

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-Q

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

For the quarterly period ended September 30, 2022

or

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

For the transition period from

to

Commission File Number: 001-14965

The Goldman Sachs Group, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

13-4019460

(I.R.S. Employer
Identification No.)

200 West Street, New York, NY

(Address of principal executive offices)

10282

(Zip Code)

(212) 902-1000

(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Exchange on which registered
Common stock, par value \$.01 per share	GS	NYSE
Depository Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series A	GS PrA	NYSE
Depository Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series C	GS PrC	NYSE
Depository Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series D	GS PrD	NYSE
Depository Shares, Each Representing 1/1,000th Interest in a Share of 5.50% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series J	GS PrJ	NYSE
Depository Shares, Each Representing 1/1,000th Interest in a Share of 6.375% Fixed-to-Floating Rate Non-Cumulative Preferred Stock, Series K	GS PrK	NYSE
5.793% Fixed-to-Floating Rate Normal Automatic Preferred Enhanced Capital Securities of Goldman Sachs Capital II	GS/43PE	NYSE
Floating Rate Normal Automatic Preferred Enhanced Capital Securities of Goldman Sachs Capital III	GS/43PF	NYSE
Medium-Term Notes, Series F, Callable Fixed and Floating Rate Notes due March 2031 of GS Finance Corp.	GS/31B	NYSE
Medium-Term Notes, Series F, Callable Fixed and Floating Rate Notes due May 2031 of GS Finance Corp.	GS/31X	NYSE

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐

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

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

As of October 21, 2022, there were 338,634,588 shares of the registrant's common stock outstanding.

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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements (Unaudited)

THE GOLDMAN SACHS GROUP, INC. AND SUBSIDIARIES

Consolidated Statements of Earnings (Unaudited)

	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
<i>in millions, except per share amounts</i>				
Revenues				
Investment banking	\$ 1,541	\$ 3,548	\$ 5,457	\$ 10,564
Investment management	2,276	2,139	6,733	5,840
Commissions and fees	995	860	3,079	2,766
Market making	4,642	3,929	15,561	13,096
Other principal transactions	478	1,568	338	9,759
Total non-interest revenues	9,932	12,044	31,168	42,025
Interest income	8,550	3,117	16,613	9,110
Interest expense	6,507	1,553	11,009	4,435
Net interest income	2,043	1,564	5,604	4,675
Total net revenues	11,975	13,608	36,772	46,700
Provision for credit losses	515	175	1,743	13
Operating expenses				
Compensation and benefits	3,606	3,167	11,384	14,473
Transaction based	1,317	1,139	3,878	3,520
Market development	199	165	596	360
Communications and technology	459	397	1,327	1,143
Depreciation and amortization	666	509	1,728	1,527
Occupancy	255	239	765	727
Professional fees	465	433	1,392	1,137
Other expenses	737	542	2,003	1,781
Total operating expenses	7,704	6,591	23,073	24,668
Pre-tax earnings	3,756	6,842	11,956	22,019
Provision for taxes	687	1,464	2,021	4,319
Net earnings	3,069	5,378	9,935	17,700
Preferred stock dividends	107	94	356	358
Net earnings applicable to common shareholders	\$ 2,962	\$ 5,284	\$ 9,579	\$ 17,342
Earnings per common share				
Basic	\$ 8.35	\$ 15.14	\$ 27.03	\$ 49.23
Diluted	\$ 8.25	\$ 14.93	\$ 26.71	\$ 48.59
Average common shares				
Basic	352.8	348.3	353.0	351.8
Diluted	359.2	353.9	358.6	356.9

Consolidated Statements of Comprehensive Income (Unaudited)

	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
<i>\$ in millions</i>				
Net earnings	\$ 3,069	\$ 5,378	\$ 9,935	\$ 17,700
Other comprehensive income/(loss) adjustments, net of tax:				
Currency translation	26	(20)	(5)	(36)
Debt valuation adjustment	673	67	2,601	165
Pension and postretirement liabilities	(2)	—	10	7
Available-for-sale securities	(615)	(114)	(2,410)	(658)
Other comprehensive income/(loss)	82	(67)	196	(522)
Comprehensive income	\$ 3,151	\$ 5,311	\$ 10,131	\$ 17,178

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Balance Sheets

(Unaudited)

	As of	
	September 2022	December 2021
<i>\$ in millions</i>		
Assets		
Cash and cash equivalents	\$ 284,251	\$ 261,036
Collateralized agreements:		
Securities purchased under agreements to resell (at fair value)	182,502	205,703
Securities borrowed (includes \$42,506 and \$39,955 at fair value)	196,968	178,771
Customer and other receivables (includes \$25 and \$42 at fair value)	165,421	160,673
Trading assets (at fair value and includes \$77,130 and \$68,208 pledged as collateral)	383,975	375,916
Investments (includes \$77,580 and \$83,427 at fair value, and \$20,375 and \$12,840 pledged as collateral)	126,963	88,719
Loans (net of allowance of \$4,846 and \$3,573, and includes \$8,250 and \$10,769 at fair value)	176,669	158,562
Other assets	39,245	34,608
Total assets	\$ 1,555,994	\$ 1,463,988
Liabilities and shareholders' equity		
Deposits (includes \$23,587 and \$35,425 at fair value)	\$ 394,733	\$ 364,227
Collateralized financings:		
Securities sold under agreements to repurchase (at fair value)	159,690	165,883
Securities loaned (includes \$7,444 and \$9,170 at fair value)	43,822	46,505
Other secured financings (includes \$14,240 and \$17,074 at fair value)	15,595	18,544
Customer and other payables	278,457	251,931
Trading liabilities (at fair value)	231,713	181,424
Unsecured short-term borrowings (includes \$32,470 and \$29,832 at fair value)	51,850	46,955
Unsecured long-term borrowings (includes \$65,358 and \$52,390 at fair value)	239,965	254,092
Other liabilities (includes \$462 and \$359 at fair value)	20,879	24,501
Total liabilities	1,436,704	1,354,062
Commitments, contingencies and guarantees		
Shareholders' equity		
Preferred stock; aggregate liquidation preference of \$10,703 and \$10,703	10,703	10,703
Common stock; 917,804,656 and 906,430,314 shares issued, and 339,103,013 and 333,573,254 shares outstanding	9	9
Share-based awards	5,479	4,211
Nonvoting common stock; no shares issued and outstanding	—	—
Additional paid-in capital	59,031	56,396
Retained earnings	139,067	131,811
Accumulated other comprehensive loss	(1,872)	(2,068)
Stock held in treasury, at cost; 578,701,645 and 572,857,062 shares	(93,127)	(91,136)
Total shareholders' equity	119,290	109,926
Total liabilities and shareholders' equity	\$ 1,555,994	\$ 1,463,988

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statements of Changes in Shareholders' Equity

(Unaudited)

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Preferred stock				
Beginning balance	\$ 10,703	\$ 9,203	\$ 10,703	\$ 11,203
Issued	—	750	—	1,425
Redeemed	—	—	—	(2,675)
Ending balance	10,703	9,953	10,703	9,953
Common stock				
Beginning balance	9	9	9	9
Issued	—	—	—	—
Ending balance	9	9	9	9
Share-based awards				
Beginning balance	5,245	3,759	4,211	3,468
Issuance and amortization of share-based awards	311	202	3,811	2,180
Delivery of common stock underlying share-based awards	(44)	(21)	(2,463)	(1,625)
Forfeiture of share-based awards	(33)	(44)	(80)	(127)
Ending balance	5,479	3,896	5,479	3,896
Additional paid-in capital				
Beginning balance	58,993	56,390	56,396	55,679
Delivery of common stock underlying share-based awards	61	23	2,494	1,676
Cancellation of share-based awards in satisfaction of withholding tax requirements	(23)	(14)	(1,587)	(983)
Issuance costs of redeemed preferred stock	—	(1)	—	25
Issuance of common stock in connection with acquisition	—	—	1,730	—
Other	—	—	(2)	1
Ending balance	59,031	56,398	59,031	56,398
Retained earnings				
Beginning balance	136,998	124,051	131,811	112,947
Net earnings	3,069	5,378	9,935	17,700
Accretion of redeemable noncontrolling interests	—	(4)	—	(69)
Dividends and dividend equivalents declared on common stock and share-based awards	(893)	(700)	(2,323)	(1,589)
Dividends declared on preferred stock	(107)	(94)	(356)	(317)
Preferred stock redemption premium	—	—	—	(41)
Ending balance	139,067	128,631	139,067	128,631
Accumulated other comprehensive income/(loss)				
Beginning balance	(1,954)	(1,889)	(2,068)	(1,434)
Other comprehensive income/(loss)	82	(67)	196	(522)
Ending balance	(1,872)	(1,956)	(1,872)	(1,956)
Stock held in treasury, at cost				
Beginning balance	(92,123)	(89,633)	(91,136)	(85,940)
Repurchased	(1,000)	(1,000)	(2,000)	(4,700)
Reissued	1	1	20	11
Other	(5)	(2)	(11)	(5)
Ending balance	(93,127)	(90,634)	(93,127)	(90,634)
Total shareholders' equity	\$ 119,290	\$ 106,297	\$ 119,290	\$ 106,297

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statements of Cash Flows

(Unaudited)

\$ in millions	Nine Months Ended September	
	2022	2021
Cash flows from operating activities		
Net earnings	\$ 9,935	\$ 17,700
Adjustments to reconcile net earnings to net cash provided by/(used for) operating activities		
Depreciation and amortization	1,728	1,527
Share-based compensation	3,811	2,141
Provision for credit losses	1,743	13
Changes in operating assets and liabilities:		
Customer and other receivables and payables, net	21,453	11,010
Collateralized transactions (excluding other secured financings), net	(3,872)	(88,832)
Trading assets	(39,764)	(1,815)
Trading liabilities	48,411	50,065
Loans held for sale, net	2,041	(1,780)
Other, net	(21,781)	(14,005)
Net cash provided by/(used for) operating activities	23,705	(23,976)
Cash flows from investing activities		
Purchase of property, leasehold improvements and equipment	(2,994)	(3,548)
Proceeds from sales of property, leasehold improvements and equipment	1,272	3,111
Net cash used for business acquisitions	(2,113)	—
Purchase of investments	(52,989)	(31,998)
Proceeds from sales and paydowns of investments	8,080	40,127
Loans (excluding loans held for sale), net	(20,924)	(24,219)
Net cash used for investing activities	(69,668)	(16,527)
Cash flows from financing activities		
Unsecured short-term borrowings, net	2,451	1,342
Other secured financings (short-term), net	(1,415)	(635)
Proceeds from issuance of other secured financings (long-term)	1,499	3,661
Repayment of other secured financings (long-term), including the current portion	(2,677)	(4,922)
Proceeds from issuance of unsecured long-term borrowings	69,620	68,798
Repayment of unsecured long-term borrowings, including the current portion	(35,328)	(38,370)
Derivative contracts with a financing element, net	1,749	477
Deposits, net	39,174	74,612
Preferred stock redemption	—	(2,675)
Common stock repurchased	(2,000)	(4,700)
Settlement of share-based awards in satisfaction of withholding tax requirements	(1,591)	(984)
Dividends and dividend equivalents paid on common stock, preferred stock and share-based awards	(2,669)	(1,903)
Proceeds from issuance of preferred stock, net of issuance costs	—	1,423
Other financing, net	365	367
Net cash provided by financing activities	69,178	96,491
Net increase in cash and cash equivalents	23,215	55,988
Cash and cash equivalents, beginning balance	261,036	155,842
Cash and cash equivalents, ending balance	\$ 284,251	\$ 211,830
Supplemental disclosures:		
Cash payments for interest, net of capitalized interest	\$ 9,882	\$ 4,394
Cash payments for income taxes, net	\$ 3,046	\$ 4,769

See Notes 12 and 16 for information about non-cash activities.

Notes to Consolidated Financial Statements (Unaudited)

Note 1.

Description of Business

The Goldman Sachs Group, Inc. (Group Inc. or parent company), a Delaware corporation, together with its consolidated subsidiaries (collectively, the firm), is a leading global financial institution that delivers a broad range of financial services across investment banking, securities, investment management and consumer banking to a large and diversified client base that includes corporations, financial institutions, governments and individuals. Founded in 1869, the firm is headquartered in New York and maintains offices in all major financial centers around the world.

The firm reports its activities in four business segments:

Investment Banking

The firm provides a broad range of investment banking services to a diverse group of corporations, financial institutions, investment funds and governments. Services include strategic advisory assignments with respect to mergers and acquisitions, divestitures, corporate defense activities, restructurings and spin-offs, and equity and debt underwriting of public offerings and private placements. The firm also provides lending to corporate clients, including relationship lending, middle-market lending and acquisition financing. The firm also provides transaction banking services to certain corporate clients.

Global Markets

The firm facilitates client transactions and makes markets in fixed income, equity, currency and commodity products with institutional clients, such as corporations, financial institutions, investment funds and governments. The firm also makes markets in and clears institutional client transactions on major stock, options and futures exchanges worldwide and provides prime brokerage and other equities financing activities, including securities lending, margin lending and swaps. The firm also provides financing to clients through securities purchased under agreements to resell (resale agreements), and through structured credit, warehouse and asset-backed lending.

Asset Management

The firm manages assets and offers investment products (primarily through separately managed accounts and commingled vehicles, such as mutual funds and private investment funds) across all major asset classes to a diverse set of institutional clients and a network of third-party distributors around the world. The firm makes equity investments, which include alternative investing activities related to public and private equity investments in corporate, real estate and infrastructure assets, as well as investments through consolidated investment entities, substantially all of which are engaged in real estate investment activities. The firm also invests in corporate debt and provides financing for real estate and other assets.

Consumer & Wealth Management

The firm provides investing and wealth advisory solutions, including financial planning and counseling, executing brokerage transactions and managing assets for individuals in its wealth management business. The firm also provides loans, accepts deposits and provides investing services through its consumer banking digital platform, *Marcus by Goldman Sachs*, and through its private bank, as well as issues credit cards to consumers. The acquisition of GreenSky, Inc. (GreenSky) in March 2022 expanded the firm's offering of point-of-sale financing.

Note 2.

Basis of Presentation

These consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States (U.S. GAAP) and include the accounts of Group Inc. and all other entities in which the firm has a controlling financial interest. Intercompany transactions and balances have been eliminated.

These consolidated financial statements are unaudited and should be read in conjunction with the audited consolidated financial statements included in the firm's Annual Report on Form 10-K for the year ended December 31, 2021. References to "the 2021 Form 10-K" are to the firm's Annual Report on Form 10-K for the year ended December 31, 2021. Certain disclosures included in the annual financial statements have been condensed or omitted from these financial statements as they are not required for interim financial statements under U.S. GAAP and the rules of the SEC.

These unaudited consolidated financial statements reflect all adjustments that are, in the opinion of management, necessary for a fair statement of the results for the interim periods presented. These adjustments are of a normal, recurring nature. Interim period operating results may not be indicative of the operating results for a full year.

All references to September 2022, June 2022 and September 2021 refer to the firm's periods ended, or the dates, as the context requires, September 30, 2022, June 30, 2022 and September 30, 2021, respectively. All references to December 2021 refer to the date December 31, 2021. Any reference to a future year refers to a year ending on December 31 of that year. Certain reclassifications have been made to previously reported amounts to conform to the current presentation.

Notes to Consolidated Financial Statements (Unaudited)

Note 3.

Significant Accounting Policies

The firm's significant accounting policies include when and how to measure the fair value of assets and liabilities, measuring the allowance for credit losses on loans and lending commitments accounted for at amortized cost, and when to consolidate an entity. See Note 4 for policies on fair value measurements, Note 9 for policies on the allowance for credit losses, and below and Note 17 for policies on consolidation accounting. All other significant accounting policies are either described below or included in the following footnotes:

Fair Value Measurements	Note 4
Trading Assets and Liabilities	Note 5
Trading Cash Instruments	Note 6
Derivatives and Hedging Activities	Note 7
Investments	Note 8
Loans	Note 9
Fair Value Option	Note 10
Collateralized Agreements and Financings	Note 11
Other Assets	Note 12
Deposits	Note 13
Unsecured Borrowings	Note 14
Other Liabilities	Note 15
Securitization Activities	Note 16
Variable Interest Entities	Note 17
Commitments, Contingencies and Guarantees	Note 18
Shareholders' Equity	Note 19
Regulation and Capital Adequacy	Note 20
Earnings Per Common Share	Note 21
Transactions with Affiliated Funds	Note 22
Interest Income and Interest Expense	Note 23
Income Taxes	Note 24
Business Segments	Note 25
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Legal Proceedings	Note 27

Consolidation

The firm consolidates entities in which the firm has a controlling financial interest. The firm determines whether it has a controlling financial interest in an entity by first evaluating whether the entity is a voting interest entity or a variable interest entity (VIE).

Voting Interest Entities. Voting interest entities are entities in which (i) the total equity investment at risk is sufficient to enable the entity to finance its activities independently and (ii) the equity holders have the power to direct the activities of the entity that most significantly impact its economic performance, the obligation to absorb the losses of the entity and the right to receive the residual returns of the entity. The usual condition for a controlling financial interest in a voting interest entity is ownership of a majority voting interest. If the firm has a controlling majority voting interest in a voting interest entity, the entity is consolidated.

Variable Interest Entities. A VIE is an entity that lacks one or more of the characteristics of a voting interest entity. The firm has a controlling financial interest in a VIE when the firm has a variable interest or interests that provide it with (i) the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and (ii) the obligation to absorb losses of the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE. See Note 17 for further information about VIEs.

Equity-Method Investments. When the firm does not have a controlling financial interest in an entity but can exert significant influence over the entity's operating and financial policies, the investment is generally accounted for at fair value by electing the fair value option available under U.S. GAAP. Significant influence generally exists when the firm owns 20% to 50% of the entity's common stock or in-substance common stock.

In certain cases, the firm applies the equity method of accounting to new investments that are strategic in nature or closely related to the firm's principal business activities, when the firm has a significant degree of involvement in the cash flows or operations of the investee or when cost-benefit considerations are less significant. See Note 8 for further information about equity-method investments.

Notes to Consolidated Financial Statements (Unaudited)

Investment Funds. The firm has formed investment funds with third-party investors. These funds are typically organized as limited partnerships or limited liability companies for which the firm acts as general partner or manager. Generally, the firm does not hold a majority of the economic interests in these funds. These funds are usually voting interest entities and generally are not consolidated because third-party investors typically have rights to terminate the funds or to remove the firm as general partner or manager. Investments in these funds are generally measured at net asset value (NAV) and are included in investments. See Notes 8, 18 and 22 for further information about investments in funds.

Use of Estimates

Preparation of these consolidated financial statements requires management to make certain estimates and assumptions, the most important of which relate to fair value measurements, the allowance for credit losses on loans and lending commitments accounted for at amortized cost, discretionary compensation accruals, accounting for goodwill and identifiable intangible assets, provisions for losses that may arise from litigation and regulatory proceedings (including governmental investigations), and accounting for income taxes. These estimates and assumptions are based on the best available information, but actual results could be materially different.

Revenue Recognition

Financial Assets and Liabilities at Fair Value. Trading assets and liabilities and certain investments are carried at fair value either under the fair value option or in accordance with other U.S. GAAP. In addition, the firm has elected to account for certain of its loans and other financial assets and liabilities at fair value by electing the fair value option. The fair value of a financial instrument is the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Financial assets are marked to bid prices and financial liabilities are marked to offer prices. Fair value measurements do not include transaction costs. Fair value gains or losses are generally included in market making or other principal transactions. See Note 4 for further information about fair value measurements.

Revenue from Contracts with Clients. The firm recognizes revenue earned from contracts with clients for services, such as investment banking, investment management, and execution and clearing (contracts with clients), when the performance obligations related to the underlying transaction are completed.

Revenues from contracts with clients represent approximately 45% of total non-interest revenues for the three months ended September 2022 (including approximately 90% of investment banking revenues, approximately 95% of investment management revenues and all commissions and fees) and approximately 45% of total non-interest revenues for the nine months ended September 2022 (including approximately 85% of investment banking revenues, approximately 95% of investment management revenues and all commissions and fees), and approximately 50% of total non-interest revenues for the three months ended September 2021 and approximately 40% for the nine months ended September 2021 (in each case, reflecting approximately 90% of investment banking revenues, approximately 95% of investment management revenues and all commissions and fees). See Note 25 for information about net revenues by business segment.

Investment Banking

Advisory. Fees from financial advisory assignments are recognized in revenues when the services related to the underlying transaction are completed under the terms of the assignment. Non-refundable deposits and milestone payments in connection with financial advisory assignments are recognized in revenues upon completion of the underlying transaction or when the assignment is otherwise concluded.

Expenses associated with financial advisory assignments are recognized when incurred and are included in transaction based expenses. Client reimbursements for such expenses are included in investment banking revenues.

Underwriting. Fees from underwriting assignments are recognized in revenues upon completion of the underlying transaction based on the terms of the assignment.

Expenses associated with underwriting assignments are generally deferred until the related revenue is recognized or the assignment is otherwise concluded. Such expenses are included in transaction based expenses for completed assignments.

Notes to Consolidated Financial Statements (Unaudited)

Investment Management

The firm earns management fees and incentive fees for investment management services, which are included in investment management revenues. The firm makes payments to brokers and advisors related to the placement of the firm's investment funds (distribution fees), which are included in transaction based expenses.

Management Fees. Management fees for mutual funds are calculated as a percentage of daily net asset value and are received monthly. Management fees for hedge funds and separately managed accounts are calculated as a percentage of month-end net asset value and are generally received quarterly. Management fees for private equity funds are calculated as a percentage of monthly invested capital or committed capital and are received quarterly, semi-annually or annually, depending on the fund. Management fees are recognized over time in the period the services are provided.

Distribution fees paid by the firm are calculated based on either a percentage of the management fee, the investment fund's net asset value or the committed capital. Such fees are included in transaction based expenses.

Incentive Fees. Incentive fees are calculated as a percentage of a fund's or separately managed account's return, or excess return above a specified benchmark or other performance target. Incentive fees are generally based on investment performance over a twelve-month period or over the life of a fund. Fees that are based on performance over a twelve-month period are subject to adjustment prior to the end of the measurement period. For fees that are based on investment performance over the life of the fund, future investment underperformance may require fees previously distributed to the firm to be returned to the fund.

Incentive fees earned from a fund or separately managed account are recognized when it is probable that a significant reversal of such fees will not occur, which is generally when such fees are no longer subject to fluctuations in the market value of investments held by the fund or separately managed account. Therefore, incentive fees recognized during the period may relate to performance obligations satisfied in previous periods.

Commissions and Fees

The firm earns commissions and fees from executing and clearing client transactions on stock, options and futures markets, as well as over-the-counter (OTC) transactions. Commissions and fees are recognized on the day the trade is executed. The firm also provides third-party research services to clients in connection with certain soft-dollar arrangements. Third-party research costs incurred by the firm in connection with such arrangements are presented net within commissions and fees.

Remaining Performance Obligations

Remaining performance obligations are services that the firm has committed to perform in the future in connection with its contracts with clients. The firm's remaining performance obligations are generally related to its financial advisory assignments and certain investment management activities. Revenues associated with remaining performance obligations relating to financial advisory assignments cannot be determined until the outcome of the transaction. For the firm's investment management activities, where fees are calculated based on the net asset value of the fund or separately managed account, future revenues associated with such remaining performance obligations cannot be determined as such fees are subject to fluctuations in the market value of investments held by the fund or separately managed account.

The firm is able to determine the future revenues associated with management fees calculated based on committed capital. As of September 2022, substantially all future net revenues associated with such remaining performance obligations will be recognized through 2029. Annual revenues associated with such performance obligations average less than \$300 million through 2029.

Transfers of Financial Assets

Transfers of financial assets are accounted for as sales when the firm has relinquished control over the assets transferred. For transfers of financial assets accounted for as sales, any gains or losses are recognized in net revenues. Assets or liabilities that arise from the firm's continuing involvement with transferred financial assets are initially recognized at fair value. For transfers of financial assets that are not accounted for as sales, the assets are generally included in trading assets and the transfer is accounted for as a collateralized financing, with the related interest expense recognized over the life of the transaction. See Note 11 for further information about transfers of financial assets accounted for as collateralized financings and Note 16 for further information about transfers of financial assets accounted for as sales.

Notes to Consolidated Financial Statements (Unaudited)

Cash and Cash Equivalents

The firm defines cash equivalents as highly liquid overnight deposits held in the ordinary course of business. Cash and cash equivalents included cash and due from banks of \$9.15 billion as of September 2022 and \$10.14 billion as of December 2021. Cash and cash equivalents also included interest-bearing deposits with banks of \$275.10 billion as of September 2022 and \$250.90 billion as of December 2021.

The firm segregates cash for regulatory and other purposes related to client activity. Cash and cash equivalents segregated for regulatory and other purposes were \$22.93 billion as of September 2022 and \$24.87 billion as of December 2021. In addition, the firm segregates securities for regulatory and other purposes related to client activity. See Note 11 for further information about segregated securities.

Customer and Other Receivables

Customer and other receivables included receivables from customers and counterparties of \$87.72 billion as of September 2022 and \$103.82 billion as of December 2021, and receivables from brokers, dealers and clearing organizations of \$77.70 billion as of September 2022 and \$56.85 billion as of December 2021. Such receivables primarily consist of customer margin loans, receivables resulting from unsettled transactions and collateral posted in connection with certain derivative transactions.

Substantially all of these receivables are accounted for at amortized cost net of any allowance for credit losses, which generally approximates fair value. As these receivables are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these receivables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both September 2022 and December 2021. See Note 10 for further information about customer and other receivables accounted for at fair value under the fair value option. Interest on customer and other receivables is recognized over the life of the transaction and included in interest income.

Customer and other receivables includes receivables from contracts with clients and contract assets. Contract assets represent the firm's right to receive consideration for services provided in connection with its contracts with clients for which collection is conditional and not merely subject to the passage of time. The firm's receivables from contracts with clients were \$2.80 billion as of September 2022 and \$3.01 billion as of December 2021. As of both September 2022 and December 2021 contract assets were not material.

Customer and Other Payables

Customer and other payables included payables to customers and counterparties of \$254.58 billion as of September 2022 and \$241.93 billion as of December 2021, and payables to brokers, dealers and clearing organizations of \$23.88 billion as of September 2022 and \$10.00 billion as of December 2021. Such payables primarily consist of customer credit balances related to the firm's prime brokerage activities. Customer and other payables are accounted for at cost plus accrued interest, which generally approximates fair value. As these payables are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these payables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both September 2022 and December 2021. Interest on customer and other payables is recognized over the life of the transaction and included in interest expense.

Offsetting Assets and Liabilities

To reduce credit exposures on derivatives and securities financing transactions, the firm may enter into master netting agreements or similar arrangements (collectively, netting agreements) with counterparties that permit it to offset receivables and payables with such counterparties. A netting agreement is a contract with a counterparty that permits net settlement of multiple transactions with that counterparty, including upon the exercise of termination rights by a non-defaulting party. Upon exercise of such termination rights, all transactions governed by the netting agreement are terminated and a net settlement amount is calculated. In addition, the firm receives and posts cash and securities collateral with respect to its derivatives and securities financing transactions, subject to the terms of the related credit support agreements or similar arrangements (collectively, credit support agreements). An enforceable credit support agreement grants the non-defaulting party exercising termination rights the right to liquidate the collateral and apply the proceeds to any amounts owed. In order to assess enforceability of the firm's right of setoff under netting and credit support agreements, the firm evaluates various factors, including applicable bankruptcy laws, local statutes and regulatory provisions in the jurisdiction of the parties to the agreement.

Derivatives are reported on a net-by-counterparty basis (i.e., the net payable or receivable for derivative assets and liabilities for a given counterparty) in the consolidated balance sheets when a legal right of setoff exists under an enforceable netting agreement. Resale agreements and securities sold under agreements to repurchase (repurchase agreements) and securities borrowed and loaned transactions with the same term and currency are presented on a net-by-counterparty basis in the consolidated balance sheets when such transactions meet certain settlement criteria and are subject to netting agreements.

Notes to Consolidated Financial Statements (Unaudited)

In the consolidated balance sheets, derivatives are reported net of cash collateral received and posted under enforceable credit support agreements, when transacted under an enforceable netting agreement. In the consolidated balance sheets, resale and repurchase agreements, and securities borrowed and loaned, are not reported net of the related cash and securities received or posted as collateral. See Note 11 for further information about collateral received and pledged, including rights to deliver or repledge collateral. See Notes 7 and 11 for further information about offsetting assets and liabilities.

Share-Based Compensation

The cost of employee services received in exchange for a share-based award is generally measured based on the grant-date fair value of the award. Share-based awards that do not require future service (i.e., vested awards, including awards granted to retirement-eligible employees) are expensed immediately. Share-based awards that require future service are amortized over the relevant service period. Forfeitures are recorded when they occur.

Cash dividend equivalents paid on restricted stock units (RSUs) are generally charged to retained earnings. If RSUs that require future service are forfeited, the related dividend equivalents originally charged to retained earnings are reclassified to compensation expense in the period in which forfeiture occurs.

The firm generally issues new shares of common stock upon delivery of share-based awards. In certain cases, primarily related to conflicted employment (as outlined in the applicable award agreements), the firm may cash settle share-based compensation awards accounted for as equity instruments. For these awards, whose terms allow for cash settlement, additional paid-in capital is adjusted to the extent of the difference between the value of the award at the time of cash settlement and the grant-date value of the award. The tax effect related to the settlement of share-based awards is recorded in income tax benefit or expense.

Foreign Currency Translation

Assets and liabilities denominated in non-U.S. currencies are translated at rates of exchange prevailing on the date of the consolidated balance sheets and revenues and expenses are translated at average rates of exchange for the period. Foreign currency remeasurement gains or losses on transactions in nonfunctional currencies are recognized in earnings. Gains or losses on translation of the financial statements of a non-U.S. operation, when the functional currency is other than the U.S. dollar, are included, net of hedges and taxes, in the consolidated statements of comprehensive income.

Recent Accounting Developments

Facilitation of the Effects of Reference Rate Reform on Financial Reporting (ASC 848). In March 2020, the FASB issued ASU No. 2020-04, "Reference Rate Reform — Facilitation of the Effects of Reference Rate Reform on Financial Reporting." This ASU provides optional relief from applying generally accepted accounting principles to contracts, hedging relationships and other transactions affected by reference rate reform. In addition, in January 2021 the FASB issued ASU No. 2021-01, "Reference Rate Reform — Scope," which clarified the scope of ASC 848 relating to contract modifications. The firm adopted these ASUs upon issuance and elected to apply the relief available to certain modified derivatives. The adoption of these ASUs did not have a material impact on the firm's consolidated financial statements.

Troubled Debt Restructurings and Vintage Disclosures (ASC 326). In March 2022, the FASB issued ASU No. 2022-02, "Financial Instruments — Credit Losses (Topic 326) — Troubled Debt Restructurings and Vintage Disclosures." This ASU eliminates the recognition and measurement guidance for troubled debt restructurings (TDRs) and requires enhanced disclosures about loan modifications for borrowers experiencing financial difficulty. This ASU also requires enhanced disclosure for loans that have been charged off. The ASU is effective in January 2023 under a prospective approach. Adoption of this ASU is not expected to have a material impact on the firm's consolidated financial statements.

Accounting for Obligations to Safeguard Crypto-Assets an Entity Holds for Platform Users (SAB 121). In March 2022, the SEC staff issued SAB 121 (SAB 121) — "Accounting for obligations to safeguard crypto-assets an entity holds for platform users." SAB 121 adds interpretive guidance requiring an entity to recognize a liability on its balance sheet to reflect the obligation to safeguard the crypto-assets held for its platform users, along with a corresponding asset. The firm adopted this guidance in June 2022 under a modified retrospective approach and adoption did not have a material impact on the firm's consolidated financial statements.

Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions (ASC 820). In June 2022, the FASB issued ASU No. 2022-03, "Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions." This ASU clarifies that a contractual restriction on the sale of an equity security should not be considered in measuring its fair value. In addition, the ASU requires specific disclosures related to equity securities that are subject to contractual sale restrictions. The ASU is effective in January 2024 under a prospective approach. Early adoption is permitted. Adoption of this ASU is not expected to have a material impact on the firm's consolidated financial statements.

Notes to Consolidated Financial Statements (Unaudited)

Note 4.

Fair Value Measurements

The fair value of a financial instrument is the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Financial assets are marked to bid prices and financial liabilities are marked to offer prices. Fair value measurements do not include transaction costs. The firm measures certain financial assets and liabilities as a portfolio (i.e., based on its net exposure to market and/or credit risks).

The best evidence of fair value is a quoted price in an active market. If quoted prices in active markets are not available, fair value is determined by reference to prices for similar instruments, quoted prices or recent transactions in less active markets, or internally developed models that primarily use market-based or independently sourced inputs, including, but not limited to, interest rates, volatilities, equity or debt prices, foreign exchange rates, commodity prices, credit spreads and funding spreads (i.e., the spread or difference between the interest rate at which a borrower could finance a given financial instrument relative to a benchmark interest rate).

U.S. GAAP has a three-level hierarchy for disclosure of fair value measurements. This hierarchy prioritizes inputs to the valuation techniques used to measure fair value, giving the highest priority to level 1 inputs and the lowest priority to level 3 inputs. A financial instrument's level in this hierarchy is based on the lowest level of input that is significant to its fair value measurement. In evaluating the significance of a valuation input, the firm considers, among other factors, a portfolio's net risk exposure to that input. The fair value hierarchy is as follows:

Level 1. Inputs are unadjusted quoted prices in active markets to which the firm had access at the measurement date for identical, unrestricted assets or liabilities.

Level 2. Inputs to valuation techniques are observable, either directly or indirectly.

Level 3. One or more inputs to valuation techniques are significant and unobservable.

The fair values for substantially all of the firm's financial assets and liabilities are based on observable prices and inputs and are classified in levels 1 and 2 of the fair value hierarchy. Certain level 2 and level 3 financial assets and liabilities may require valuation adjustments that a market participant would require to arrive at fair value for factors, such as counterparty and the firm's credit quality, funding risk, transfer restrictions, liquidity and bid/offer spreads. Valuation adjustments are generally based on market evidence.

The valuation techniques and nature of significant inputs used to determine the fair value of the firm's financial instruments are described below. See Notes 5 through 10 for further information about significant unobservable inputs used to value level 3 financial instruments.

Valuation Techniques and Significant Inputs for Trading Cash Instruments, Investments and Loans

Level 1. Level 1 instruments include U.S. government obligations, most non-U.S. government obligations, certain agency obligations, certain corporate debt instruments, certain money market instruments, certain other debt obligations and actively traded listed equities. These instruments are valued using quoted prices for identical unrestricted instruments in active markets. The firm defines active markets for equity instruments based on the average daily trading volume both in absolute terms and relative to the market capitalization for the instrument. The firm defines active markets for debt instruments based on both the average daily trading volume and the number of days with trading activity.

Level 2. Level 2 instruments include certain non-U.S. government obligations, most agency obligations, most mortgage-backed loans and securities, most corporate debt instruments, most state and municipal obligations, most money market instruments, most other debt obligations, restricted or less liquid listed equities, certain private equities, commodities and certain lending commitments.

Valuations of level 2 instruments can be verified to quoted prices, recent trading activity for identical or similar instruments, broker or dealer quotations or alternative pricing sources with reasonable levels of price transparency. Consideration is given to the nature of the quotations (e.g., indicative or executable) and the relationship of recent market activity to the prices provided from alternative pricing sources.

Valuation adjustments are typically made to level 2 instruments (i) if the instrument is subject to transfer restrictions and/or (ii) for other premiums and liquidity discounts that a market participant would require to arrive at fair value. Valuation adjustments are generally based on market evidence.

Level 3. Level 3 instruments have one or more significant valuation inputs that are not observable. Absent evidence to the contrary, level 3 instruments are initially valued at transaction price, which is considered to be the best initial estimate of fair value. Subsequently, the firm uses other methodologies to determine fair value, which vary based on the type of instrument. Valuation inputs and assumptions are changed when corroborated by substantive observable evidence, including values realized on sales.

Notes to Consolidated Financial Statements (Unaudited)

Valuation techniques of level 3 instruments vary by instrument, but are generally based on discounted cash flow techniques. The valuation techniques and the nature of significant inputs used to determine the fair values of each type of level 3 instrument are described below:

Loans and Securities Backed by Commercial Real Estate

Loans and securities backed by commercial real estate are directly or indirectly collateralized by a single property or a portfolio of properties, and may include tranches of varying levels of subordination. Significant inputs are generally determined based on relative value analyses and include:

- Market yields implied by transactions of similar or related assets and/or current levels and changes in market indices, such as the CMBX (an index that tracks the performance of commercial mortgage bonds);
- Transaction prices in both the underlying collateral and instruments with the same or similar underlying collateral;
- A measure of expected future cash flows in a default scenario (recovery rates) implied by the value of the underlying collateral, which is mainly driven by current performance of the underlying collateral and capitalization rates. Recovery rates are expressed as a percentage of notional or face value of the instrument and reflect the benefit of credit enhancements on certain instruments; and
- Timing of expected future cash flows (duration) which, in certain cases, may incorporate the impact of any loan forbearances and other unobservable inputs (e.g., prepayment speeds).

Loans and Securities Backed by Residential Real Estate

Loans and securities backed by residential real estate are directly or indirectly collateralized by portfolios of residential real estate and may include tranches of varying levels of subordination. Significant inputs are generally determined based on relative value analyses, which incorporate comparisons to instruments with similar collateral and risk profiles. Significant inputs include:

- Market yields implied by transactions of similar or related assets;
- Transaction prices in both the underlying collateral and instruments with the same or similar underlying collateral;
- Cumulative loss expectations, driven by default rates, home price projections, residential property liquidation timelines, related costs and subsequent recoveries; and
- Duration, driven by underlying loan prepayment speeds and residential property liquidation timelines.

Corporate Debt Instruments

Corporate debt instruments includes corporate loans, debt securities and convertible debentures. Significant inputs for corporate debt instruments are generally determined based on relative value analyses, which incorporate comparisons both to prices of credit default swaps that reference the same or similar underlying instrument or entity and to other debt instruments for the same or similar issuer for which observable prices or broker quotations are available. Significant inputs include:

- Market yields implied by transactions of similar or related assets and/or current levels and trends of market indices, such as the CDX (an index that tracks the performance of corporate credit);
- Current performance and recovery assumptions and, where the firm uses credit default swaps to value the related instrument, the cost of borrowing the underlying reference obligation;
- Duration; and
- Market and transaction multiples for corporate debt instruments with convertibility or participation options.

Equity Securities

Equity securities consists of private equities. Recent third-party completed or pending transactions (e.g., merger proposals, debt restructurings, tender offers) are considered the best evidence for any change in fair value. When these are not available, the following valuation methodologies are used, as appropriate:

- Industry multiples (primarily EBITDA and revenue multiples) and public comparables;
- Transactions in similar instruments;
- Discounted cash flow techniques; and
- Third-party appraisals.

The firm also considers changes in the outlook for the relevant industry and financial performance of the issuer as compared to projected performance. Significant inputs include:

- Market and transaction multiples;
- Discount rates and capitalization rates; and
- For equity securities with debt-like features, market yields implied by transactions of similar or related assets, current performance and recovery assumptions, and duration.

Notes to Consolidated Financial Statements (Unaudited)

Other Trading Cash Instruments, Investments and Loans

The significant inputs to the valuation of other instruments, such as non-U.S. government and agency obligations, state and municipal obligations, and other loans and debt obligations are generally determined based on relative value analyses, which incorporate comparisons both to prices of credit default swaps that reference the same or similar underlying instrument or entity and to other debt instruments for the same issuer for which observable prices or broker quotations are available. Significant inputs include:

- Market yields implied by transactions of similar or related assets and/or current levels and trends of market indices;
- Current performance and recovery assumptions and, where the firm uses credit default swaps to value the related instrument, the cost of borrowing the underlying reference obligation; and
- Duration.

Valuation Techniques and Significant Inputs for Derivatives

The firm's level 2 and level 3 derivatives are valued using derivative pricing models (e.g., discounted cash flow models, correlation models and models that incorporate option pricing methodologies, such as Monte Carlo simulations). Price transparency of derivatives can generally be characterized by product type, as described below.

- **Interest Rate.** In general, the key inputs used to value interest rate derivatives are transparent, even for most long-dated contracts. Interest rate swaps and options denominated in the currencies of leading industrialized nations are characterized by high trading volumes and tight bid/offer spreads. Interest rate derivatives that reference indices, such as an inflation index, or the shape of the yield curve (e.g., 10-year swap rate vs. 2-year swap rate) are more complex, but the key inputs are generally observable.
- **Credit.** Price transparency for credit default swaps, including both single names and baskets of credits, varies by market and underlying reference entity or obligation. Credit default swaps that reference indices, large corporates and major sovereigns generally exhibit the most price transparency. For credit default swaps with other underliers, price transparency varies based on credit rating, the cost of borrowing the underlying reference obligations, and the availability of the underlying reference obligations for delivery upon the default of the issuer. Credit default swaps that reference loans, asset-backed securities and emerging market debt instruments tend to have less price transparency than those that reference corporate bonds. In addition, more complex credit derivatives, such as those sensitive to the correlation between two or more underlying reference obligations, generally have less price transparency.

- **Currency.** Prices for currency derivatives based on the exchange rates of leading industrialized nations, including those with longer tenors, are generally transparent. The primary difference between the price transparency of developed and emerging market currency derivatives is that emerging markets tend to be only observable for contracts with shorter tenors.
- **Commodity.** Commodity derivatives include transactions referenced to energy (e.g., oil, natural gas and electricity), metals (e.g., precious and base) and soft commodities (e.g., agricultural). Price transparency varies based on the underlying commodity, delivery location, tenor and product quality (e.g., diesel fuel compared to unleaded gasoline). In general, price transparency for commodity derivatives is greater for contracts with shorter tenors and contracts that are more closely aligned with major and/or benchmark commodity indices.
- **Equity.** Price transparency for equity derivatives varies by market and underlier. Options on indices and the common stock of corporates included in major equity indices exhibit the most price transparency. Equity derivatives generally have observable market prices, except for contracts with long tenors or reference prices that differ significantly from current market prices. More complex equity derivatives, such as those sensitive to the correlation between two or more individual stocks, generally have less price transparency.

Liquidity is essential to the observability of all product types. If transaction volumes decline, previously transparent prices and other inputs may become unobservable. Conversely, even highly structured products may at times have trading volumes large enough to provide observability of prices and other inputs.

Level 1. Level 1 derivatives include short-term contracts for future delivery of securities when the underlying security is a level 1 instrument, and exchange-traded derivatives if they are actively traded and are valued at their quoted market price.

Level 2. Level 2 derivatives include OTC derivatives for which all significant valuation inputs are corroborated by market evidence and exchange-traded derivatives that are not actively traded and/or that are valued using models that calibrate to market-clearing levels of OTC derivatives.

The selection of a particular model to value a derivative depends on the contractual terms of and specific risks inherent in the instrument, as well as the availability of pricing information in the market. For derivatives that trade in liquid markets, model selection does not involve significant management judgment because outputs of models can be calibrated to market-clearing levels.

Notes to Consolidated Financial Statements (Unaudited)

Valuation models require a variety of inputs, such as contractual terms, market prices, yield curves, discount rates (including those derived from interest rates on collateral received and posted as specified in credit support agreements for collateralized derivatives), credit curves, measures of volatility, prepayment rates, loss severity rates and correlations of such inputs. Significant inputs to the valuations of level 2 derivatives can be verified to market transactions, broker or dealer quotations or other alternative pricing sources with reasonable levels of price transparency. Consideration is given to the nature of the quotations (e.g., indicative or executable) and the relationship of recent market activity to the prices provided from alternative pricing sources.

Level 3. Level 3 derivatives are valued using models which utilize observable level 1 and/or level 2 inputs, as well as unobservable level 3 inputs. The significant unobservable inputs used to value the firm's level 3 derivatives are described below.

- For level 3 interest rate and currency derivatives, significant unobservable inputs include correlations of certain currencies and interest rates (e.g., the correlation between Euro inflation and Euro interest rates) and specific interest rate and currency volatilities.
- For level 3 credit derivatives, significant unobservable inputs include illiquid credit spreads and upfront credit points, which are unique to specific reference obligations and reference entities, and recovery rates.
- For level 3 commodity derivatives, significant unobservable inputs include volatilities for options with strike prices that differ significantly from current market prices and prices or spreads for certain products for which the product quality or physical location of the commodity is not aligned with benchmark indices.
- For level 3 equity derivatives, significant unobservable inputs generally include equity volatility inputs for options that are long-dated and/or have strike prices that differ significantly from current market prices. In addition, the valuation of certain structured trades requires the use of level 3 correlation inputs, such as the correlation of the price performance of two or more individual stocks or the correlation of the price performance for a basket of stocks to another asset class, such as commodities.

Subsequent to the initial valuation of a level 3 derivative, the firm updates the level 1 and level 2 inputs to reflect observable market changes and any resulting gains and losses are classified in level 3. Level 3 inputs are changed when corroborated by evidence, such as similar market transactions, third-party pricing services and/or broker or dealer quotations or other empirical market data. In circumstances where the firm cannot verify the model value by reference to market transactions, it is possible that a different valuation model could produce a materially different estimate of fair value. See Note 7 for further information about significant unobservable inputs used in the valuation of level 3 derivatives.

Valuation Adjustments. Valuation adjustments are integral to determining the fair value of derivative portfolios and are used to adjust the mid-market valuations produced by derivative pricing models to the exit price valuation. These adjustments incorporate bid/offer spreads, the cost of liquidity, and credit and funding valuation adjustments, which account for the credit and funding risk inherent in the uncollateralized portion of derivative portfolios. The firm also makes funding valuation adjustments to collateralized derivatives where the terms of the agreement do not permit the firm to deliver or repledge collateral received. Market-based inputs are generally used when calibrating valuation adjustments to market-clearing levels.

In addition, for derivatives that include significant unobservable inputs, the firm makes model or exit price adjustments to account for the valuation uncertainty present in the transaction.

Notes to Consolidated Financial Statements (Unaudited)

Valuation Techniques and Significant Inputs for Other Financial Instruments at Fair Value

In addition to trading cash instruments, derivatives, and certain investments and loans, the firm accounts for certain of its other financial assets and liabilities at fair value under the fair value option. Such instruments include resale and repurchase agreements; certain securities borrowed and loaned transactions; certain customer and other receivables, including certain margin loans; certain time deposits, including structured certificates of deposit, which are hybrid financial instruments; substantially all other secured financings, including transfers of assets accounted for as financings; certain unsecured short- and long-term borrowings, substantially all of which are hybrid financial instruments; and certain other liabilities. These instruments are generally valued based on discounted cash flow techniques, which incorporate inputs with reasonable levels of price transparency, and are generally classified in level 2 because the inputs are observable. Valuation adjustments may be made for liquidity and for counterparty and the firm's credit quality. The significant inputs used to value the firm's other financial instruments are described below.

Resale and Repurchase Agreements and Securities Borrowed and Loaned.

The significant inputs to the valuation of resale and repurchase agreements and securities borrowed and loaned are funding spreads, the amount and timing of expected future cash flows and interest rates.

Customer and Other Receivables. The significant inputs to the valuation of receivables are interest rates, the amount and timing of expected future cash flows and funding spreads.

Deposits. The significant inputs to the valuation of time deposits are interest rates and the amount and timing of future cash flows. The inputs used to value the embedded derivative component of hybrid financial instruments are consistent with the inputs used to value the firm's other derivative instruments described above. See Note 7 for further information about derivatives and Note 13 for further information about deposits.

Other Secured Financings. The significant inputs to the valuation of other secured financings are the amount and timing of expected future cash flows, interest rates, funding spreads and the fair value of the collateral delivered by the firm (determined using the amount and timing of expected future cash flows, market prices, market yields and recovery assumptions). See Note 11 for further information about other secured financings.

Unsecured Short- and Long-Term Borrowings. The significant inputs to the valuation of unsecured short- and long-term borrowings are the amount and timing of expected future cash flows, interest rates, the credit spreads of the firm and commodity prices for prepaid commodity transactions. The inputs used to value the embedded derivative component of hybrid financial instruments are consistent with the inputs used to value the firm's other derivative instruments described above. See Note 7 for further information about derivatives and Note 14 for further information about borrowings.

Other Liabilities. The significant inputs to the valuation of other liabilities are the amount and timing of expected future cash flows and equity volatility and correlation inputs. The inputs used to value the embedded derivative component of hybrid financial instruments are consistent with the inputs used to value the firm's other derivative instruments described above. See Note 7 for further information about derivatives.

Financial Assets and Liabilities at Fair Value

The table below presents financial assets and liabilities carried at fair value.

	As of		
	September	June	December
<i>\$ in millions</i>	2022	2022	2021
Total level 1 financial assets	\$ 249,307	\$ 249,974	\$ 255,774
Total level 2 financial assets	490,992	526,910	498,527
Total level 3 financial assets	29,275	28,884	24,083
Investments in funds at NAV	2,971	3,045	3,469
Counterparty and cash collateral netting	(77,707)	(70,198)	(66,041)
Total financial assets at fair value	\$ 694,838	\$ 738,615	\$ 715,812
Total assets	\$ 1,555,994	\$ 1,601,224	\$ 1,463,988
Total level 3 financial assets divided by:			
Total assets	1.9%	1.8%	1.6%
Total financial assets at fair value	4.2%	3.9%	3.4%
Total level 1 financial liabilities	\$ 137,956	\$ 168,941	\$ 110,030
Total level 2 financial liabilities	434,313	435,827	403,627
Total level 3 financial liabilities	23,268	24,470	29,169
Counterparty and cash collateral netting	(60,573)	(50,926)	(51,269)
Total financial liabilities at fair value	\$ 534,964	\$ 578,312	\$ 491,557
Total liabilities	\$ 1,436,704	\$ 1,483,353	\$ 1,354,062
Total level 3 financial liabilities divided by:			
Total liabilities	1.6%	1.6%	2.2%
Total financial liabilities at fair value	4.3%	4.2%	5.9%

In the table above:

- Counterparty netting among positions classified in the same level is included in that level.
- Counterparty and cash collateral netting represents the impact on derivatives of netting across levels.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents a summary of level 3 financial assets.

\$ in millions	As of		
	September 2022	June 2022	December 2021
Trading assets:			
Trading cash instruments	\$ 1,828	\$ 2,080	\$ 1,889
Derivatives	8,435	8,348	5,938
Investments	16,954	16,109	13,902
Loans	2,058	2,347	2,354
Total	\$ 29,275	\$ 28,884	\$ 24,083

Level 3 financial assets as of September 2022 remained essentially unchanged compared with June 2022 and increased compared with December 2021, primarily reflecting an increase in level 3 investments and derivatives. See Notes 5 through 10 for further information about level 3 financial assets (including information about unrealized gains and losses related to level 3 financial assets and transfers in and out of level 3).

Note 5.

Trading Assets and Liabilities

Trading assets and liabilities include trading cash instruments and derivatives held in connection with the firm's market-making or risk management activities. These assets and liabilities are carried at fair value either under the fair value option or in accordance with other U.S. GAAP, and the related fair value gains and losses are generally recognized in the consolidated statements of earnings.

The table below presents a summary of trading assets and liabilities.

\$ in millions	Trading Assets	Trading Liabilities
As of September 2022		
Trading cash instruments	\$ 303,854	\$ 160,944
Derivatives	80,121	70,769
Total	\$ 383,975	\$ 231,713
As of December 2021		
Trading cash instruments	\$ 311,956	\$ 129,471
Derivatives	63,960	51,953
Total	\$ 375,916	\$ 181,424

See Note 6 for further information about trading cash instruments and Note 7 for further information about derivatives.

Gains and Losses from Market Making

The table below presents market making revenues by major product type.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Interest rates	\$ (3,043)	\$ (1,249)	\$ (7,705)	\$ (1,572)
Credit	(286)	162	1,380	1,324
Currencies	5,769	1,779	13,997	4,521
Equities	1,464	2,521	6,064	6,839
Commodities	738	716	1,825	1,984
Total	\$ 4,642	\$ 3,929	\$ 15,561	\$ 13,096

In the table above:

- Gains/(losses) include both realized and unrealized gains and losses. Gains/(losses) exclude related interest income and interest expense. See Note 23 for further information about interest income and interest expense.
- Gains/(losses) included in market making are primarily related to the firm's trading assets and liabilities, including both derivative and non-derivative financial instruments.
- Gains/(losses) are not representative of the manner in which the firm manages its business activities because many of the firm's market-making and client facilitation strategies utilize financial instruments across various product types. Accordingly, gains or losses in one product type frequently offset gains or losses in other product types. For example, most of the firm's longer-term derivatives across product types are sensitive to changes in interest rates and may be economically hedged with interest rate swaps. Similarly, a significant portion of the firm's trading cash instruments and derivatives across product types has exposure to foreign currencies and may be economically hedged with foreign currency contracts.

Notes to Consolidated Financial Statements (Unaudited)

Note 6.

Trading Cash Instruments

Trading cash instruments consists of instruments held in connection with the firm's market-making or risk management activities. These instruments are carried at fair value and the related fair value gains and losses are recognized in the consolidated statements of earnings.

Fair Value of Trading Cash Instruments by Level

The table below presents trading cash instruments by level within the fair value hierarchy.

<i>\$ in millions</i>	Level 1	Level 2	Level 3	Total
As of September 2022				
Assets				
Government and agency obligations:				
U.S.	\$ 62,481	\$ 28,001	\$ —	\$ 90,482
Non-U.S.	52,260	17,548	38	69,846
Loans and securities backed by:				
Commercial real estate	—	1,435	55	1,490
Residential real estate	—	9,445	110	9,555
Corporate debt instruments	282	33,347	1,352	34,981
State and municipal obligations	—	563	32	595
Other debt obligations	254	3,387	135	3,776
Equity securities	83,569	1,947	102	85,618
Commodities	—	7,507	4	7,511
Total	\$ 198,846	\$ 103,180	\$ 1,828	\$ 303,854

Liabilities				
Government and agency obligations:				
U.S.	\$ (24,009)	\$ (19)	\$ —	\$ (24,028)
Non-U.S.	(37,453)	(2,672)	—	(40,125)
Loans and securities backed by:				
Commercial real estate	—	(31)	(1)	(32)
Residential real estate	—	(10)	(1)	(11)
Corporate debt instruments	(32)	(19,229)	(79)	(19,340)
Other debt obligations	—	(143)	—	(143)
Equity securities	(76,423)	(786)	(30)	(77,239)
Commodities	—	(26)	—	(26)
Total	\$(137,917)	\$ (22,916)	\$ (111)	\$(160,944)

As of December 2021

Assets				
Government and agency obligations:				
U.S.	\$ 63,388	\$ 27,427	\$ —	\$ 90,815
Non-U.S.	35,284	13,511	19	48,814
Loans and securities backed by:				
Commercial real estate	—	1,717	137	1,854
Residential real estate	—	13,083	152	13,235
Corporate debt instruments	590	36,874	1,318	38,782
State and municipal obligations	—	568	36	604
Other debt obligations	69	1,564	66	1,699
Equity securities	105,233	2,958	156	108,347
Commodities	—	7,801	5	7,806
Total	\$ 204,564	\$ 105,503	\$ 1,889	\$ 311,956

Liabilities				
Government and agency obligations:				
U.S.	\$ (21,002)	\$ (25)	\$ —	\$ (21,027)
Non-U.S.	(39,983)	(2,602)	—	(42,585)
Loans and securities backed by:				
Commercial real estate	—	(40)	(2)	(42)
Residential real estate	—	(5)	—	(5)
Corporate debt instruments	(23)	(15,781)	(71)	(15,875)
Equity securities	(48,991)	(915)	(31)	(49,937)
Total	\$(109,999)	\$ (19,368)	\$ (104)	\$(129,471)

In the table above:

- Trading cash instrument assets are shown as positive amounts and trading cash instrument liabilities are shown as negative amounts.
- Corporate debt instruments includes corporate loans, debt securities, convertible debentures, prepaid commodity transactions and transfers of assets accounted for as secured loans rather than purchases.
- Other debt obligations includes other asset-backed securities and money market instruments.
- Equity securities includes public equities and exchange-traded funds.

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of trading cash instruments. See Note 7 for information about hedging activities for precious metals included in commodities and accounted for at the lower of cost or net realizable value. These precious metals are designated in a fair value hedging relationship, and therefore their carrying value equals fair value.

Significant Unobservable Inputs

The table below presents the amount of level 3 assets, and ranges and weighted averages of significant unobservable inputs used to value level 3 trading cash instruments.

<i>\$ in millions</i>	As of September 2022		As of December 2021	
	Amount or Range	Weighted Average	Amount or Range	Weighted Average
Loans and securities backed by commercial real estate				
Level 3 assets	\$ 55		\$ 137	
Yield	6.8% to 34.0%	20.2%	2.8% to 28.5%	12.3%
Recovery rate	47.0% to 61.7%	53.1%	5.1% to 86.5%	55.0%
Duration (years)	1.2 to 3.7	2.1	0.1 to 4.3	1.8
Loans and securities backed by residential real estate				
Level 3 assets	\$ 110		\$ 152	
Yield	1.0% to 23.0%	9.7%	0.4% to 26.6%	7.0%
Cumulative loss rate	11.0% to 35.0%	20.8%	0.1% to 43.4%	17.7%
Duration (years)	1.1 to 10.8	6.5	1.2 to 17.2	6.5
Corporate debt instruments				
Level 3 assets	\$ 1,352		\$ 1,318	
Yield	1.2% to 33.0%	6.6%	0.0% to 18.0%	7.1%
Recovery rate	17.0% to 70.0%	51.6%	9.0% to 69.9%	52.0%
Duration (years)	0.5 to 21.4	4.7	2.0 to 28.5	4.5
Other				
Level 3 assets	\$ 311		\$ 282	
Yield	4.0% to 41.6%	11.5%	1.1% to 44.8%	9.4%
Multiples	3.9x to 4.2x	4.0x	N/A	N/A
Duration (years)	0.8 to 13.0	5.0	0.9 to 5.2	2.4

Notes to Consolidated Financial Statements (Unaudited)

In the table above:

- Other includes government and agency obligations, state and municipal obligations, other debt obligations, equity securities and commodities.
- Ranges represent the significant unobservable inputs that were used in the valuation of each type of trading cash instrument.
- Weighted averages are calculated by weighting each input by the relative fair value of the trading cash instruments.
- The ranges and weighted averages of these inputs are not representative of the appropriate inputs to use when calculating the fair value of any one trading cash instrument. For example, the highest recovery rate for corporate debt instruments is appropriate for valuing a specific corporate debt instrument, but may not be appropriate for valuing any other corporate debt instrument. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 trading cash instruments.
- Increases in yield, duration or cumulative loss rate used in the valuation of level 3 trading cash instruments would have resulted in a lower fair value measurement, while increases in recovery rate or multiples would have resulted in a higher fair value measurement as of both September 2022 and December 2021. Due to the distinctive nature of each level 3 trading cash instrument, the interrelationship of inputs is not necessarily uniform within each product type.
- Trading cash instruments are valued using discounted cash flows.
- In other, the significant unobservable inputs for multiples as of December 2021 did not have a range (and there was no weighted average) as they pertained to a single position. Therefore, such unobservable inputs are not included in the table above.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 trading cash instruments.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Total trading cash instrument assets				
Beginning balance	\$ 2,080	\$ 1,304	\$ 1,889	\$ 1,237
Net realized gains/(losses)	40	27	85	63
Net unrealized gains/(losses)	(124)	11	(1,496)	64
Purchases	359	223	1,294	793
Sales	(248)	(133)	(635)	(455)
Settlements	(78)	(113)	(206)	(287)
Transfers into level 3	326	358	1,277	306
Transfers out of level 3	(527)	(161)	(380)	(205)
Ending balance	\$ 1,828	\$ 1,516	\$ 1,828	\$ 1,516
Total trading cash instrument liabilities				
Beginning balance	\$ (182)	\$ (78)	\$ (104)	\$ (80)
Net realized gains/(losses)	(4)	2	(42)	5
Net unrealized gains/(losses)	53	(2)	47	(1)
Purchases	100	22	198	35
Sales	(40)	(55)	(121)	(86)
Settlements	5	—	(2)	8
Transfers into level 3	(86)	(32)	(103)	(22)
Transfers out of level 3	43	5	16	3
Ending balance	\$ (111)	\$ (138)	\$ (111)	\$ (138)

In the table above:

- Changes in fair value are presented for all trading cash instruments that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to trading cash instruments that were still held at period-end.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If a trading cash instrument was transferred to level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.
- For level 3 trading cash instrument assets, increases are shown as positive amounts, while decreases are shown as negative amounts. For level 3 trading cash instrument liabilities, increases are shown as negative amounts, while decreases are shown as positive amounts.
- Level 3 trading cash instruments are frequently economically hedged with level 1 and level 2 trading cash instruments and/or level 1, level 2 or level 3 derivatives. Accordingly, gains or losses that are classified in level 3 can be partially offset by gains or losses attributable to level 1 or level 2 trading cash instruments and/or level 1, level 2 or level 3 derivatives. As a result, gains or losses included in the level 3 rollforward below do not necessarily represent the overall impact on the firm's results of operations, liquidity or capital resources.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information, by product type, for assets included in the summary table above.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Loans and securities backed by commercial real estate				
Beginning balance	\$ 74	\$ 96	\$ 137	\$ 203
Net realized gains/(losses)	7	2	7	6
Net unrealized gains/(losses)	(10)	(4)	(10)	(7)
Purchases	2	28	11	54
Sales	(1)	(2)	(54)	(39)
Settlements	(8)	(7)	(15)	(13)
Transfers into level 3	16	31	11	15
Transfers out of level 3	(25)	(8)	(32)	(83)
Ending balance	\$ 55	\$ 136	\$ 55	\$ 136
Loans and securities backed by residential real estate				
Beginning balance	\$ 110	\$ 130	\$ 152	\$ 131
Net realized gains/(losses)	2	2	10	6
Net unrealized gains/(losses)	(5)	5	(12)	16
Purchases	5	11	33	29
Sales	(7)	(4)	(57)	(48)
Settlements	(4)	(25)	(14)	(36)
Transfers into level 3	23	14	15	39
Transfers out of level 3	(14)	(11)	(17)	(15)
Ending balance	\$ 110	\$ 122	\$ 110	\$ 122
Corporate debt instruments				
Beginning balance	\$ 1,440	\$ 891	\$ 1,318	\$ 797
Net realized gains/(losses)	13	24	44	48
Net unrealized gains/(losses)	(43)	12	(115)	57
Purchases	313	152	558	634
Sales	(126)	(88)	(363)	(327)
Settlements	(51)	(67)	(131)	(195)
Transfers into level 3	201	292	339	187
Transfers out of level 3	(395)	(120)	(298)	(105)
Ending balance	\$ 1,352	\$ 1,096	\$ 1,352	\$ 1,096
Other				
Beginning balance	\$ 456	\$ 187	\$ 282	\$ 106
Net realized gains/(losses)	18	(1)	24	3
Net unrealized gains/(losses)	(66)	(2)	(1,359)	(2)
Purchases	39	32	692	76
Sales	(114)	(39)	(161)	(41)
Settlements	(15)	(14)	(46)	(43)
Transfers into level 3	86	21	912	65
Transfers out of level 3	(93)	(22)	(33)	(2)
Ending balance	\$ 311	\$ 162	\$ 311	\$ 162

In the table above, other includes government and agency obligations, state and municipal obligations, other debt obligations, equity securities and commodities.

Level 3 Rollforward Commentary

Three Months Ended September 2022. The net realized and unrealized losses on level 3 trading cash instrument assets of \$84 million (reflecting \$40 million of net realized gains and \$124 million of net unrealized losses) for the three months ended September 2022 included gains/(losses) of \$(106) million reported in market making and \$22 million reported in interest income.

The drivers of net unrealized losses on level 3 trading cash instrument assets for the three months ended September 2022 were not material.

Transfers into level 3 trading cash instrument assets during the three months ended September 2022 primarily reflected transfers of certain corporate debt instruments from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 trading cash instrument assets during the three months ended September 2022 primarily reflected transfers of certain corporate debt instruments to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Nine Months Ended September 2022. The net realized and unrealized losses on level 3 trading cash instrument assets of \$1.41 billion (reflecting \$85 million of net realized gains and \$1.50 billion of net unrealized losses) for the nine months ended September 2022 included gains/(losses) of \$(1.46) billion reported in market making and \$53 million reported in interest income.

The net unrealized losses on level 3 trading cash instrument assets for the nine months ended September 2022 primarily reflected losses on certain equity securities (included in other cash instruments), principally driven by broad macroeconomic and geopolitical concerns.

Transfers into level 3 trading cash instrument assets during the nine months ended September 2022 primarily reflected transfers of certain equity securities (included in other cash instruments) and corporate debt instruments from both level 1 and level 2 (in each case, principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 trading cash instrument assets during the nine months ended September 2022 primarily reflected transfers of certain corporate debt instruments to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Three Months Ended September 2021. The net realized and unrealized gains on level 3 trading cash instrument assets of \$38 million (reflecting \$27 million of net realized gains and \$11 million of net unrealized gains) for the three months ended September 2021 included gains of \$17 million reported in market making and \$21 million reported in interest income.

The drivers of net unrealized gains on level 3 trading cash instrument assets for the three months ended September 2021 were not material.

Transfers into level 3 trading cash instrument assets during the three months ended September 2021 primarily reflected transfers of certain corporate debt instruments from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Notes to Consolidated Financial Statements (Unaudited)

Transfers out of level 3 trading cash instrument assets during the three months ended September 2021 primarily reflected transfers of certain corporate debt instruments to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Nine Months Ended September 2021. The net realized and unrealized gains on level 3 trading cash instrument assets of \$127 million (reflecting \$63 million of net realized gains and \$64 million of net unrealized gains) for the nine months ended September 2021 included gains of \$63 million reported in market making and \$64 million reported in interest income.

The drivers of net unrealized gains on level 3 trading cash instrument assets for the nine months ended September 2021 were not material.

Transfers into level 3 trading cash instrument assets during the nine months ended September 2021 primarily reflected transfers of certain corporate debt instruments from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 trading cash instrument assets during the nine months ended September 2021 primarily reflected transfers of certain corporate debt instruments to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Note 7.

Derivatives and Hedging Activities

Derivative Activities

Derivatives are instruments that derive their value from underlying asset prices, indices, reference rates and other inputs, or a combination of these factors. Derivatives may be traded on an exchange (exchange-traded) or they may be privately negotiated contracts, which are usually referred to as OTC derivatives. Certain of the firm's OTC derivatives are cleared and settled through central clearing counterparties (OTC-cleared), while others are bilateral contracts between two counterparties (bilateral OTC).

Market Making. As a market maker, the firm enters into derivative transactions to provide liquidity to clients and to facilitate the transfer and hedging of their risks. In this role, the firm typically acts as principal and is required to commit capital to provide execution, and maintains market-making positions in response to, or in anticipation of, client demand.

Risk Management. The firm also enters into derivatives to actively manage risk exposures that arise from its market-making and investing and financing activities. The firm's holdings and exposures are hedged, in many cases, on either a portfolio or risk-specific basis, as opposed to an instrument-by-instrument basis. The offsetting impact of this economic hedging is reflected in the same business segment as the related revenues. In addition, the firm may enter into derivatives designated as hedges under U.S. GAAP. These derivatives are used to manage interest rate exposure of certain fixed-rate unsecured borrowings and deposits and certain U.S. government securities classified as available-for-sale, foreign exchange risk of certain available-for-sale securities and the net investment in certain non-U.S. operations, and the price risk of certain commodities.

The firm enters into various types of derivatives, including:

- **Futures and Forwards.** Contracts that commit counterparties to purchase or sell financial instruments, commodities or currencies in the future.
- **Swaps.** Contracts that require counterparties to exchange cash flows, such as currency or interest payment streams. The amounts exchanged are based on the specific terms of the contract with reference to specified rates, financial instruments, commodities, currencies or indices.
- **Options.** Contracts in which the option purchaser has the right, but not the obligation, to purchase from or sell to the option writer financial instruments, commodities or currencies within a defined time period for a specified price.

Derivatives are reported on a net-by-counterparty basis (i.e., the net payable or receivable for derivative assets and liabilities for a given counterparty) when a legal right of setoff exists under an enforceable netting agreement (counterparty netting). Derivatives are accounted for at fair value, net of cash collateral received or posted under enforceable credit support agreements (cash collateral netting). Derivative assets are included in trading assets and derivative liabilities are included in trading liabilities. Realized and unrealized gains and losses on derivatives not designated as hedges are included in market making (for derivatives included in the Global Markets segment), and other principal transactions (for derivatives included in the remaining business segments) in the consolidated statements of earnings. For each of the three and nine months ended September 2022 and September 2021, substantially all of the firm's derivatives were included in the Global Markets segment.

Notes to Consolidated Financial Statements (Unaudited)

The tables below present the gross fair value and the notional amounts of derivative contracts by major product type, the amounts of counterparty and cash collateral netting in the consolidated balance sheets, as well as cash and securities collateral posted and received under enforceable credit support agreements that do not meet the criteria for netting under U.S. GAAP.

	As of September 2022		As of December 2021	
<i>\$ in millions</i>	Derivative Assets	Derivative Liabilities	Derivative Assets	Derivative Liabilities
Not accounted for as hedges				
Exchange-traded	\$ 1,048	\$ 1,952	\$ 256	\$ 557
OTC-cleared	71,562	71,135	13,795	12,692
Bilateral OTC	206,352	184,457	232,595	205,073
Total interest rates	278,962	257,544	246,646	218,322
OTC-cleared	1,736	1,902	3,665	4,053
Bilateral OTC	12,479	10,831	12,591	11,702
Total credit	14,215	12,733	16,256	15,755
Exchange-traded	50	25	417	10
OTC-cleared	1,485	1,097	423	338
Bilateral OTC	147,357	147,099	86,076	85,795
Total currencies	148,892	148,221	86,916	86,143
Exchange-traded	13,519	13,615	6,534	6,189
OTC-cleared	853	1,019	652	373
Bilateral OTC	52,013	39,930	28,359	25,969
Total commodities	66,385	54,564	35,545	32,531
Exchange-traded	31,258	33,610	33,840	35,518
OTC-cleared	14	14	8	5
Bilateral OTC	35,209	42,826	39,718	44,750
Total equities	66,481	76,450	73,566	80,273
Subtotal	574,935	549,512	458,929	433,024
Accounted for as hedges				
OTC-cleared	—	7	1	—
Bilateral OTC	323	10	945	—
Total interest rates	323	17	946	—
OTC-cleared	85	25	34	27
Bilateral OTC	831	134	60	139
Total currencies	916	159	94	166
Subtotal	1,239	176	1,040	166
Total gross fair value	\$ 576,174	\$ 549,688	\$ 459,969	\$ 433,190
Offset in the consolidated balance sheets				
Exchange-traded	\$ (39,580)	\$ (39,580)	\$ (35,724)	\$ (35,724)
OTC-cleared	(73,326)	(73,326)	(16,979)	(16,979)
Bilateral OTC	(309,469)	(309,469)	(279,189)	(279,189)
Counterparty netting	(422,375)	(422,375)	(331,892)	(331,892)
OTC-cleared	(1,559)	(154)	(1,033)	(361)
Bilateral OTC	(72,119)	(56,390)	(63,084)	(48,984)
Cash collateral netting	(73,678)	(56,544)	(64,117)	(49,345)
Total amounts offset	\$ (496,053)	\$ (478,919)	\$ (396,009)	\$ (381,237)
Included in the consolidated balance sheets				
Exchange-traded	\$ 6,295	\$ 9,622	\$ 5,323	\$ 6,550
OTC-cleared	850	1,719	566	148
Bilateral OTC	72,976	59,428	58,071	45,255
Total	\$ 80,121	\$ 70,769	\$ 63,960	\$ 51,953
Not offset in the consolidated balance sheets				
Cash collateral	\$ (595)	\$ (2,475)	\$ (1,008)	\$ (1,939)
Securities collateral	(17,908)	(4,887)	(15,751)	(7,349)
Total	\$ 61,618	\$ 63,407	\$ 47,201	\$ 42,665

	Notional Amounts as of	
	September 2022	December 2021
<i>\$ in millions</i>		
Not accounted for as hedges		
Exchange-traded	\$ 4,112,393	\$ 2,630,915
OTC-cleared	16,663,199	17,874,504
Bilateral OTC	10,483,366	11,122,871
Total interest rates	31,258,958	31,628,290
Exchange-traded	13	—
OTC-cleared	531,824	463,477
Bilateral OTC	644,885	616,095
Total credit	1,176,722	1,079,572
Exchange-traded	9,312	14,617
OTC-cleared	183,609	194,124
Bilateral OTC	6,094,304	6,606,927
Total currencies	6,287,225	6,815,668
Exchange-traded	421,737	308,917
OTC-cleared	3,492	3,647
Bilateral OTC	270,884	234,322
Total commodities	696,113	546,886
Exchange-traded	1,243,432	1,149,777
OTC-cleared	301	198
Bilateral OTC	1,118,371	1,173,103
Total equities	2,362,104	2,323,078
Subtotal	41,781,122	42,393,494
Accounted for as hedges		
OTC-cleared	263,785	219,083
Bilateral OTC	3,426	4,499
Total interest rates	267,211	223,582
OTC-cleared	1,885	2,758
Bilateral OTC	17,988	18,658
Total currencies	19,873	21,416
Exchange-traded	652	1,050
Total commodities	652	1,050
Subtotal	287,736	246,048
Total notional amounts	\$ 42,068,858	\$ 42,639,542

In the tables above:

- Gross fair values exclude the effects of both counterparty netting and collateral, and therefore are not representative of the firm's exposure.
- Where the firm has received or posted collateral under credit support agreements, but has not yet determined such agreements are enforceable, the related collateral has not been netted.
- Notional amounts, which represent the sum of gross long and short derivative contracts, provide an indication of the volume of the firm's derivative activity and do not represent anticipated losses.
- Total gross fair value of derivatives included derivative assets of \$17.12 billion as of September 2022 and \$17.48 billion as of December 2021, and derivative liabilities of \$16.19 billion as of September 2022 and \$17.29 billion as of December 2021, which are not subject to an enforceable netting agreement or are subject to a netting agreement that the firm has not yet determined to be enforceable.

Notes to Consolidated Financial Statements (Unaudited)

Fair Value of Derivatives by Level

The table below presents derivatives on a gross basis by level and product type, as well as the impact of netting.

<i>\$ in millions</i>	Level 1	Level 2	Level 3	Total
As of September 2022				
Assets				
Interest rates	\$ 62	\$ 276,914	\$ 2,309	\$ 279,285
Credit	—	11,404	2,811	14,215
Currencies	—	149,107	701	149,808
Commodities	—	64,227	2,158	66,385
Equities	124	64,862	1,495	66,481
Gross fair value	186	566,514	9,474	576,174
Counterparty netting in levels		(417,307)	(1,039)	(418,346)
Subtotal	\$ 186	\$ 149,207	\$ 8,435	\$ 157,828
Cross-level counterparty netting				(4,029)
Cash collateral netting				(73,678)
Net fair value				\$ 80,121

Liabilities				
Interest rates	\$ (14)	\$(256,711)	\$ (836)	\$(257,561)
Credit	—	(11,588)	(1,145)	(12,733)
Currencies	—	(147,804)	(576)	(148,380)
Commodities	—	(53,923)	(641)	(54,564)
Equities	(25)	(74,292)	(2,133)	(76,450)
Gross fair value	(39)	(544,318)	(5,331)	(549,688)
Counterparty netting in levels		417,307	1,039	418,346
Subtotal	\$ (39)	\$(127,011)	\$ (4,292)	\$(131,342)
Cross-level counterparty netting				4,029
Cash collateral netting				56,544
Net fair value				\$ (70,769)

As of December 2021

Assets				
Interest rates	\$ 2	\$ 246,525	\$ 1,065	\$ 247,592
Credit	—	12,823	3,433	16,256
Currencies	—	86,773	237	87,010
Commodities	—	34,501	1,044	35,545
Equities	33	72,570	963	73,566
Gross fair value	35	453,192	6,742	459,969
Counterparty netting in levels	—	(329,164)	(804)	(329,968)
Subtotal	\$ 35	\$ 124,028	\$ 5,938	\$ 130,001
Cross-level counterparty netting				(1,924)
Cash collateral netting				(64,117)
Net fair value				\$ 63,960

Liabilities				
Interest rates	\$ (2)	\$(217,438)	\$ (882)	\$(218,322)
Credit	—	(14,176)	(1,579)	(15,755)
Currencies	—	(85,925)	(384)	(86,309)
Commodities	—	(31,925)	(606)	(32,531)
Equities	(29)	(77,393)	(2,851)	(80,273)
Gross fair value	(31)	(426,857)	(6,302)	(433,190)
Counterparty netting in levels	—	329,164	804	329,968
Subtotal	\$ (31)	\$(97,693)	\$ (5,498)	\$(103,222)
Cross-level counterparty netting				1,924
Cash collateral netting				49,345
Net fair value				\$ (51,953)

In the table above:

- Gross fair values exclude the effects of both counterparty netting and collateral netting, and therefore are not representative of the firm's exposure.

- Counterparty netting is reflected in each level to the extent that receivable and payable balances are netted within the same level and is included in counterparty netting in levels. Where the counterparty netting is across levels, the netting is included in cross-level counterparty netting.

- Derivative assets are shown as positive amounts and derivative liabilities are shown as negative amounts.

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of derivatives.

Significant Unobservable Inputs

The table below presents the amount of level 3 derivative assets (liabilities), and ranges, averages and medians of significant unobservable inputs used to value level 3 derivatives.

<i>\$ in millions, except inputs</i>	As of September 2022		As of December 2021	
	Amount or Range	Average/Median	Amount or Range	Average/Median
Interest rates, net	\$ 1,473		\$ 183	
Correlation	25% to 81%	64%/63%	25% to 81%	63%/62%
Volatility (bps)	31 to 100	63/61	31 to 100	59/54
Credit, net	\$ 1,666		\$ 1,854	
Credit spreads (bps)	4 to 1,040	188/117	1 to 568	136/107
Upfront credit points	0 to 100	41/34	2 to 100	34/26
Recovery rates	20% to 50%	41%/40%	20% to 50%	37%/40%
Currencies, net	\$ 125		\$ (147)	
Correlation	20% to 71%	39%/23%	20% to 71%	40%/41%
Volatility	20% to 21%	21%/21%	19% to 19%	19%/19%
Commodities, net	\$ 1,517		\$ 438	
Volatility	25% to 148%	56%/47%	15% to 93%	32%/29%
Natural gas spread	\$(3.59) to \$8.59	\$(0.16)/\$(0.20)	\$(1.33) to \$2.60	\$(0.11)/\$(0.07)
Oil spread	\$(5.50) to \$48.91	\$20.75/\$20.07	\$8.64 to \$22.68	\$13.36/\$12.69
Electricity price	\$2.60 to \$309.83	\$54.13/\$48.43	\$1.50 to \$289.96	\$37.42/\$32.20
Equities, net	\$ (638)		\$ (1,888)	
Correlation	(70)% to 100%	64%/66%	(70)% to 99%	59%/62%
Volatility	2% to 89%	16%/13%	3% to 150%	17%/17%

In the table above:

- Derivative assets are shown as positive amounts and derivative liabilities are shown as negative amounts.
- Ranges represent the significant unobservable inputs that were used in the valuation of each type of derivative.
- Averages represent the arithmetic average of the inputs and are not weighted by the relative fair value or notional amount of the respective financial instruments. An average greater than the median indicates that the majority of inputs are below the average. For example, the difference between the average and the median for credit spreads indicates that the majority of the inputs fall in the lower end of the range.

Notes to Consolidated Financial Statements (Unaudited)

- The ranges, averages and medians of these inputs are not representative of the appropriate inputs to use when calculating the fair value of any one derivative. For example, the highest correlation for interest rate derivatives is appropriate for valuing a specific interest rate derivative but may not be appropriate for valuing any other interest rate derivative. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 derivatives.
- Interest rates, currencies and equities derivatives are valued using option pricing models, credit derivatives are valued using option pricing, correlation and discounted cash flow models, and commodities derivatives are valued using option pricing and discounted cash flow models.
- The fair value of any one instrument may be determined using multiple valuation techniques. For example, option pricing models and discounted cash flow models are typically used together to determine fair value. Therefore, the level 3 balance encompasses both of these techniques.
- Correlation within currencies and equities includes cross-product type correlation.
- Natural gas spread represents the spread per million British thermal units of natural gas.
- Oil spread represents the spread per barrel of oil and refined products.
- Electricity price represents the price per megawatt hour of electricity.

Range of Significant Unobservable Inputs

The following provides information about the ranges of significant unobservable inputs used to value the firm's level 3 derivative instruments:

- **Correlation.** Ranges for correlation cover a variety of underliers both within one product type (e.g., equity index and equity single stock names) and across product types (e.g., correlation of an interest rate and a currency), as well as across regions. Generally, cross-product type correlation inputs are used to value more complex instruments and are lower than correlation inputs on assets within the same derivative product type.
- **Volatility.** Ranges for volatility cover numerous underliers across a variety of markets, maturities and strike prices. For example, volatility of equity indices is generally lower than volatility of single stocks.
- **Credit spreads, upfront credit points and recovery rates.** The ranges for credit spreads, upfront credit points and recovery rates cover a variety of underliers (index and single names), regions, sectors, maturities and credit qualities (high-yield and investment-grade). The broad range of this population gives rise to the width of the ranges of significant unobservable inputs.
- **Commodity prices and spreads.** The ranges for commodity prices and spreads cover variability in products, maturities and delivery locations.

Sensitivity of Fair Value Measurement to Changes in Significant Unobservable Inputs

The following is a description of the directional sensitivity of the firm's level 3 fair value measurements to changes in significant unobservable inputs, in isolation, as of each period-end:

- **Correlation.** In general, for contracts where the holder benefits from the convergence of the underlying asset or index prices (e.g., interest rates, credit spreads, foreign exchange rates, inflation rates and equity prices), an increase in correlation results in a higher fair value measurement.
- **Volatility.** In general, for purchased options, an increase in volatility results in a higher fair value measurement.
- **Credit spreads, upfront credit points and recovery rates.** In general, the fair value of purchased credit protection increases as credit spreads or upfront credit points increase or recovery rates decrease. Credit spreads, upfront credit points and recovery rates are strongly related to distinctive risk factors of the underlying reference obligations, which include reference entity-specific factors, such as leverage, volatility and industry, market-based risk factors, such as borrowing costs or liquidity of the underlying reference obligation, and macroeconomic conditions.
- **Commodity prices and spreads.** In general, for contracts where the holder is receiving a commodity, an increase in the spread (price difference from a benchmark index due to differences in quality or delivery location) or price results in a higher fair value measurement.

Due to the distinctive nature of each of the firm's level 3 derivatives, the interrelationship of inputs is not necessarily uniform within each product type.

Notes to Consolidated Financial Statements

(Unaudited)

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 derivatives.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Total level 3 derivatives, net				
Beginning balance	\$ 3,174	\$ 567	\$ 440	\$ 1,175
Net realized gains/(losses)	(16)	(33)	456	73
Net unrealized gains/(losses)	1,167	453	4,413	34
Purchases	156	92	216	439
Sales	(232)	(366)	(1,004)	(1,058)
Settlements	491	(264)	50	99
Transfers into level 3	105	(112)	(130)	(79)
Transfers out of level 3	(702)	312	(298)	(34)
Ending balance	\$ 4,143	\$ 649	\$ 4,143	\$ 649

In the table above:

- Changes in fair value are presented for all derivative assets and liabilities that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to instruments that were still held at period-end.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If a derivative was transferred into level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.
- Positive amounts for transfers into level 3 and negative amounts for transfers out of level 3 represent net transfers of derivative assets. Negative amounts for transfers into level 3 and positive amounts for transfers out of level 3 represent net transfers of derivative liabilities.
- A derivative with level 1 and/or level 2 inputs is classified in level 3 in its entirety if it has at least one significant level 3 input.
- If there is one significant level 3 input, the entire gain or loss from adjusting only observable inputs (i.e., level 1 and level 2 inputs) is classified in level 3.
- Gains or losses that have been classified in level 3 resulting from changes in level 1 or level 2 inputs are frequently offset by gains or losses attributable to level 1 or level 2 derivatives and/or level 1, level 2 and level 3 trading cash instruments. As a result, gains/(losses) included in the level 3 rollforward below do not necessarily represent the overall impact on the firm's results of operations, liquidity or capital resources.

The table below presents information, by product type, for derivatives included in the summary table above.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Interest rates, net				
Beginning balance	\$ 1,035	\$ 308	\$ 183	\$ 267
Net realized gains/(losses)	(27)	(60)	(98)	(11)
Net unrealized gains/(losses)	411	(56)	1,370	38
Purchases	8	—	55	67
Sales	(1)	(24)	(27)	(72)
Settlements	64	101	111	23
Transfers into level 3	(15)	(20)	(7)	(1)
Transfers out of level 3	(2)	(2)	(114)	(64)
Ending balance	\$ 1,473	\$ 247	\$ 1,473	\$ 247
Credit, net				
Beginning balance	\$ 2,164	\$ 1,750	\$ 1,854	\$ 1,778
Net realized gains/(losses)	(11)	(22)	36	(33)
Net unrealized gains/(losses)	24	11	92	129
Purchases	64	18	2	62
Sales	(8)	(35)	(40)	(62)
Settlements	(144)	(22)	(105)	(9)
Transfers into level 3	16	15	11	(60)
Transfers out of level 3	(439)	4	(184)	(86)
Ending balance	\$ 1,666	\$ 1,719	\$ 1,666	\$ 1,719
Currencies, net				
Beginning balance	\$ (239)	\$ (234)	\$ (147)	\$ (338)
Net realized gains/(losses)	28	9	66	(29)
Net unrealized gains/(losses)	199	43	225	(7)
Purchases	1	1	2	41
Sales	(2)	(5)	(7)	(12)
Settlements	122	36	62	235
Transfers into level 3	2	(4)	(81)	(20)
Transfers out of level 3	14	35	5	11
Ending balance	\$ 125	\$ (119)	\$ 125	\$ (119)
Commodities, net				
Beginning balance	\$ 1,435	\$ 266	\$ 438	\$ 300
Net realized gains/(losses)	(53)	(23)	(29)	(76)
Net unrealized gains/(losses)	209	196	1,264	348
Purchases	5	16	4	38
Sales	(16)	(4)	(23)	(34)
Settlements	(14)	6	(87)	(56)
Transfers into level 3	78	25	172	16
Transfers out of level 3	(127)	31	(222)	(23)
Ending balance	\$ 1,517	\$ 513	\$ 1,517	\$ 513
Equities, net				
Beginning balance	\$ (1,221)	\$ (1,523)	\$ (1,888)	\$ (832)
Net realized gains/(losses)	47	63	481	222
Net unrealized gains/(losses)	324	259	1,462	(474)
Purchases	78	57	153	231
Sales	(205)	(298)	(907)	(878)
Settlements	463	(385)	69	(94)
Transfers into level 3	24	(128)	(225)	(14)
Transfers out of level 3	(148)	244	217	128
Ending balance	\$ (638)	\$ (1,711)	\$ (638)	\$ (1,711)

Level 3 Rollforward Commentary

Three Months Ended September 2022. The net realized and unrealized gains on level 3 derivatives of \$1.15 billion (reflecting \$16 million of net realized losses and \$1.17 billion of net unrealized gains) for the three months ended September 2022 included gains of \$1.14 billion reported in market making and gains of \$7 million reported in other principal transactions.

Notes to Consolidated Financial Statements (Unaudited)

The net unrealized gains on level 3 derivatives for the three months ended September 2022 were primarily attributable to gains on certain interest rate derivatives (primarily reflecting the impact of an increase in interest rates), gains on certain equity derivatives (primarily reflecting the impact of a decrease in equity prices), gains on certain commodity derivatives (primarily reflecting the impact of an increase in commodity prices), and gains on certain currency derivatives (primarily reflecting the impact of changes in foreign exchange rates).

The drivers of transfers into level 3 derivatives during the three months ended September 2022 were not material.

Transfers out of level 3 derivatives during the three months ended September 2022 primarily reflected transfers of certain credit derivative assets to level 2 (principally due to certain unobservable credit spread inputs no longer being significant to the net risk of certain portfolios), certain equity derivative assets to level 2 (principally due to increased transparency of certain unobservable volatility inputs used to value these derivatives), and certain commodity derivative assets to level 2 (principally due to certain unobservable natural gas spread and volatility inputs no longer being significant to the valuation of these derivatives).

Nine Months Ended September 2022. The net realized and unrealized gains on level 3 derivatives of \$4.87 billion (reflecting \$456 million of net realized gains and \$4.41 billion of net unrealized gains) for the nine months ended September 2022 included gains of \$4.85 billion reported in market making and gains of \$16 million reported in other principal transactions.

The net unrealized gains on level 3 derivatives for the nine months ended September 2022 were primarily attributable to gains on certain equity derivatives (primarily reflecting the impact of a decrease in equity prices), gains on certain interest rate derivatives (primarily reflecting the impact of an increase in interest rates), and gains on certain commodity derivatives (primarily reflecting the impact of an increase in commodity prices).

Transfers into level 3 derivatives during the nine months ended September 2022 primarily reflected transfers of certain equity derivative liabilities from level 2 (principally due to decreased transparency of certain unobservable volatility inputs used to value these derivatives) and certain currency derivative liabilities from level 2 (principally due to certain unobservable correlation inputs becoming significant to the valuation of these derivatives), partially offset by transfers of certain commodity derivative assets from level 2 (principally due to certain unobservable electricity price inputs becoming significant to the valuation of these derivatives).

Transfers out of level 3 derivatives during the nine months ended September 2022 primarily reflected transfers of certain commodity derivative assets to level 2 (principally due to certain unobservable natural gas spread and volatility inputs no longer being significant to the valuation of these derivatives), certain credit derivative assets to level 2 (principally due to certain unobservable credit spread inputs no longer being significant to the net risk of certain portfolios), and certain interest rate derivative assets to level 2 (principally due to increased transparency of certain unobservable volatility inputs used to value these derivatives), partially offset by transfers of certain equity derivative liabilities to level 2 (principally due to increased transparency of certain unobservable volatility inputs used to value these derivatives).

Three Months Ended September 2021. The net realized and unrealized gains on level 3 derivatives of \$420 million (reflecting \$33 million of net realized losses and \$453 million of net unrealized gains) for the three months ended September 2021 included gains of \$405 million reported in market making and \$15 million reported in other principal transactions.

The net unrealized gains on level 3 derivatives for the three months ended September 2021 were primarily attributable to gains on certain equity derivatives (primarily reflecting the impact of changes in equity prices) and gains on certain commodity derivatives (primarily reflecting the impact of an increase in commodity prices).

Transfers into level 3 derivatives during the three months ended September 2021 primarily reflected transfers of certain equity derivative liabilities from level 2 (principally due to certain unobservable inputs becoming significant to the valuation of these derivatives).

Transfers out of level 3 derivatives during the three months ended September 2021 primarily reflected transfers of certain equity derivative liabilities to level 2 (principally due to increased transparency of certain volatility inputs used to value these derivatives).

Nine Months Ended September 2021. The net realized and unrealized gains on level 3 derivatives of \$107 million (reflecting \$73 million of net realized gains and \$34 million of net unrealized gains) for the nine months ended September 2021 included gains of \$62 million reported in market making and \$45 million reported in other principal transactions.

The net unrealized gains on level 3 derivatives for the nine months ended September 2021 were primarily attributable to gains on certain commodity derivatives (primarily reflecting the impact of an increase in commodity prices) and gains on certain credit derivatives (primarily reflecting the impact of changes in foreign exchange rates), partially offset by losses on certain equity derivatives (primarily reflecting the impact of an increase in equity prices).

Notes to Consolidated Financial Statements (Unaudited)

The drivers of transfers into level 3 derivatives during the nine months ended September 2021 were not material.

Transfers out of level 3 derivatives during the nine months ended September 2021 primarily reflected transfers of certain equity derivative liabilities to level 2 (principally due to increased transparency of certain volatility inputs used to value these derivatives), partially offset by transfers of certain credit derivative assets to level 2 (principally due to certain unobservable credit spread inputs no longer being significant to the valuation of these derivatives).

OTC Derivatives

The table below presents OTC derivative assets and liabilities by tenor and major product type.

<i>\$ in millions</i>	Less than 1 Year	1 - 5 Years	Greater than 5 Years	Total
As of September 2022				
Assets				
Interest rates	\$ 12,714	\$17,175	\$ 53,692	\$ 83,581
Credit	971	2,908	2,678	6,557
Currencies	25,586	10,152	8,154	43,892
Commodities	17,378	15,744	2,163	35,285
Equities	7,903	5,795	3,674	17,372
Counterparty netting in tenors	(4,306)	(3,971)	(4,572)	(12,849)
Subtotal	\$ 60,246	\$47,803	\$ 65,789	\$173,838
Cross-tenor counterparty netting				(26,334)
Cash collateral netting				(73,678)
Total OTC derivative assets				\$ 73,826

Liabilities				
Interest rates	\$ 17,883	\$24,168	\$ 18,904	\$ 60,955
Credit	1,459	2,013	1,603	5,075
Currencies	20,944	11,134	10,412	42,490
Commodities	11,761	10,555	1,049	23,365
Equities	13,020	8,807	3,162	24,989
Counterparty netting in tenors	(4,306)	(3,971)	(4,572)	(12,849)
Subtotal	\$ 60,761	\$52,706	\$ 30,558	\$144,025
Cross-tenor counterparty netting				(26,334)
Cash collateral netting				(56,544)
Total OTC derivative liabilities				\$ 61,147

As of December 2021

Assets				
Interest rates	\$ 6,076	\$11,655	\$ 61,380	\$ 79,111
Credit	1,800	2,381	3,113	7,294
Currencies	13,366	6,642	6,570	26,578
Commodities	10,178	7,348	770	18,296
Equities	11,075	6,592	2,100	19,767
Counterparty netting in tenors	(3,624)	(3,357)	(2,673)	(9,654)
Subtotal	\$ 38,871	\$31,261	\$ 71,260	\$141,392
Cross-tenor counterparty netting				(18,638)
Cash collateral netting				(64,117)
Total OTC derivative assets				\$ 58,637

Liabilities				
Interest rates	\$ 3,929	\$10,932	\$ 34,676	\$ 49,537
Credit	1,695	3,257	1,841	6,793
Currencies	14,122	6,581	5,580	26,283
Commodities	7,591	6,274	1,763	15,628
Equities	8,268	12,944	3,587	24,799
Counterparty netting in tenors	(3,624)	(3,357)	(2,673)	(9,654)
Subtotal	\$ 31,981	\$36,631	\$ 44,774	\$113,386
Cross-tenor counterparty netting				(18,638)
Cash collateral netting				(49,345)
Total OTC derivative liabilities				\$ 45,403

In the table above:

- Tenor is based on remaining contractual maturity.
- Counterparty netting within the same product type and tenor category is included within such product type and tenor category.
- Counterparty netting across product types within the same tenor category is included in counterparty netting in tenors. Where the counterparty netting is across tenor categories, the netting is included in cross-tenor counterparty netting.

Credit Derivatives

The firm enters into a broad array of credit derivatives to facilitate client transactions and to manage the credit risk associated with market-making and investing and financing activities. Credit derivatives are actively managed based on the firm's net risk position. Credit derivatives are generally individually negotiated contracts and can have various settlement and payment conventions. Credit events include failure to pay, bankruptcy, acceleration of indebtedness, restructuring, repudiation and dissolution of the reference entity.

The firm enters into the following types of credit derivatives:

- **Credit Default Swaps.** Single-name credit default swaps protect the buyer against the loss of principal on one or more bonds, loans or mortgages (reference obligations) in the event the issuer of the reference obligations suffers a credit event. The buyer of protection pays an initial or periodic premium to the seller and receives protection for the period of the contract. If there is no credit event, as defined in the contract, the seller of protection makes no payments to the buyer. If a credit event occurs, the seller of protection is required to make a payment to the buyer, calculated according to the terms of the contract.
- **Credit Options.** In a credit option, the option writer assumes the obligation to purchase or sell a reference obligation at a specified price or credit spread. The option purchaser buys the right, but does not assume the obligation, to sell the reference obligation to, or purchase it from, the option writer. The payments on credit options depend either on a particular credit spread or the price of the reference obligation.

Notes to Consolidated Financial Statements

(Unaudited)

- **Credit Indices, Baskets and Tranches.** Credit derivatives may reference a basket of single-name credit default swaps or a broad-based index. If a credit event occurs in one of the underlying reference obligations, the protection seller pays the protection buyer. The payment is typically a pro-rata portion of the transaction's total notional amount based on the underlying defaulted reference obligation. In certain transactions, the credit risk of a basket or index is separated into various portions (tranches), each having different levels of subordination. The most junior tranches cover initial defaults and once losses exceed the notional amount of these junior tranches, any excess loss is covered by the next most senior tranche.
- **Total Return Swaps.** A total return swap transfers the risks relating to economic performance of a reference obligation from the protection buyer to the protection seller. Typically, the protection buyer receives a floating rate of interest and protection against any reduction in fair value of the reference obligation, and the protection seller receives the cash flows associated with the reference obligation, plus any increase in the fair value of the reference obligation.

The firm economically hedges its exposure to written credit derivatives primarily by entering into offsetting purchased credit derivatives with identical underliers. Substantially all of the firm's purchased credit derivative transactions are with financial institutions and are subject to stringent collateral thresholds. In addition, upon the occurrence of a specified trigger event, the firm may take possession of the reference obligations underlying a particular written credit derivative, and consequently may, upon liquidation of the reference obligations, recover amounts on the underlying reference obligations in the event of default.

As of September 2022, written credit derivatives had a total gross notional amount of \$557.61 billion and purchased credit derivatives had a total gross notional amount of \$619.11 billion, for total net notional purchased protection of \$61.50 billion. As of December 2021, written credit derivatives had a total gross notional amount of \$510.24 billion and purchased credit derivatives had a total gross notional amount of \$569.34 billion, for total net notional purchased protection of \$59.10 billion. The firm's written and purchased credit derivatives primarily consist of credit default swaps.

The table below presents information about credit derivatives.

\$ in millions	Credit Spread on Underlier (basis points)				
	0 - 250	251 - 500	501 - 1,000	Greater than 1,000	Total
As of September 2022					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	\$114,156	\$ 2,562	\$17,059	\$ 4,569	\$138,346
1 - 5 years	263,129	33,493	20,948	12,831	330,401
Greater than 5 years	69,694	12,411	5,345	1,417	88,867
Total	\$446,979	\$48,466	\$43,352	\$ 18,817	\$557,614
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	\$356,426	\$42,279	\$29,204	\$ 16,637	\$444,546
Other	\$152,001	\$ 7,669	\$12,077	\$ 2,815	\$174,562
Fair Value of Written Credit Derivatives					
Asset	\$ 3,459	\$ 335	\$ 85	\$ 39	\$ 3,918
Liability	2,493	1,813	2,408	3,478	10,192
Net asset/(liability)	\$ 966	\$ (1,478)	\$ (2,323)	\$ (3,439)	\$ (6,274)
As of December 2021					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	\$120,456	\$ 6,173	\$ 1,656	\$ 4,314	\$132,599
1 - 5 years	305,255	14,328	12,754	3,814	336,151
Greater than 5 years	35,558	3,087	2,529	311	41,485
Total	\$461,269	\$23,588	\$16,939	\$ 8,439	\$510,235
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	\$381,715	\$17,210	\$12,806	\$ 6,714	\$418,445
Other	\$138,214	\$ 7,780	\$ 3,576	\$ 1,322	\$150,892
Fair Value of Written Credit Derivatives					
Asset	\$ 9,803	\$ 924	\$ 318	\$ 137	\$ 11,182
Liability	941	123	1,666	1,933	4,663
Net asset/(liability)	\$ 8,862	\$ 801	\$ (1,348)	\$ (1,796)	\$ 6,519

In the table above:

- Fair values exclude the effects of both netting of receivable balances with payable balances under enforceable netting agreements, and netting of cash received or posted under enforceable credit support agreements, and therefore are not representative of the firm's credit exposure.
- Tenor is based on remaining contractual maturity.
- The credit spread on the underlier, together with the tenor of the contract, are indicators of payment/performance risk. The firm is less likely to pay or otherwise be required to perform where the credit spread and the tenor are lower.
- Offsetting purchased credit derivatives represent the notional amount of purchased credit derivatives that economically hedge written credit derivatives with identical underliers.
- Other purchased credit derivatives represent the notional amount of all other purchased credit derivatives not included in offsetting.

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Impact of Credit and Funding Spreads on Derivatives

The firm realizes gains or losses on its derivative contracts. These gains or losses include credit valuation adjustments (CVA) relating to uncollateralized derivative assets and liabilities, which represent the gains or losses (including hedges) attributable to the impact of changes in credit exposure, counterparty credit spreads, liability funding spreads (which include the firm's own credit), probability of default and assumed recovery. These gains or losses also include funding valuation adjustments (FVA) relating to uncollateralized derivative assets, which represent the gains or losses (including hedges) attributable to the impact of changes in expected funding exposures and funding spreads.

The table below presents information about CVA and FVA.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
CVA, net of hedges	\$ 223	\$ 49	\$ 523	\$ (14)
FVA, net of hedges	(74)	17	(465)	54
Total	\$ 149	\$ 66	\$ 58	\$ 40

Bifurcated Embedded Derivatives

The table below presents the fair value and the notional amount of derivatives that have been bifurcated from their related borrowings.

\$ in millions	As of	
	September 2022	December 2021
Fair value of assets	\$ 283	\$ 845
Fair value of liabilities	(263)	(124)
Net asset/(liability)	\$ 20	\$ 721
Notional amount	\$ 8,856	\$ 10,743

In the table above, derivatives that have been bifurcated from their related borrowings are recorded at fair value and primarily consist of interest rate, equity and commodity products. These derivatives are included in unsecured short- and long-term borrowings, as well as other secured financings, with the related borrowings.

Derivatives with Credit-Related Contingent Features

Certain of the firm's derivatives have been transacted under bilateral agreements with counterparties who may require the firm to post collateral or terminate the transactions based on changes in the firm's credit ratings. The firm assesses the impact of these bilateral agreements by determining the collateral or termination payments that would occur assuming a downgrade by all rating agencies. A downgrade by any one rating agency, depending on the agency's relative ratings of the firm at the time of the downgrade, may have an impact which is comparable to the impact of a downgrade by all rating agencies.

The table below presents information about net derivative liabilities under bilateral agreements (excluding collateral posted), the fair value of collateral posted and additional collateral or termination payments that could have been called by counterparties in the event of a one- or two-notch downgrade in the firm's credit ratings.

\$ in millions	As of	
	September 2022	December 2021
Net derivative liabilities under bilateral agreements	\$ 36,526	\$ 34,315
Collateral posted	\$ 26,751	\$ 29,214
Additional collateral or termination payments:		
One-notch downgrade	\$ 352	\$ 345
Two-notch downgrade	\$ 1,283	\$ 1,536

Hedge Accounting

The firm applies hedge accounting for (i) interest rate swaps used to manage the interest rate exposure of certain fixed-rate unsecured long- and short-term borrowings and certain fixed-rate certificates of deposit and certain U.S. government securities classified as available-for-sale, (ii) foreign exchange forward contracts used to manage the foreign exchange risk of certain available-for-sale securities, (iii) foreign currency forward contracts and foreign currency-denominated debt used to manage foreign currency exposures on the firm's net investment in certain non-U.S. operations and (iv) commodity futures contracts used to manage the price risk of certain commodities.

To qualify for hedge accounting, the hedging instrument must be highly effective at reducing the risk from the exposure being hedged. Additionally, the firm must formally document the hedging relationship at inception and assess the hedging relationship at least on a quarterly basis to ensure the hedging instrument continues to be highly effective over the life of the hedging relationship.

Fair Value Hedges

The firm designates interest rate swaps as fair value hedges of certain fixed-rate unsecured long- and short-term debt and fixed-rate certificates of deposit, and beginning in the second quarter of 2022, of certain U.S. government securities classified as available-for-sale. These interest rate swaps hedge changes in fair value attributable to the designated benchmark interest rate (e.g., London Interbank Offered Rate (LIBOR), Secured Overnight Financing Rate (SOFR) or Overnight Index Swap Rate), effectively converting a substantial portion of these fixed-rate financial instruments into floating-rate financial instruments.

The firm applies a statistical method that utilizes regression analysis when assessing the effectiveness of these hedging relationships in achieving offsetting changes in the fair values of the hedging instrument and the risk being hedged (i.e., interest rate risk). An interest rate swap is considered highly effective in offsetting changes in fair value attributable to changes in the hedged risk when the regression analysis results in a coefficient of determination of 80% or greater and a slope between 80% and 125%.

Notes to Consolidated Financial Statements (Unaudited)

For qualifying interest rate fair value hedges, gains or losses on derivatives are included in interest income/expense. The change in fair value of the hedged items attributable to the risk being hedged is reported as an adjustment to its carrying value (hedging adjustment) and is also included in interest income/expense. When a derivative is no longer designated as a hedge, any remaining difference between the carrying value and par value of the hedged item is amortized in interest income/expense over the remaining life of the hedged item using the effective interest method. See Note 23 for further information about interest income and interest expense.

The table below presents the gains/(losses) from interest rate derivatives accounted for as hedges and the related hedged items.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Investments				
Interest rate hedges	\$ 427	\$ —	\$ 372	\$ —
Hedged investments	(409)	—	(357)	—
Gains/(losses)	\$ 18	\$ —	\$ 15	\$ —
Borrowings and deposits				
Interest rate hedges	\$ (7,820)	\$ (1,528)	\$ (22,629)	\$ (5,459)
Hedged borrowings and deposits	7,741	1,365	22,279	4,991
Gains/(losses)	\$ (79)	\$ (163)	\$ (350)	\$ (468)

The table below presents the carrying value of investments, deposits and unsecured borrowings that are designated in an interest rate hedging relationship and the related cumulative hedging adjustment (increase/(decrease)) from current and prior hedging relationships included in such carrying values.

\$ in millions	Carrying Value		Cumulative Hedging Adjustment	
As of September 2022				
Assets				
Investments	\$ 10,174	\$ (358)		
Liabilities				
Deposits	\$ 7,391	\$ (297)		
Unsecured short-term borrowings	\$ 7,553	\$ (59)		
Unsecured long-term borrowings	\$ 150,553	\$ (15,395)		
As of December 2021				
Liabilities				
Deposits	\$ 14,131	\$ 246		
Unsecured short-term borrowings	\$ 2,167	\$ 5		
Unsecured long-term borrowings	\$ 144,934	\$ 6,169		

In the table above:

- Cumulative hedging adjustment included \$5.10 billion as of September 2022 and \$5.91 billion as of December 2021 of hedging adjustments from prior hedging relationships that were de-designated and substantially all were related to unsecured long-term borrowings.
- The amortized cost of investments was \$10.93 billion as of September 2022.

In addition, cumulative hedging adjustments for items no longer designated in a hedging relationship were \$149 million as of September 2022 and \$68 million as of December 2021 and were substantially all related to unsecured long-term borrowings.

The firm designates foreign exchange forward contracts as fair value hedges of the foreign exchange risk of non-U.S. government securities classified as available-for-sale. See Note 8 for information about the amortized cost and fair value of such securities. The effectiveness of such hedges is assessed based on changes in spot rates. The gains/(losses) on the hedges (relating to both spot and forward points) and the foreign exchange gains/(losses) on the related available-for-sale securities are included in market making. The net gains/(losses) on hedges and related available-for-sale securities were \$3 million (reflecting a gain of \$189 million related to hedges and a loss of \$186 million on the related hedged available-for-sale securities) for the three months ended September 2022 and were \$(25) million (reflecting a gain of \$425 million related to hedges and a loss of \$450 million on the related hedged available-for-sale securities) for the nine months ended September 2022. The gross and net gains/(losses) were not material for both the three and nine months ended September 2021.

The firm designates commodity futures contracts as fair value hedges of the price risk of certain precious metals included in commodities within trading assets. As of September 2022, the carrying value of such commodities was \$627 million and the amortized cost was \$664 million, and as of December 2021, the carrying value was \$1.05 billion and the amortized cost was \$1.02 billion. Changes in spot rates of such commodities are reflected as an adjustment to their carrying value, and the related gains/(losses) on both the commodities and the designated futures contracts are included in market making. The contractual forward points on the designated futures contracts are amortized into earnings ratably over the life of the contract and other gains/(losses) as a result of changes in the forward points are included in other comprehensive income/(loss). The cumulative hedging adjustment was not material as of both September 2022 and December 2021, and the related gains/(losses) were not material for each of the three and nine months ended September 2022 and September 2021.

Notes to Consolidated Financial Statements (Unaudited)

Net Investment Hedges

The firm seeks to reduce the impact of fluctuations in foreign exchange rates on its net investments in certain non-U.S. operations through the use of foreign currency forward contracts and foreign currency-denominated debt. For foreign currency forward contracts designated as hedges, the effectiveness of the hedge is assessed based on the overall changes in the fair value of the forward contracts (i.e., based on changes in forward rates). For foreign currency-denominated debt designated as a hedge, the effectiveness of the hedge is assessed based on changes in spot rates. For qualifying net investment hedges, all gains or losses on the hedging instruments are included in currency translation.

The table below presents the gains/(losses) from net investment hedging.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Hedges:				
Foreign currency forward contract	\$ 1,097	\$ 373	\$ 2,310	\$ 600
Foreign currency-denominated debt	\$ 551	\$ 31	\$ 1,147	\$ 290

Gains or losses on individual net investments in non-U.S. operations are reclassified from accumulated other comprehensive income/(loss) to other principal transactions in the consolidated statements of earnings when such net investments are sold or substantially liquidated. The gross and net gains and losses on hedges and the related net investments in non-U.S. operations reclassified to earnings from accumulated other comprehensive income/(loss) were not material for each of the three and nine months ended September 2022 and September 2021.

The firm had designated \$8.57 billion as of September 2022 and \$3.71 billion as of December 2021 of foreign currency-denominated debt, included in unsecured long- and short-term borrowings, as hedges of net investments in non-U.S. subsidiaries.

Note 8.

Investments

Investments includes debt instruments and equity securities that are accounted for at fair value and are generally held by the firm in connection with its long-term investing activities. In addition, investments includes debt securities classified as available-for-sale and held-to-maturity that are generally held in connection with the firm's asset-liability management activities. Investments also consists of equity securities that are accounted for under the equity method.

The table below presents information about investments.

\$ in millions	As of	
	September 2022	December 2021
Equity securities, at fair value	\$ 15,359	\$ 18,937
Debt instruments, at fair value	14,096	15,558
Available-for-sale securities, at fair value	48,125	48,932
Investments, at fair value	77,580	83,427
Held-to-maturity securities	48,549	4,699
Equity method investments	834	593
Total investments	\$ 126,963	\$ 88,719

Equity Securities and Debt Instruments, at Fair Value

Equity securities and debt instruments, at fair value are accounted for at fair value either under the fair value option or in accordance with other U.S. GAAP, and the related fair value gains and losses are recognized in the consolidated statements of earnings.

Equity Securities, at Fair Value. Equity securities, at fair value consists of the firm's public and private equity investments in corporate and real estate entities.

The table below presents information about equity securities, at fair value.

\$ in millions	As of	
	September 2022	December 2021
Equity securities, at fair value	\$ 15,359	\$ 18,937
Equity Type		
Public equity	17%	24%
Private equity	83%	76%
Total	100%	100%
Asset Class		
Corporate	73%	78%
Real estate	27%	22%
Total	100%	100%

In the table above:

- Equity securities, at fair value included investments accounted for at fair value under the fair value option where the firm would otherwise apply the equity method of accounting of \$5.07 billion as of September 2022 and \$5.81 billion as of December 2021. Gains/(losses) recognized as a result of changes in the fair value of equity securities for which the fair value option was elected were \$(118) million for the three months ended September 2022, \$177 million for the three months ended September 2021, \$(189) million for the nine months ended September 2022 and \$1.81 billion for the nine months ended September 2021. These gains/(losses) are included in other principal transactions.
- Equity securities, at fair value included \$1.33 billion as of September 2022 and \$1.80 billion as of December 2021 of investments in funds that are measured at NAV.

Notes to Consolidated Financial Statements (Unaudited)

Debt Instruments, at Fair Value. Debt instruments, at fair value primarily includes mezzanine, senior and distressed debt.

The table below presents information about debt instruments, at fair value.

\$ in millions	As of	
	September 2022	December 2021
Corporate debt securities	\$ 9,828	\$ 9,793
Securities backed by real estate	1,316	2,280
Money market instruments	1,002	1,396
Other	1,950	2,089
Total	\$ 14,096	\$ 15,558

In the table above:

- Money market instruments primarily includes time deposits and investments in money market funds.
- Other included \$1.64 billion as of September 2022 and \$1.67 billion as of December 2021 of investments in credit funds that are measured at NAV.

Investments in Funds at Net Asset Value Per Share.

Equity securities and debt instruments, at fair value include investments in funds that are measured at NAV of the investment fund. The firm uses NAV to measure the fair value of fund investments when (i) the fund investment does not have a readily determinable fair value and (ii) the NAV of the investment fund is calculated in a manner consistent with the measurement principles of investment company accounting, including measurement of the investments at fair value.

Substantially all of the firm's investments in funds at NAV consist of investments in firm-sponsored private equity, credit, real estate and hedge funds where the firm co-invests with third-party investors.

Private equity funds primarily invest in a broad range of industries worldwide, including leveraged buyouts, recapitalizations, growth investments and distressed investments. Credit funds generally invest in loans and other fixed income instruments and are focused on providing private high-yield capital for leveraged and management buyout transactions, recapitalizations, financings, refinancings, acquisitions and restructurings for private equity firms, private family companies and corporate issuers. Real estate funds invest globally, primarily in real estate companies, loan portfolios, debt recapitalizations and property. Private equity, credit and real estate funds are closed-end funds in which the firm's investments are generally not eligible for redemption. Distributions will be received from these funds as the underlying assets are liquidated or distributed, the timing of which is uncertain.

The firm also invests in hedge funds, primarily multi-disciplinary hedge funds that employ a fundamental bottom-up investment approach across various asset classes and strategies. The firm's investments in hedge funds primarily include interests where the underlying assets are illiquid in nature, and proceeds from redemptions will not be received until the underlying assets are liquidated or distributed, the timing of which is uncertain.

Private equity and hedge funds, in which the firm is invested, include "covered funds" as defined in the Volcker Rule of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). Substantially all of the credit and real estate funds, in which the firm is invested, are not covered funds. As of September 2022, the firm's total investments in funds at NAV included investments of approximately \$400 million (net of the firm's share of cash in the funds) in certain legacy "illiquid funds" (as defined in the Volcker Rule) for which the firm conformed by restructuring these funds to be non-covered funds as liquidating trusts by July 2022. However, based on recent interpretations of the covered fund provisions of the Volcker Rule, the firm may be required to seek an additional extension from the Board of Governors of the Federal Reserve System (FRB) to bring these funds into conformance. If the firm does not receive any required extensions or conform by the end of any extensions received, the firm may be required to sell such interests. If that occurs, the firm may receive a value for its interests that is less than the then carrying value as there could be a limited secondary market for these investments and the firm may be unable to sell them in orderly transactions.

The table below presents the fair value of investments in funds at NAV and the related unfunded commitments.

\$ in millions	Fair Value of Investments	Unfunded Commitments
As of September 2022		
Private equity funds	\$ 955	\$ 589
Credit funds	1,649	417
Hedge funds	70	—
Real estate funds	297	129
Total	\$ 2,971	\$ 1,135
As of December 2021		
Private equity funds	\$ 1,411	\$ 619
Credit funds	1,686	556
Hedge funds	84	—
Real estate funds	288	147
Total	\$ 3,469	\$ 1,322

Available-for-Sale Securities

Available-for-sale securities are accounted for at fair value, and the related unrealized fair value gains and losses are included in accumulated other comprehensive income/(loss) unless designated in a fair value hedging relationship. See Note 7 for information about available-for-sale securities that are designated in a hedging relationship.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information about available-for-sale securities by tenor.

<i>\$ in millions</i>	Amortized Cost	Fair Value	Weighted Average Yield
As of September 2022			
Less than 1 year	\$ 2,353	\$ 2,295	0.24%
1 year to 5 years	46,366	43,125	0.65%
5 years to 10 years	830	776	2.14%
Total U.S. government obligations	49,549	46,196	0.65%
1 year to 5 years	9	9	0.28%
5 years to 10 years	2,461	1,920	0.40%
Total non-U.S. government obligations	2,470	1,929	0.40%
Total available-for-sale securities	\$ 52,019	\$ 48,125	0.64%
As of December 2021			
Less than 1 year	\$ 25	\$ 25	0.12%
1 year to 5 years	41,536	41,066	0.47%
5 years to 10 years	5,337	5,229	0.92%
Greater than 10 years	2	2	2.00%
Total U.S. government obligations	46,900	46,322	0.53%
5 years to 10 years	2,693	2,610	0.33%
Total non-U.S. government obligations	2,693	2,610	0.33%
Total available-for-sale securities	\$ 49,593	\$ 48,932	0.52%

In the table above:

- Available-for-sale securities were classified in level 1 of the fair value hierarchy as of both September 2022 and December 2021.
- The weighted average yield for available-for-sale securities is presented on a pre-tax basis and computed using the effective interest rate of each security at the end of the period, weighted based on the fair value of each security.
- The gross unrealized gains included in accumulated other comprehensive income/(loss) were not material and the gross unrealized losses included in accumulated other comprehensive income/(loss) were \$3.89 billion as of September 2022 and primarily related to U.S. government obligations in a continuous unrealized loss position for more than a year. The gross unrealized gains included in accumulated other comprehensive income/(loss) were \$118 million and the gross unrealized losses included in accumulated other comprehensive income/(loss) were \$779 million as of December 2021 and primarily related to U.S. government obligations in a continuous unrealized loss position for less than a year. Net unrealized losses included in other comprehensive income/(loss) were \$836 million (\$615 million, net of tax) for the three months ended September 2022, \$152 million (\$114 million, net of tax) for the three months ended September 2021, \$3.23 billion (\$2.41 billion, net of tax) for the nine months ended September 2022 and \$880 million (\$658 million, net of tax) for the nine months ended September 2021.

- If the fair value of available-for-sale securities is less than amortized cost, such securities are considered impaired. If the firm has the intent to sell the debt security, or if it is more likely than not that the firm will be required to sell the debt security before recovery of its amortized cost, the difference between the amortized cost (net of allowance, if any) and the fair value of the securities is recognized as an impairment loss in earnings. The firm did not record any such impairment losses during either the three or nine months ended September 2022 or September 2021. Impaired available-for-sale debt securities that the firm has the intent and ability to hold are reviewed to determine if an allowance for credit losses should be recorded. The firm considers various factors in such determination, including market conditions, changes in issuer credit ratings and severity of the unrealized losses. The firm did not record any provision for credit losses on such securities during either the three or nine months ended September 2022 or September 2021.

The table below presents gross realized gains and the proceeds from the sales of available-for-sale securities.

<i>\$ in millions</i>	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Gross realized gains	\$ —	\$ 54	\$ —	\$ 187
Proceeds from sales	\$ —	\$ 11,467	\$ 2	\$ 24,882

In the table above, the realized gains were reclassified from accumulated other comprehensive income/(loss) to other principal transactions in the consolidated statements of earnings.

Fair Value of Investments by Level

The table below presents investments accounted for at fair value by level within the fair value hierarchy.

<i>\$ in millions</i>	Level 1	Level 2	Level 3	Total
As of September 2022				
Government and agency obligations:				
U.S.	\$ 46,196	\$ —	\$ —	\$ 46,196
Non-U.S.	1,921	20	—	1,941
Corporate debt securities	160	2,930	6,738	9,828
Securities backed by real estate	—	404	912	1,316
Money market instruments	24	978	—	1,002
Other debt obligations	—	8	284	292
Equity securities	1,974	3,040	9,020	14,034
Subtotal	\$ 50,275	\$ 7,380	\$ 16,954	\$ 74,609
Investments in funds at NAV				2,971
Total investments				\$ 77,580
As of December 2021				
Government and agency obligations:				
U.S.	\$ 46,322	\$ —	\$ —	\$ 46,322
Non-U.S.	2,612	—	—	2,612
Corporate debt securities	65	5,201	4,527	9,793
Securities backed by real estate	—	1,202	1,078	2,280
Money market instruments	41	1,355	—	1,396
Other debt obligations	—	35	382	417
Equity securities	2,135	7,088	7,915	17,138
Subtotal	\$ 51,175	\$ 14,881	\$ 13,902	\$ 79,958
Investments in funds at NAV				3,469
Total investments				\$ 83,427

Notes to Consolidated Financial Statements (Unaudited)

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of investments.

Significant Unobservable Inputs

The table below presents the amount of level 3 investments, and ranges and weighted averages of significant unobservable inputs used to value such investments.

\$ in millions	As of September 2022		As of December 2021	
	Amount or Range	Weighted Average	Amount or Range	Weighted Average
Corporate debt securities				
Level 3 assets	\$ 6,738		\$ 4,527	
Yield	2.0% to 21.8%	11.8%	2.0% to 29.0%	10.8%
Recovery rate	9.1% to 78.5%	51.7%	9.1% to 76.0%	59.1%
Duration (years)	1.2 to 5.5	3.9	1.4 to 6.4	3.8
Multiples	1.9x to 66.5x	7.8x	0.5x to 28.2x	6.9x
Securities backed by real estate				
Level 3 assets	\$ 912		\$ 1,078	
Yield	8.3% to 23.3%	15.4%	8.3% to 20.3%	13.1%
Recovery rate	N/A	N/A	55.1% to 61.0%	56.4%
Duration (years)	1.0 to 4.2	4.1	0.1 to 2.6	1.2
Other debt obligations				
Level 3 assets	\$ 284		\$ 382	
Yield	5.0% to 20.0%	7.1%	2.3% to 10.6%	3.2%
Duration (years)	0.4 to 1.5	1.3	0.9 to 9.3	4.8
Equity securities				
Level 3 assets	\$ 9,020		\$ 7,915	
Multiples	0.4x to 34.4x	9.0x	0.4x to 30.5x	10.1x
Discount rate/yield	6.0% to 38.5%	14.7%	2.0% to 35.0%	14.1%
Capitalization rate	4.0% to 10.8%	5.4%	3.5% to 14.0%	5.7%

In the table above:

- Ranges represent the significant unobservable inputs that were used in the valuation of each type of investment.
- Weighted averages are calculated by weighting each input by the relative fair value of the investment.
- The ranges and weighted averages of these inputs are not representative of the appropriate inputs to use when calculating the fair value of any one investment. For example, the highest multiple for private equity securities is appropriate for valuing a specific private equity security but may not be appropriate for valuing any other private equity security. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 investments.
- Increases in yield, discount rate, capitalization rate or duration used in the valuation of level 3 investments would have resulted in a lower fair value measurement, while increases in recovery rate or multiples would have resulted in a higher fair value measurement as of both September 2022 and December 2021. Due to the distinctive nature of each level 3 investment, the interrelationship of inputs is not necessarily uniform within each product type.

- Corporate debt securities, securities backed by real estate and other debt obligations are valued using discounted cash flows, and equity securities are valued using market comparables and discounted cash flows.
- The fair value of any one instrument may be determined using multiple valuation techniques. For example, market comparables and discounted cash flows may be used together to determine fair value. Therefore, the level 3 balance encompasses both of these techniques.
- The significant unobservable inputs for recovery rate related to securities backed by real estate as of September 2022 did not have a range (and there was no weighted average) as they pertained to a single position. Therefore, such unobservable inputs are not included in the table above.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 investments.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Beginning balance	\$ 16,109	\$ 16,332	\$ 13,902	\$ 16,423
Net realized gains/(losses)	103	78	428	184
Net unrealized gains/(losses)	(407)	155	(1,828)	1,244
Purchases	445	496	1,385	1,467
Sales	(236)	(478)	(741)	(1,070)
Settlements	(272)	(831)	(1,461)	(2,421)
Transfers into level 3	1,687	806	6,425	1,843
Transfers out of level 3	(475)	(2,879)	(1,156)	(3,991)
Ending balance	\$ 16,954	\$ 13,679	\$ 16,954	\$ 13,679

In the table above:

- Changes in fair value are presented for all investments that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to investments that were still held at period-end.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If an investment was transferred to level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.
- For level 3 investments, increases are shown as positive amounts, while decreases are shown as negative amounts.

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The table below presents information, by product type, for investments included in the summary table above.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Corporate debt securities				
Beginning balance	\$ 6,576	\$ 4,958	\$ 4,527	\$ 5,286
Net realized gains/(losses)	69	33	224	150
Net unrealized gains/(losses)	(111)	47	(297)	302
Purchases	137	101	624	374
Sales	(78)	(204)	(151)	(383)
Settlements	(143)	(601)	(810)	(1,254)
Transfers into level 3	659	529	2,944	1,120
Transfers out of level 3	(371)	(586)	(323)	(1,318)
Ending balance	\$ 6,738	\$ 4,277	\$ 6,738	\$ 4,277
Securities backed by real estate				
Beginning balance	\$ 1,067	\$ 1,117	\$ 1,078	\$ 998
Net realized gains/(losses)	7	12	21	29
Net unrealized gains/(losses)	(88)	(11)	(287)	25
Purchases	17	14	76	212
Sales	(47)	(19)	(96)	(43)
Settlements	(23)	(51)	(140)	(247)
Transfers into level 3	1	26	269	114
Transfers out of level 3	(22)	—	(9)	—
Ending balance	\$ 912	\$ 1,088	\$ 912	\$ 1,088
Other debt obligations				
Beginning balance	\$ 303	\$ 502	\$ 382	\$ 497
Net realized gains/(losses)	3	4	9	9
Net unrealized gains/(losses)	(3)	1	(8)	1
Purchases	4	10	28	32
Sales	—	(1)	—	(3)
Settlements	(23)	(33)	(127)	(54)
Transfers out of level 3	—	(96)	—	(95)
Ending balance	\$ 284	\$ 387	\$ 284	\$ 387
Equity securities				
Beginning balance	\$ 8,163	\$ 9,755	\$ 7,915	\$ 9,642
Net realized gains/(losses)	24	29	174	(4)
Net unrealized gains/(losses)	(205)	118	(1,236)	916
Purchases	287	371	657	849
Sales	(111)	(254)	(494)	(641)
Settlements	(83)	(146)	(384)	(866)
Transfers into level 3	1,027	251	3,212	609
Transfers out of level 3	(82)	(2,197)	(824)	(2,578)
Ending balance	\$ 9,020	\$ 7,927	\$ 9,020	\$ 7,927

Level 3 Rollforward Commentary

Three Months Ended September 2022. The net realized and unrealized losses on level 3 investments of \$304 million (reflecting \$103 million of net realized gains and \$407 million of net unrealized losses) for the three months ended September 2022 included gains/(losses) of \$(427) million reported in other principal transactions and \$123 million reported in interest income.

The net unrealized losses on level 3 investments for the three months ended September 2022 primarily reflected losses on certain equity securities and corporate debt securities (in each case, principally driven by broad macroeconomic concerns).

Transfers into level 3 investments during the three months ended September 2022 primarily reflected transfers of certain equity securities from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments) and transfers of certain corporate debt securities from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments, and certain unobservable yield and duration inputs becoming significant to the valuation of these instruments).

Transfers out of level 3 investments during the three months ended September 2022 primarily reflected transfers of certain corporate debt securities to level 2 (principally due to certain unobservable yield and duration inputs no longer being significant to the valuation of these instruments).

Nine Months Ended September 2022. The net realized and unrealized losses on level 3 investments of \$1.40 billion (reflecting \$428 million of net realized gains and \$1.83 billion of net unrealized losses) for the nine months ended September 2022 included gains/(losses) of \$(1.71) billion reported in other principal transactions and \$314 million reported in interest income.

The net unrealized losses on level 3 investments for the nine months ended September 2022 primarily reflected losses on certain equity securities and corporate debt securities (in each case, principally driven by broad macroeconomic and geopolitical concerns) and securities backed by real estate (principally driven by an increase in interest rates).

Transfers into level 3 investments during the nine months ended September 2022 primarily reflected transfers of certain equity securities from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments), and transfers of certain corporate debt securities from level 2 (principally due to certain unobservable yield and duration inputs becoming significant to the valuation of these instruments, and reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 investments during the nine months ended September 2022 primarily reflected transfers of certain equity securities to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments) and transfers of certain corporate debt securities to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments, and certain unobservable yield and duration inputs no longer being significant to the valuation of these instruments).

Notes to Consolidated Financial Statements (Unaudited)

Three Months Ended September 2021. The net realized and unrealized gains on level 3 investments of \$233 million (reflecting \$78 million of net realized gains and \$155 million of net unrealized gains) for the three months ended September 2021 included gains of \$183 million reported in other principal transactions and \$50 million reported in interest income.

The net unrealized gains on level 3 investments for the three months ended September 2021 primarily reflected gains on certain private equity securities (principally driven by corporate performance and company-specific events).

Transfers into level 3 investments during the three months ended September 2021 primarily reflected transfers of certain corporate debt securities and private equity securities from level 2 (in each case, principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 investments during the three months ended September 2021 primarily reflected transfers of certain private equity securities to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments) and transfers of certain corporate debt securities to level 2 (principally due to certain unobservable yield and duration inputs no longer being significant to the valuation of these instruments, and increased price transparency as a result of market evidence, including market transactions in these instruments).

Nine Months Ended September 2021. The net realized and unrealized gains on level 3 investments of \$1.43 billion (reflecting \$184 million of net realized gains and \$1.24 billion of net unrealized gains) for the nine months ended September 2021 included gains of \$1.29 billion reported in other principal transactions and \$135 million reported in interest income.

The net unrealized gains on level 3 investments for the nine months ended September 2021 primarily reflected gains on certain private equity securities and corporate debt securities (in each case, principally driven by corporate performance and company-specific events).

Transfers into level 3 investments during the nine months ended September 2021 primarily reflected transfers of certain corporate debt securities from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments, and certain unobservable yield and duration inputs becoming significant to the valuation of these instruments) and transfers of certain private equity securities from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 investments during the nine months ended September 2021 primarily reflected transfers of certain private equity securities to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments) and transfers of certain corporate debt securities to level 2 (principally due to certain unobservable yield and duration inputs no longer being significant to the valuation of these instruments, and increased price transparency as a result of market evidence, including market transactions of these instruments).

Held-to-Maturity Securities

Held-to-maturity securities are accounted for at amortized cost.

The table below presents information about held-to-maturity securities by type and tenor.

<i>\$ in millions</i>	Amortized Cost	Fair Value	Weighted Average Yield
As of September 2022			
Less than 1 year	\$ 5,920	\$ 5,908	2.25%
1 year to 5 years	40,254	38,816	2.79%
5 years to 10 years	2,209	2,134	3.41%
Total U.S. government obligations	48,383	46,858	2.75%
5 years to 10 years	2	2	4.39%
Greater than 10 years	164	160	1.79%
Total securities backed by real estate	166	162	1.84%
Total held-to-maturity securities	\$ 48,549	\$ 47,020	2.75%
As of December 2021			
1 year to 5 years	\$ 4,054	\$ 4,200	2.30%
Total U.S. government obligations	4,054	4,200	2.30%
5 years to 10 years	3	3	2.78%
Greater than 10 years	642	670	1.03%
Total securities backed by real estate	645	673	1.04%
Total held-to-maturity securities	\$ 4,699	\$ 4,873	2.13%

In the table above:

- Substantially all of the securities backed by real estate consist of securities backed by residential real estate.
- As these securities are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these securities been included in the firm's fair value hierarchy, U.S. government obligations would have been classified in level 1 and securities backed by real estate would have been primarily classified in level 2 of the fair value hierarchy as of both September 2022 and December 2021.
- The weighted average yield for held-to-maturity securities is presented on a pre-tax basis and computed using the effective interest rate of each security at the end of the period, weighted based on the amortized cost of each security.

Notes to Consolidated Financial Statements (Unaudited)

- The gross unrealized gains were not material as of September 2022 and were \$175 million as of December 2021. The gross unrealized losses were \$1.53 billion as of September 2022 and were not material as of December 2021.
- Held-to-maturity securities are reviewed to determine if an allowance for credit losses should be recorded in the consolidated statements of earnings. The firm considers various factors in such determination, including market conditions, changes in issuer credit ratings, historical credit losses and sovereign guarantees. Provision for credit losses on such securities was not material during either the three or nine months ended September 2022 or September 2021.

Note 9.

Loans

Loans includes (i) loans held for investment that are accounted for at amortized cost net of allowance for loan losses or at fair value under the fair value option and (ii) loans held for sale that are accounted for at the lower of cost or fair value. Interest on loans is recognized over the life of the loan and is recorded on an accrual basis.

The table below presents information about loans.

<i>\$ in millions</i>	Amortized Cost	Fair Value	Held For Sale	Total
As of September 2022				
Loan Type				
Corporate	\$ 57,431	\$ 1,844	\$ 3,906	\$ 63,181
Wealth management	45,564	4,537	—	50,101
Commercial real estate	22,214	1,277	2,591	26,082
Residential real estate	14,084	257	1	14,342
Consumer:				
Installment	5,157	—	—	5,157
Credit cards	13,691	—	—	13,691
Other	8,324	335	302	8,961
Total loans, gross	166,465	8,250	6,800	181,515
Allowance for loan losses	(4,846)	—	—	(4,846)
Total loans	\$ 161,619	\$ 8,250	\$ 6,800	\$ 176,669
As of December 2021				
Loan Type				
Corporate	\$ 50,960	\$ 2,492	\$ 2,475	\$ 55,927
Wealth management	38,062	5,936	—	43,998
Commercial real estate	21,150	1,588	3,145	25,883
Residential real estate	15,493	320	100	15,913
Consumer:				
Installment	3,672	—	—	3,672
Credit cards	8,212	—	—	8,212
Other	5,958	433	2,139	8,530
Total loans, gross	143,507	10,769	7,859	162,135
Allowance for loan losses	(3,573)	—	—	(3,573)
Total loans	\$ 139,934	\$ 10,769	\$ 7,859	\$ 158,562

In the table above:

- The increase in credit cards from December 2021 to September 2022 reflected approximately \$2.0 billion relating to the firm's acquisition of the General Motors co-branded credit card portfolio.

- Loans held for investment that are accounted for at amortized cost include net deferred fees and costs, and unamortized premiums and discounts, which are amortized over the life of the loan. These amounts were less than 1% of loans accounted for at amortized cost as of both September 2022 and December 2021.

The following is a description of the loan types in the table above:

- **Corporate.** Corporate loans includes term loans, revolving lines of credit, letter of credit facilities and bridge loans, and are principally used for operating and general corporate purposes, or in connection with acquisitions. Corporate loans may be secured or unsecured, depending on the loan purpose, the risk profile of the borrower and other factors.
- **Wealth Management.** Wealth management loans includes loans extended to private bank clients, including wealth management and other clients. These loans are used to finance investments in both financial and nonfinancial assets, bridge cash flow timing gaps or provide liquidity for other needs. Substantially all of such loans are secured by securities, residential real estate, commercial real estate or other assets.
- **Commercial Real Estate.** Commercial real estate loans includes originated loans (other than those extended to private bank clients) that are directly or indirectly secured by hotels, retail stores, multifamily housing complexes and commercial and industrial properties. Commercial real estate loans also includes loans extended to clients who warehouse assets that are directly or indirectly backed by commercial real estate. In addition, commercial real estate includes loans purchased by the firm.
- **Residential Real Estate.** Residential real estate loans primarily includes loans extended by the firm to clients (other than those extended to private bank clients) who warehouse assets that are directly or indirectly secured by residential real estate and loans purchased by the firm.
- **Installment.** Installment loans are unsecured loans originated by the firm (including point-of-sale loans that the firm began to originate through the GreenSky platform in the third quarter of 2022).
- **Credit Cards.** Credit card loans are loans made pursuant to revolving lines of credit issued to consumers by the firm.
- **Other.** Other loans primarily includes loans extended to clients who warehouse assets that are directly or indirectly secured by consumer loans, including auto loans and private student loans, and other assets. Other loans also includes unsecured consumer and credit card loans purchased by the firm.

Notes to Consolidated Financial Statements

(Unaudited)

Credit Quality

Risk Assessment. The firm's risk assessment process includes evaluating the credit quality of its loans by the firm's independent risk oversight and control function. For corporate loans and a majority of wealth management, real estate and other loans, the firm performs credit analyses which incorporate initial and ongoing evaluations of the capacity and willingness of a borrower to meet its financial obligations. These credit evaluations are performed on an annual basis or more frequently if deemed necessary as a result of events or changes in circumstances. The firm determines an internal credit rating for the borrower by considering the results of the credit evaluations and assumptions with respect to the nature of and outlook for the borrower's industry and the economic environment. The internal credit rating does not take into consideration collateral received or other credit support arrangements.

The table below presents gross loans by an internally determined public rating agency equivalent or other credit metrics and the concentration of secured and unsecured loans.

<i>\$ in millions</i>	Investment- Grade	Non-Investment- Grade	Other Metrics/ Unrated	Total
As of September 2022				
Accounting Method				
Amortized cost	\$ 62,336	\$ 78,212	\$ 25,917	\$ 166,465
Fair value	1,784	3,606	2,860	8,250
Held for sale	1,036	5,703	61	6,800
Total	\$ 65,156	\$ 87,521	\$ 28,838	\$ 181,515

Loan Type				
Corporate	\$ 21,072	\$ 42,033	\$ 76	\$ 63,181
Wealth management	36,376	6,090	7,635	50,101
Real estate:				
Commercial	2,586	23,246	250	26,082
Residential	935	12,406	1,001	14,342
Consumer:				
Installment	—	—	5,157	5,157
Credit cards	—	—	13,691	13,691
Other	4,187	3,746	1,028	8,961
Total	\$ 65,156	\$ 87,521	\$ 28,838	\$ 181,515
Secured	85%	93%	31%	80%
Unsecured	15%	7%	69%	20%
Total	100%	100%	100%	100%

As of December 2021				
Accounting Method				
Amortized cost	\$ 50,923	\$ 75,179	\$ 17,405	\$ 143,507
Fair value	2,301	4,634	3,834	10,769
Held for sale	1,650	4,747	1,462	7,859
Total	\$ 54,874	\$ 84,560	\$ 22,701	\$ 162,135

Loan Type				
Corporate	\$ 15,370	\$ 40,389	\$ 168	\$ 55,927
Wealth management	31,476	5,730	6,792	43,998
Real estate:				
Commercial	3,986	21,523	374	25,883
Residential	1,112	13,779	1,022	15,913
Consumer:				
Installment	—	—	3,672	3,672
Credit cards	—	—	8,212	8,212
Other	2,930	3,139	2,461	8,530
Total	\$ 54,874	\$ 84,560	\$ 22,701	\$ 162,135
Secured	85%	92%	36%	82%
Unsecured	15%	8%	64%	18%
Total	100%	100%	100%	100%

In the table above:

- Wealth management loans included in the other metrics/unrated category primarily consists of loans backed by residential real estate and securities, and real estate loans included in the other metrics/unrated category primarily consists of purchased loans. The firm's risk assessment process for these loans includes reviewing certain key metrics, such as loan-to-value ratio, delinquency status, collateral values, expected cash flows, the Fair Isaac Corporation (FICO) credit score (which measures a borrower's creditworthiness by considering factors such as payment and credit history) and other risk factors.
- For installment and credit card loans included in the other metrics/unrated category, the evaluation of credit quality incorporates the borrower's FICO credit score. FICO credit scores are periodically refreshed by the firm to assess the updated creditworthiness of the borrower. See "Vintage" below for information about installment and credit card loans by FICO credit scores.

The firm also assigns a regulatory risk rating to its loans based on the definitions provided by the U.S. federal bank regulatory agencies. Total loans included 93% of loans as of September 2022 and 92% of loans as of December 2021 that were rated pass/non-criticized.

Notes to Consolidated Financial Statements

(Unaudited)

Vintage. The tables below present gross loans accounted for at amortized cost (excluding installment and credit card loans) by an internally determined public rating agency equivalent or other credit metrics and origination year for term loans.

As of September 2022				
<i>\$ in millions</i>	Investment-Grade	Non-Investment-Grade	Other Metrics/Unrated	Total
2022	\$ 4,364	\$ 3,512	\$ —	\$ 7,876
2021	3,847	7,031	—	10,878
2020	1,246	4,334	—	5,580
2019	325	3,333	—	3,658
2018	1,833	2,064	—	3,897
2017 or earlier	1,063	3,026	—	4,089
Revolving	7,259	14,193	1	21,453
Corporate	19,937	37,493	1	57,431
2022	1,886	766	907	3,559
2021	1,391	1,069	1,175	3,635
2020	522	377	—	899
2019	411	225	—	636
2018	356	36	—	392
2017 or earlier	686	468	—	1,154
Revolving	30,018	2,083	3,188	35,289
Wealth management	35,270	5,024	5,270	45,564
2022	39	3,053	157	3,249
2021	219	3,437	—	3,656
2020	85	1,420	—	1,505
2019	47	1,203	—	1,250
2018	184	488	—	672
2017 or earlier	655	674	6	1,335
Revolving	863	9,684	—	10,547
Commercial real estate	2,092	19,959	163	22,214
2022	97	734	218	1,049
2021	141	1,208	229	1,578
2020	—	11	91	102
2019	—	—	101	101
2018	—	103	142	245
2017 or earlier	6	2	144	152
Revolving	669	10,188	—	10,857
Residential real estate	913	12,246	925	14,084
2022	—	84	114	198
2021	—	556	160	716
2020	—	30	320	350
2019	—	11	13	24
2018	—	13	10	23
2017 or earlier	—	4	5	9
Revolving	4,124	2,792	88	7,004
Other	4,124	3,490	710	8,324
Total	\$ 62,336	\$ 78,212	\$ 7,069	\$ 147,617
Percentage of total	42%	53%	5%	100%

As of December 2021				
<i>\$ in millions</i>	Investment-Grade	Non-Investment-Grade	Other Metrics/Unrated	Total
2021	\$ 4,687	\$ 10,424	\$ 52	\$ 15,163
2020	1,911	4,561	7	6,479
2019	451	3,949	—	4,400
2018	1,842	2,901	—	4,743
2017	733	1,857	—	2,590
2016 or earlier	274	1,693	—	1,967
Revolving	3,800	11,744	74	15,618
Corporate	13,698	37,129	133	50,960
2021	1,405	1,186	1,265	3,856
2020	558	287	—	845
2019	537	352	—	889
2018	334	38	—	372
2017	380	31	—	411
2016 or earlier	565	243	—	808
Revolving	26,349	2,127	2,405	30,881
Wealth management	30,128	4,264	3,670	38,062
2021	334	4,084	94	4,512
2020	127	1,890	—	2,017
2019	52	1,336	—	1,388
2018	207	829	—	1,036
2017	398	624	—	1,022
2016 or earlier	405	583	7	995
Revolving	1,768	8,412	—	10,180
Commercial real estate	3,291	17,758	101	21,150
2021	113	1,944	253	2,310
2020	260	557	103	920
2019	—	—	173	173
2018	—	84	165	249
2017	8	65	119	192
2016 or earlier	—	1	56	57
Revolving	673	10,919	—	11,592
Residential real estate	1,054	13,570	869	15,493
2021	—	694	261	955
2020	—	59	378	437
2019	—	25	19	44
2018	—	30	—	30
2017	—	5	8	13
Revolving	2,752	1,645	82	4,479
Other	2,752	2,458	748	5,958
Total	\$ 50,923	\$ 75,179	\$ 5,521	\$ 131,623
Percentage of total	39%	57%	4%	100%

In the tables above, revolving loans which converted to term loans were \$1.25 billion as of September 2022 and were not material as of December 2021.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents gross installment loans by refreshed FICO credit scores and origination year and gross credit card loans by refreshed FICO credit scores.

<i>\$ in millions</i>	Greater than or equal to 660	Less than 660	Total
As of September 2022			
2022	\$ 2,951	\$ 118	\$ 3,069
2021	1,271	102	1,373
2020	324	27	351
2019	210	29	239
2018	98	17	115
2017 or earlier	8	2	10
Installment	4,862	295	5,157
Credit cards	9,495	4,196	13,691
Total	\$ 14,357	\$ 4,491	\$ 18,848

Percentage of total:			
Installment	94%	6%	100%
Credit cards	69%	31%	100%
Total	76%	24%	100%

As of December 2021			
2021	\$ 2,017	\$ 42	\$ 2,059
2020	665	40	705
2019	508	61	569
2018	257	42	299
2017	32	7	39
2016	1	—	1
Installment	3,480	192	3,672
Credit cards	6,100	2,112	8,212
Total	\$ 9,580	\$ 2,304	\$ 11,884

Percentage of total:			
Installment	95%	5%	100%
Credit cards	74%	26%	100%
Total	81%	19%	100%

In the table above, credit card loans consist of revolving lines of credit.

Credit Concentrations. The table below presents the concentration of gross loans by region.

<i>\$ in millions</i>	Carrying Value	Americas	EMEA	Asia	Total
As of September 2022					
Corporate	\$ 63,181	64%	29%	7%	100%
Wealth management	50,101	89%	10%	1%	100%
Commercial real estate	26,082	79%	16%	5%	100%
Residential real estate	14,342	95%	3%	2%	100%
Consumer:					
Installment	5,157	100%	—	—	100%
Credit cards	13,691	100%	—	—	100%
Other	8,961	89%	10%	1%	100%
Total	\$ 181,515	80%	16%	4%	100%

As of December 2021					
Corporate	\$ 55,927	54%	38%	8%	100%
Wealth management	43,998	87%	10%	3%	100%
Commercial real estate	25,883	80%	15%	5%	100%
Residential real estate	15,913	95%	2%	3%	100%
Consumer:					
Installment	3,672	100%	—	—	100%
Credit cards	8,212	100%	—	—	100%
Other	8,530	84%	15%	1%	100%
Total	\$ 162,135	76%	19%	5%	100%

In the table above:

- EMEA represents Europe, Middle East and Africa.
- The top five industry concentrations for corporate loans as of September 2022 were 23% for funds, 17% for technology, media & telecommunications, 12% for diversified industrials, 8% for financial institutions, and 8% for real estate.
- The top five industry concentrations for corporate loans as of December 2021 were 21% for funds, 18% for technology, media & telecommunications, 13% for diversified industrials, 9% for natural resources & utilities, and 8% for financial institutions.

Nonaccrual and Past Due Loans. Loans accounted for at amortized cost (other than credit card loans) are placed on nonaccrual status when it is probable that the firm will not collect all principal and interest due under the contractual terms, regardless of the delinquency status or if a loan is past due for 90 days or more, unless the loan is both well collateralized and in the process of collection. At that time, all accrued but uncollected interest is reversed against interest income and interest subsequently collected is recognized on a cash basis to the extent the loan balance is deemed collectible. Otherwise, all cash received is used to reduce the outstanding loan balance. A loan is considered past due when a principal or interest payment has not been made according to its contractual terms. Credit card loans are not placed on nonaccrual status and accrue interest until the loan is paid in full or is charged off.

In certain circumstances, the firm may modify the original terms of a loan agreement by granting a concession to a borrower experiencing financial difficulty, typically in the form of a modification of loan covenants, but may also include forbearance of interest or principal, payment extensions or interest rate reductions. These modifications, to the extent significant, are considered TDRs. Loan modifications that extend payment terms for a period of less than 90 days are generally considered insignificant and therefore not reported as TDRs.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information about past due loans.

<i>\$ in millions</i>	30-89 days	90 days or more	Total
As of September 2022			
Corporate	\$ 12	\$ 129	\$ 141
Wealth management	253	37	290
Commercial real estate	24	316	340
Residential real estate	2	7	9
Consumer:			
Installment	34	12	46
Credit cards	226	196	422
Other	20	8	28
Total	\$ 571	\$ 705	\$ 1,276
Total divided by gross loans at amortized cost			0.8%
As of December 2021			
Corporate	\$ 5	\$ 90	\$ 95
Wealth management	—	20	20
Commercial real estate	7	143	150
Residential real estate	3	4	7
Consumer:			
Installment	20	7	27
Credit cards	86	71	157
Other	15	3	18
Total	\$ 136	\$ 338	\$ 474
Total divided by gross loans at amortized cost			0.3%

The table below presents information about nonaccrual loans.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Corporate	\$ 1,422	\$ 1,559
Wealth management	213	21
Commercial real estate	574	841
Residential real estate	4	5
Installment	38	43
Total	\$ 2,251	\$ 2,469
Total divided by gross loans at amortized cost		1.4% 1.7%

In the table above:

- Nonaccrual loans included \$598 million as of September 2022 and \$254 million as of December 2021 of loans that were 30 days or more past due.
- Loans that were 90 days or more past due and still accruing were not material as of both September 2022 and December 2021.
- Nonaccrual loans included \$212 million as of September 2022 and \$267 million as of December 2021 of corporate and commercial real estate loans that were modified in a TDR. The firm's lending commitments related to these loans were not material as of both September 2022 and December 2021. Installment loans that were modified in a TDR were not material as of both September 2022 and December 2021.
- Allowance for loan losses as a percentage of total nonaccrual loans was 215.3% as of September 2022 and 144.7% as of December 2021.

Allowance for Credit Losses

The firm's allowance for credit losses consists of the allowance for losses on loans and lending commitments accounted for at amortized cost. Loans and lending commitments accounted for at fair value or accounted for at the lower of cost or fair value are not subject to an allowance for credit losses.

To determine the allowance for credit losses, the firm classifies its loans and lending commitments accounted for at amortized cost into wholesale and consumer portfolios. These portfolios represent the level at which the firm has developed and documented its methodology to determine the allowance for credit losses. The allowance for credit losses is measured on a collective basis for loans that exhibit similar risk characteristics using a modeled approach and on an asset-specific basis for loans that do not share similar risk characteristics.

The allowance for credit losses takes into account the weighted average of a range of forecasts of future economic conditions over the expected life of the loan and lending commitments. The expected life of each loan or lending commitment is determined based on the contractual term adjusted for extension options or demand features, or is modeled in the case of revolving credit card loans. The forecasts include baseline, favorable and adverse economic scenarios over a three-year period. For loans with expected lives beyond three years, the model reverts to historical loss information based on a non-linear modeled approach. The forecasted economic scenarios consider a number of risk factors relevant to the wholesale and consumer portfolios described below. The firm applies judgment in weighing individual scenarios each quarter based on a variety of factors, including the firm's internally derived economic outlook, market consensus, recent macroeconomic conditions and industry trends.

The allowance for credit losses also includes qualitative components which allow management to reflect the uncertain nature of economic forecasting, capture uncertainty regarding model inputs, and account for model imprecision and concentration risk.

Notes to Consolidated Financial Statements (Unaudited)

Management's estimate of credit losses entails judgment about the expected life of the loan and loan collectability at the reporting dates, and there are uncertainties inherent in those judgments. The allowance for credit losses is subject to a governance process that involves review and approval by senior management within the firm's independent risk oversight and control functions. Personnel within the firm's independent risk oversight and control functions are responsible for forecasting the economic variables that underlie the economic scenarios that are used in the modeling of expected credit losses. While management uses the best information available to determine this estimate, future adjustments to the allowance may be necessary based on, among other things, changes in the economic environment or variances between actual results and the original assumptions used.

The table below presents gross loans and lending commitments accounted for at amortized cost by portfolio.

\$ in millions	As of			
	September 2022		December 2021	
	Loans	Lending Commitments	Loans	Lending Commitments
Wholesale				
Corporate	\$ 57,431	\$139,946	\$ 50,960	\$143,296
Wealth management	45,564	4,638	38,062	4,091
Commercial real estate	22,214	2,715	21,150	4,306
Residential real estate	14,084	2,793	15,493	3,317
Other	8,324	4,940	5,958	6,169
Consumer				
Installment	5,157	957	3,672	9
Credit cards	13,691	60,655	8,212	35,932
Total	\$ 166,465	\$216,644	\$143,507	\$197,120

In the table above:

- Wholesale loans included \$2.21 billion as of September 2022 and \$2.43 billion as of December 2021 of nonaccrual loans for which the allowance for credit losses was measured on an asset-specific basis. The allowance for credit losses on these loans was \$449 million as of September 2022 and \$543 million as of December 2021. These loans included \$313 million as of September 2022 and \$140 million as of December 2021 of loans which did not require a reserve as the loan was deemed to be recoverable.

- Credit card lending commitments included \$60.66 billion as of September 2022 and \$33.97 billion as of December 2021 related to credit card lines issued by the firm to consumers. These credit card lines are cancellable by the firm. The increase in credit card lending commitments from December 2021 to September 2022 reflected approximately \$15.0 billion relating to the firm's acquisition of the General Motors co-branded credit card portfolio. In addition, credit card lending commitments as of December 2021 included a commitment of approximately \$2.0 billion to acquire the outstanding credit card loans related to the General Motors co-branded credit card portfolio. See Note 18 for further information about lending commitments.
- The increase in installment lending commitments from December 2021 to September 2022 primarily relates to commitments extended in connection with point-of-sale financing. See Note 18 for further information about lending commitments.

The following is a description of the methodology used to calculate the allowance for credit losses:

Wholesale. The allowance for credit losses for wholesale loans and lending commitments that exhibit similar risk characteristics is measured using a modeled approach. These models determine the probability of default and loss given default based on various risk factors, including internal credit ratings, industry default and loss data, expected life, macroeconomic indicators, the borrower's capacity to meet its financial obligations, the borrower's country of risk and industry, loan seniority and collateral type. For lending commitments, the methodology also considers probability of drawdowns or funding. In addition, for loans backed by real estate, risk factors include the loan-to-value ratio, debt service ratio and home price index. The most significant inputs to the forecast model for wholesale loans and lending commitments include unemployment rates, GDP, credit spreads, commercial and industrial delinquency rates, short- and long-term interest rates, and oil prices.

The allowance for loan losses for wholesale loans that do not share similar risk characteristics, such as nonaccrual loans or loans in a TDR, is calculated using the present value of expected future cash flows discounted at the loan's original effective rate, the observable market price of the loan or the fair value of the collateral.

Wholesale loans are charged off against the allowance for loan losses when deemed to be uncollectible.

Notes to Consolidated Financial Statements (Unaudited)

Consumer. The allowance for credit losses for consumer loans that exhibit similar risk characteristics is calculated using a modeled approach which classifies consumer loans into pools based on borrower-related and exposure-related characteristics that differentiate a pool's risk characteristics from other pools. The factors considered in determining a pool are generally consistent with the risk characteristics used for internal credit risk measurement and management and include key metrics, such as FICO credit scores, delinquency status, loan vintage and macroeconomic indicators. The most significant inputs to the forecast model for consumer loans include unemployment rates and delinquency rates. The expected life of revolving credit card loans is determined by modeling expected future draws and the timing and amount of repayments allocated to the funded balance. The firm also recognizes an allowance for credit losses on commitments to acquire loans. However, no allowance for credit losses is recognized on credit card lending commitments as they are cancellable by the firm.

The allowance for credit losses for consumer loans that do not share similar risk characteristics, such as loans in a TDR, is calculated using the present value of expected future cash flows discounted at the loan's original effective rate.

Installment loans are charged off when they are 120 days past due. Credit card loans are charged off when they are 180 days past due.

Allowance for Credit Losses Rollforward

The table below presents information about the allowance for credit losses.

<i>\$ in millions</i>	Wholesale	Consumer	Total
Three Months Ended September 2022			
Allowance for loan losses			
Beginning balance	\$ 2,458	\$ 2,104	\$ 4,562
Net (charge-offs)/recoveries	(43)	(129)	(172)
Provision	78	403	481
Other	(25)	—	(25)
Ending balance	\$ 2,468	\$ 2,378	\$ 4,846
Allowance ratio	1.7%	12.6%	2.9%
Net charge-off ratio	0.1%	2.9%	0.4%
Allowance for losses on lending commitments			
Beginning balance	\$ 702	\$ 3	\$ 705
Provision	(10)	44	34
Ending balance	\$ 692	\$ 47	\$ 739
Three Months Ended September 2021			
Allowance for loan losses			
Beginning balance	\$ 2,173	\$ 1,098	\$ 3,271
Net (charge-offs)/recoveries	(40)	(36)	(76)
Provision	25	139	164
Other	(27)	—	(27)
Ending balance	\$ 2,131	\$ 1,201	\$ 3,332
Allowance ratio	1.8%	12.4%	2.6%
Net charge-off ratio	0.1%	1.6%	0.2%
Allowance for losses on lending commitments			
Beginning balance	\$ 636	\$ 186	\$ 822
Provision	13	(2)	11
Ending balance	\$ 649	\$ 184	\$ 833
Nine Months Ended September 2022			
Allowance for loan losses			
Beginning balance	\$ 2,135	\$ 1,438	\$ 3,573
Net (charge-offs)/recoveries	(189)	(286)	(475)
Provision	551	1,226	1,777
Other	(29)	—	(29)
Ending balance	\$ 2,468	\$ 2,378	\$ 4,846
Allowance ratio	1.7%	12.6%	2.9%
Net charge-off ratio	0.2%	2.5%	0.4%
Allowance for losses on lending commitments			
Beginning balance	\$ 589	\$ 187	\$ 776
Provision	106	(140)	(34)
Other	(3)	—	(3)
Ending balance	\$ 692	\$ 47	\$ 739
Nine Months Ended September 2021			
Allowance for loan losses			
Beginning balance	\$ 2,584	\$ 1,290	\$ 3,874
Net (charge-offs)/recoveries	(49)	(153)	(202)
Provision	(345)	64	(281)
Other	(59)	—	(59)
Ending balance	\$ 2,131	\$ 1,201	\$ 3,332
Allowance ratio	1.8%	12.4%	2.6%
Net charge-off ratio	0.1%	2.4%	0.2%
Allowance for losses on lending commitments			
Beginning balance	\$ 557	\$ —	\$ 557
Provision	110	184	294
Other	(18)	—	(18)
Ending balance	\$ 649	\$ 184	\$ 833

Notes to Consolidated Financial Statements (Unaudited)

In the table above:

- For the nine months ended September 2021, other primarily represented the reduction to the allowance related to loans and lending commitments transferred to held for sale.
- The allowance ratio is calculated by dividing the allowance for loan losses by gross loans accounted for at amortized cost.
- The net charge-off ratio is calculated by dividing annualized net (charge-offs)/recoveries by average gross loans accounted for at amortized cost.

Forecast Model Inputs as of September 2022

When modeling expected credit losses, the firm employs a weighted, multi-scenario forecast, which includes baseline, adverse and favorable economic scenarios. As of September 2022, this multi-scenario forecast was weighted towards the baseline and adverse economic scenarios, consistent with the second quarter of 2022.

The table below presents the forecasted U.S. unemployment and U.S. GDP growth rates used in the baseline economic scenario of the forecast model.

As of September 2022	
U.S. unemployment rate	
Forecast for the quarter ended:	
December 2022	3.8%
June 2023	4.0%
December 2023	4.1%
Growth in U.S. GDP	
Forecast for the year:	
2022	1.5%
2023	0.8%
2024	1.5%

The adverse economic scenario of the forecast model reflects a global recession in the fourth quarter of 2022 through the second half of 2023 resulting in an economic contraction, decline in consumer spending and rising unemployment rates. In this scenario, the U.S. unemployment rate peaks at approximately 7.4% during the fourth quarter of 2023 and the maximum decline in the quarterly U.S. GDP relative to the third quarter of 2022 is approximately 2.1%, which occurs during the third quarter of 2023.

In the table above:

- U.S. unemployment rate represents the rate forecasted as of the respective quarter-end.
- Growth in U.S. GDP represents the year-over-year growth rate forecasted for the respective years.

- While the U.S. unemployment and U.S. GDP growth rates are significant inputs to the forecast model, the model contemplates a variety of other inputs across a range of scenarios to provide a forecast of future economic conditions. Given the complex nature of the forecasting process, no single economic variable can be viewed in isolation and independently of other inputs.

Allowance for Credit Losses Commentary

Three Months Ended September 2022. The allowance for credit losses increased by \$318 million during the three months ended September 2022, reflecting growth in the firm's consumer lending portfolio (principally in credit cards) and higher modeled expected losses due to broad macroeconomic concerns.

Net (charge-offs)/recoveries for the three months ended September 2022 for wholesale loans were primarily related to corporate loans and net (charge-offs)/recoveries for consumer loans were primarily related to credit cards.

Nine Months Ended September 2022. The allowance for credit losses increased by \$1.24 billion during the nine months ended September 2022, reflecting growth in the firm's consumer lending portfolio (principally in credit cards) and higher modeled expected losses due to broad macroeconomic and geopolitical concerns.

Net (charge-offs)/recoveries for the nine months ended September 2022 for wholesale loans were primarily related to corporate loans and net (charge-offs)/recoveries for consumer loans were primarily related to credit cards.

Three Months Ended September 2021. The allowance for credit losses increased by \$72 million during the three months ended September 2021, reflecting growth in the firm's lending portfolios, primarily in consumer loans related to credit cards, partially offset by reserve reduction driven by improved broader economic conditions.

Net (charge-offs)/recoveries for the three months ended September 2021 for wholesale loans were primarily related to corporate loans and net (charge-offs)/recoveries for consumer loans were primarily related to credit cards.

Nine Months Ended September 2021. The allowance for credit losses decreased by \$266 million during the nine months ended September 2021, reflecting reserve reduction driven by improved broader economic conditions, partially offset by growth in the firm's wholesale and consumer lending portfolios, including a provision for credit losses of approximately \$185 million related to the acquisition of the General Motors co-branded credit card portfolio.

Notes to Consolidated Financial Statements (Unaudited)

Net (charge-offs)/recoveries for the nine months ended September 2021 for wholesale loans were primarily related to corporate loans and net (charge-offs)/recoveries for consumer loans were primarily related to credit cards.

Fair Value of Loans by Level

The table below presents loans held for investment accounted for at fair value under the fair value option by level within the fair value hierarchy.

<i>\$ in millions</i>	Level 1	Level 2	Level 3	Total
As of September 2022				
Loan Type				
Corporate	\$ —	\$ 1,101	\$ 743	\$ 1,844
Wealth management	—	4,474	63	4,537
Commercial real estate	—	432	845	1,277
Residential real estate	—	162	95	257
Other	—	23	312	335
Total	\$ —	\$ 6,192	\$ 2,058	\$ 8,250
As of December 2021				
Loan Type				
Corporate	\$ —	\$ 1,655	\$ 837	\$ 2,492
Wealth management	—	5,873	63	5,936
Commercial real estate	—	605	983	1,588
Residential real estate	—	115	205	320
Other	—	167	266	433
Total	\$ —	\$ 8,415	\$ 2,354	\$ 10,769

The gains/(losses) as a result of changes in the fair value of loans held for investment for which the fair value option was elected were \$(168) million for the three months ended September 2022, \$30 million for the three months ended September 2021, \$(363) million for the nine months ended September 2022 and \$223 million for the nine months ended September 2021. These gains/(losses) were included in other principal transactions.

Significant Unobservable Inputs

The table below presents the amount of level 3 loans, and ranges and weighted averages of significant unobservable inputs used to value such loans.

<i>\$ in millions</i>	As of September 2022		As of December 2021	
	Amount or Range	Weighted Average	Amount or Range	Weighted Average
Corporate				
Level 3 assets	\$ 743		\$ 837	
Yield	2.0% to 25.0%	10.7%	1.5% to 55.6%	14.9%
Recovery rate	15.0% to 95.0%	43.6%	15.0% to 92.0%	40.8%
Duration (years)	0.3 to 3.5	2.6	0.9 to 6.8	2.7
Commercial real estate				
Level 3 assets	\$ 845		\$ 983	
Yield	1.4% to 27.0%	14.1%	3.2% to 18.7%	12.6%
Recovery rate	3.6% to 23.5%	16.8%	4.1% to 99.5%	41.4%
Duration (years)	0.3 to 4.8	2.1	0.4 to 4.0	1.7
Residential real estate				
Level 3 assets	\$ 95		\$ 205	
Yield	3.8% to 17.0%	13.8%	2.1% to 20.0%	16.1%
Duration (years)	0.3 to 7.3	2.4	0.1 to 2.4	1.0
Wealth management and other				
Level 3 assets	\$ 375		\$ 329	
Yield	5.7% to 13.0%	8.7%	3.6% to 18.7%	7.1%
Duration (years)	2.9 to 5.4	3.9	2.9 to 5.5	3.6

In the table above:

- Ranges represent the significant unobservable inputs that were used in the valuation of each type of loan.
- Weighted averages are calculated by weighting each input by the relative fair value of the loan.
- The ranges and weighted averages of these inputs are not representative of the appropriate inputs to use when calculating the fair value of any one loan. For example, the highest yield for residential real estate loans is appropriate for valuing a specific residential real estate loan but may not be appropriate for valuing any other residential real estate loan. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 loans.
- Increases in yield or duration used in the valuation of level 3 loans would have resulted in a lower fair value measurement, while increases in recovery rate would have resulted in a higher fair value measurement as of both September 2022 and December 2021. Due to the distinctive nature of each level 3 loan, the interrelationship of inputs is not necessarily uniform within each product type.
- Loans are valued using discounted cash flows.

Notes to Consolidated Financial Statements (Unaudited)

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 loans.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Beginning balance	\$ 2,347	\$ 2,229	\$ 2,354	\$ 2,678
Net realized gains/(losses)	17	23	89	72
Net unrealized gains/(losses)	(89)	(16)	(217)	(31)
Purchases	7	74	212	140
Sales	(18)	(13)	(61)	(17)
Settlements	(156)	(181)	(429)	(555)
Transfers into level 3	141	93	272	181
Transfers out of level 3	(191)	(10)	(162)	(269)
Ending balance	\$ 2,058	\$ 2,199	\$ 2,058	\$ 2,199

In the table above:

- Changes in fair value are presented for loans that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to loans that were still held at period-end.
- Purchases includes originations and secondary purchases.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If a loan was transferred to level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.

The table below presents information, by loan type, for loans included in the summary table above.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Corporate				
Beginning balance	\$ 958	\$ 852	\$ 837	\$ 929
Net realized gains/(losses)	9	11	21	21
Net unrealized gains/(losses)	(10)	(16)	(31)	(24)
Purchases	7	17	121	63
Sales	(18)	(13)	(53)	(13)
Settlements	(78)	(81)	(141)	(208)
Transfers into level 3	41	15	78	103
Transfers out of level 3	(166)	(10)	(89)	(96)
Ending balance	\$ 743	\$ 775	\$ 743	\$ 775
Commercial real estate				
Beginning balance	\$ 891	\$ 920	\$ 983	\$ 1,104
Net realized gains/(losses)	6	9	47	33
Net unrealized gains/(losses)	(70)	11	(149)	(15)
Purchases	—	—	69	19
Sales	—	—	(7)	(3)
Settlements	(57)	(82)	(162)	(227)
Transfers into level 3	100	78	109	78
Transfers out of level 3	(25)	—	(45)	(53)
Ending balance	\$ 845	\$ 936	\$ 845	\$ 936
Residential real estate				
Beginning balance	\$ 116	\$ 118	\$ 205	\$ 260
Net realized gains/(losses)	1	3	—	6
Net unrealized gains/(losses)	(9)	1	(18)	(36)
Purchases	—	57	4	58
Sales	—	—	(1)	(1)
Settlements	(13)	(13)	(87)	(45)
Transfers into level 3	—	—	19	—
Transfers out of level 3	—	—	(27)	(76)
Ending balance	\$ 95	\$ 166	\$ 95	\$ 166
Wealth management and other				
Beginning balance	\$ 382	\$ 339	\$ 329	\$ 385
Net realized gains/(losses)	1	—	21	12
Net unrealized gains/(losses)	—	(12)	(19)	44
Purchases	—	—	18	—
Settlements	(8)	(5)	(39)	(75)
Transfers into level 3	—	—	66	—
Transfers out of level 3	—	—	(1)	(44)
Ending balance	\$ 375	\$ 322	\$ 375	\$ 322

Level 3 Rollforward Commentary

Three Months Ended September 2022. The net realized and unrealized losses on level 3 loans of \$72 million (reflecting \$17 million of net realized gains and \$89 million of net unrealized losses) for the three months ended September 2022 included gains/(losses) of \$(83) million reported in other principal transactions and \$11 million reported in interest income.

The drivers of net unrealized losses on level 3 loans for the three months ended September 2022 were not material.

Transfers into level 3 loans during the three months ended September 2022 primarily reflected transfers of certain loans backed by commercial real estate from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Notes to Consolidated Financial Statements (Unaudited)

Transfers out of level 3 loans during the three months ended September 2022 primarily reflected transfers of certain corporate loans to level 2 (principally due to certain unobservable yield inputs no longer being significant to the valuation of these instruments).

Nine Months Ended September 2022. The net realized and unrealized losses on level 3 loans of \$128 million (reflecting \$89 million of net realized gains and \$217 million of net unrealized losses) for the nine months ended September 2022 included gains/(losses) of \$(148) million reported in other principal transactions and \$20 million reported in interest income.

The net unrealized losses on level 3 loans for the nine months ended September 2022 primarily reflected losses on certain loans backed by commercial real estate (principally due to the impact of an increase in interest rates).

Transfers into level 3 loans during the nine months ended September 2022 primarily reflected transfers of certain loans backed by commercial real estate and corporate loans from level 2 (in each case, principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 loans during the nine months ended September 2022 primarily reflected transfers of certain corporate loans to level 2 (principally due to certain unobservable yield inputs no longer being significant to the valuation of these instruments).

Three Months Ended September 2021. The net realized and unrealized gains on level 3 loans of \$7 million (reflecting \$23 million of net realized gains and \$16 million of net unrealized losses) for the three months ended September 2021 included gains/(losses) of \$(7) million reported in other principal transactions and \$14 million reported in interest income.

The drivers of net unrealized losses on level 3 loans for the three months ended September 2021 were not material.

The drivers of both the transfers into level 3 loans and transfers out of level 3 loans during the three months ended September 2021 were not material.

Nine Months Ended September 2021. The net realized and unrealized gains on level 3 loans of \$41 million (reflecting \$72 million of net realized gains and \$31 million of net unrealized losses) for the nine months ended September 2021 included gains of \$15 million reported in other principal transactions and \$26 million reported in interest income.

The drivers of net unrealized losses on level 3 loans for the nine months ended September 2021 were not material.

Transfers into level 3 loans during the nine months ended September 2021 primarily reflected transfers of certain corporate loans from level 2 (principally due to reduced price transparency as a result of a lack of market evidence, including fewer market transactions in these instruments).

Transfers out of level 3 loans during the nine months ended September 2021 primarily reflected transfers of certain corporate loans and loans backed by residential real estate to level 2 (in each case, principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Estimated Fair Value

The table below presents the estimated fair value of loans that are not accounted for at fair value and in what level of the fair value hierarchy they would have been classified if they had been included in the firm's fair value hierarchy.

\$ in millions	Carrying Value	Estimated Fair Value		
		Level 2	Level 3	Total
<u>As of September 2022</u>				
Amortized cost	\$ 161,619	\$ 85,846	\$ 77,386	\$ 163,232
Held for sale	\$ 6,800	\$ 3,589	\$ 3,221	\$ 6,810
<u>As of December 2021</u>				
Amortized cost	\$ 139,934	\$ 87,676	\$ 54,127	\$ 141,803
Held for sale	\$ 7,859	\$ 5,970	\$ 1,917	\$ 7,887

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of loans.

Notes to Consolidated Financial Statements (Unaudited)

Note 10.

Fair Value Option

Other Financial Assets and Liabilities at Fair Value

In addition to trading assets and liabilities, and certain investments and loans, the firm accounts for certain of its other financial assets and liabilities at fair value, substantially all under the fair value option. The primary reasons for electing the fair value option are to:

- Reflect economic events in earnings on a timely basis;
- Mitigate volatility in earnings from using different measurement attributes (e.g., transfers of financial assets accounted for as financings are recorded at fair value, whereas the related secured financing would be recorded on an accrual basis absent electing the fair value option); and
- Address simplification and cost-benefit considerations (e.g., accounting for hybrid financial instruments at fair value in their entirety versus bifurcation of embedded derivatives and hedge accounting for debt hosts).

Hybrid financial instruments are instruments that contain bifurcable embedded derivatives and do not require settlement by physical delivery of nonfinancial assets (e.g., physical commodities). If the firm elects to bifurcate the embedded derivative from the associated debt, the derivative is accounted for at fair value and the host contract is accounted for at amortized cost, adjusted for the effective portion of any fair value hedges. If the firm does not elect to bifurcate, the entire hybrid financial instrument is accounted for at fair value under the fair value option.

Other financial assets and liabilities accounted for at fair value under the fair value option include:

- Resale and repurchase agreements;
- Certain securities borrowed and loaned transactions;
- Certain customer and other receivables and certain other liabilities;
- Certain time deposits (deposits with no stated maturity are not eligible for a fair value option election), including structured certificates of deposit, which are hybrid financial instruments;
- Substantially all other secured financings, including transfers of assets accounted for as financings; and
- Certain unsecured short- and long-term borrowings, substantially all of which are hybrid financial instruments.

Fair Value of Other Financial Assets and Liabilities by Level

The table below presents, by level within the fair value hierarchy, other financial assets and liabilities at fair value, substantially all of which are accounted for at fair value under the fair value option.

<i>\$ in millions</i>	Level 1	Level 2	Level 3	Total
As of September 2022				
Assets				
Resale agreements	\$ —	\$ 182,502	\$ —	\$ 182,502
Securities borrowed	—	42,506	—	42,506
Customer and other receivables	—	25	—	25
Total	\$ —	\$ 225,033	\$ —	\$ 225,033
Liabilities				
Deposits	\$ —	\$ (20,858)	\$ (2,729)	\$ (23,587)
Repurchase agreements	—	(159,690)	—	(159,690)
Securities loaned	—	(7,444)	—	(7,444)
Other secured financings	—	(12,370)	(1,870)	(14,240)
Unsecured borrowings:				
Short-term	—	(27,958)	(4,512)	(32,470)
Long-term	—	(55,685)	(9,673)	(65,358)
Other liabilities	—	(381)	(81)	(462)
Total	\$ —	\$ (284,386)	\$ (18,865)	\$ (303,251)
As of December 2021				
Assets				
Resale agreements	\$ —	\$ 205,703	\$ —	\$ 205,703
Securities borrowed	—	39,955	—	39,955
Customer and other receivables	—	42	—	42
Total	\$ —	\$ 245,700	\$ —	\$ 245,700
Liabilities				
Deposits	\$ —	\$ (31,812)	\$ (3,613)	\$ (35,425)
Repurchase agreements	—	(165,883)	—	(165,883)
Securities loaned	—	(9,170)	—	(9,170)
Other secured financings	—	(14,508)	(2,566)	(17,074)
Unsecured borrowings:				
Short-term	—	(22,003)	(7,829)	(29,832)
Long-term	—	(42,977)	(9,413)	(52,390)
Other liabilities	—	(213)	(146)	(359)
Total	\$ —	\$ (286,566)	\$ (23,567)	\$ (310,133)

In the table above, other financial assets are shown as positive amounts and other financial liabilities are shown as negative amounts.

See Note 4 for an overview of the firm's fair value measurement policies and the valuation techniques and significant inputs used to determine the fair value of other financial assets and liabilities.

Notes to Consolidated Financial Statements (Unaudited)

Significant Unobservable Inputs

See below for information about the significant unobservable inputs used to value level 3 other financial liabilities at fair value as of both September 2022 and December 2021.

Other Secured Financings. The ranges and weighted averages of significant unobservable inputs used to value level 3 other secured financings are presented below. These ranges and weighted averages exclude unobservable inputs that are only relevant to a single instrument, and therefore are not meaningful.

As of September 2022:

- Yield: 3.5% to 8.3% (weighted average: 4.7%)
- Duration: 0.9 to 4.3 years (weighted average: 2.5 years)

As of December 2021:

- Yield: 1.3% to 6.4% (weighted average: 2.1%)
- Duration: 0.6 to 7.1 years (weighted average: 3.7 years)

Generally, increases in yield or duration, in isolation, would have resulted in a lower fair value measurement as of period-end. Due to the distinctive nature of each of level 3 other secured financings, the interrelationship of inputs is not necessarily uniform across such financings. See Note 11 for further information about other secured financings.

Deposits, Unsecured Borrowings and Other Liabilities.

Substantially all of the firm's deposits, unsecured short- and long-term borrowings, and other liabilities that are classified in level 3 are hybrid financial instruments. As the significant unobservable inputs used to value hybrid financial instruments primarily relate to the embedded derivative component of these deposits, unsecured borrowings and other liabilities, these unobservable inputs are incorporated in the firm's derivative disclosures in Note 7. See Note 13 for further information about deposits, Note 14 for further information about unsecured borrowings and Note 15 for further information about other liabilities.

Level 3 Rollforward

The table below presents a summary of the changes in fair value for level 3 other financial liabilities accounted for at fair value.

<i>\$ in millions</i>	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Beginning balance	\$ (19,114)	\$ (28,136)	\$ (23,567)	\$ (28,058)
Net realized gains/(losses)	(90)	(181)	(222)	(388)
Net unrealized gains/(losses)	1,538	819	5,977	822
Issuances	(3,296)	(4,856)	(9,486)	(11,797)
Settlements	2,691	6,742	8,548	13,325
Transfers into level 3	(1,494)	(570)	(2,562)	(745)
Transfers out of level 3	900	1,845	2,447	2,504
Ending balance	\$ (18,865)	\$ (24,337)	\$ (18,865)	\$ (24,337)

In the table above:

- Changes in fair value are presented for all other financial liabilities that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to other financial liabilities that were still held at period-end.
- Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur. If a financial liability was transferred to level 3 during a reporting period, its entire gain or loss for the period is classified in level 3.
- For level 3 other financial liabilities, increases are shown as negative amounts, while decreases are shown as positive amounts.
- Level 3 other financial liabilities are frequently economically hedged with trading assets and liabilities. Accordingly, gains or losses that are classified in level 3 can be partially offset by gains or losses attributable to level 1, 2 or 3 trading assets and liabilities. As a result, gains or losses included in the level 3 rollforward below do not necessarily represent the overall impact on the firm's results of operations, liquidity or capital resources.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information, by the consolidated balance sheet line items, for liabilities included in the summary table above.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Deposits				
Beginning balance	\$ (2,789)	\$ (3,908)	\$ (3,613)	\$ (4,221)
Net realized gains/(losses)	—	(8)	(7)	(23)
Net unrealized gains/(losses)	135	74	466	(28)
Issuances	(261)	(144)	(735)	(341)
Settlements	259	307	1,041	904
Transfers into level 3	(89)	—	(20)	(23)
Transfers out of level 3	16	42	139	95
Ending balance	\$ (2,729)	\$ (3,637)	\$ (2,729)	\$ (3,637)
Repurchase agreements				
Beginning balance	\$ —	\$ —	\$ —	\$ (2)
Settlements	—	—	—	2
Ending balance	\$ —	\$ —	\$ —	\$ —
Other secured financings				
Beginning balance	\$ (1,412)	\$ (2,891)	\$ (2,566)	\$ (3,474)
Net realized gains/(losses)	(13)	3	(18)	(1)
Net unrealized gains/(losses)	86	30	177	71
Issuances	(406)	(43)	(545)	(101)
Settlements	22	414	527	657
Transfers into level 3	(147)	(233)	(110)	(243)
Transfers out of level 3	—	80	665	451
Ending balance	\$ (1,870)	\$ (2,640)	\$ (1,870)	\$ (2,640)
Unsecured short-term borrowings				
Beginning balance	\$ (5,209)	\$ (11,461)	\$ (7,829)	\$ (7,523)
Net realized gains/(losses)	(54)	(112)	(126)	(168)
Net unrealized gains/(losses)	286	429	1,241	334
Issuances	(1,165)	(3,453)	(3,582)	(8,042)
Settlements	1,747	4,846	5,443	6,399
Transfers into level 3	(528)	(200)	(470)	(183)
Transfers out of level 3	411	1,282	811	514
Ending balance	\$ (4,512)	\$ (8,669)	\$ (4,512)	\$ (8,669)
Unsecured long-term borrowings				
Beginning balance	\$ (9,626)	\$ (9,714)	\$ (9,413)	\$ (12,576)
Net realized gains/(losses)	(23)	(64)	(71)	(196)
Net unrealized gains/(losses)	1,034	289	4,028	348
Issuances	(1,464)	(1,216)	(4,624)	(3,313)
Settlements	663	1,175	1,537	5,363
Transfers into level 3	(730)	(137)	(1,962)	(296)
Transfers out of level 3	473	441	832	1,444
Ending balance	\$ (9,673)	\$ (9,226)	\$ (9,673)	\$ (9,226)
Other liabilities				
Beginning balance	\$ (78)	\$ (162)	\$ (146)	\$ (262)
Net unrealized gains/(losses)	(3)	(3)	65	97
Ending balance	\$ (81)	\$ (165)	\$ (81)	\$ (165)

Level 3 Rollforward Commentary

Three Months Ended September 2022. The net realized and unrealized gains on level 3 other financial liabilities of \$1.45 billion (reflecting \$90 million of net realized losses and \$1.54 billion of net unrealized gains) for the three months ended September 2022 included gains/(losses) of \$1.13 billion reported in market making, \$69 million reported in other principal transactions and \$(7) million reported in interest expense in the consolidated statements of earnings, and \$262 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized gains on level 3 other financial liabilities for the three months ended September 2022 primarily reflected gains on certain hybrid financial instruments included in unsecured long- and short-term borrowings (principally due to a decrease in global equity prices and an increase in interest rates).

Transfers into level 3 other financial liabilities during the three months ended September 2022 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings from level 2 (principally due to reduced price transparency of certain volatility and correlation inputs used to value these instruments) and transfers of certain other secured financings from level 2 (principally due to reduced price transparency of certain yield and duration inputs used to value these instruments).

Transfers out of level 3 other financial liabilities during the three months ended September 2022 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings to level 2 (principally due to increased price transparency of certain volatility and correlation inputs used to value these instruments).

Nine Months Ended September 2022. The net realized and unrealized gains on level 3 other financial liabilities of \$5.76 billion (reflecting \$222 million of net realized losses and \$5.98 billion of net unrealized gains) for the nine months ended September 2022 included gains/(losses) of \$4.69 billion reported in market making, \$155 million reported in other principal transactions and \$(14) million reported in interest expense in the consolidated statements of earnings, and \$924 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized gains on level 3 other financial liabilities for the nine months ended September 2022 primarily reflected gains on certain hybrid financial instruments included in unsecured long- and short-term borrowings and deposits (in each case, principally due to a decrease in global equity prices and an increase in interest rates).

Transfers into level 3 other financial liabilities during the nine months ended September 2022 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings from level 2 (principally due to reduced price transparency of certain volatility and correlation inputs used to value these instruments).

Notes to Consolidated Financial Statements (Unaudited)

Transfers out of level 3 other financial liabilities during the nine months ended September 2022 primarily reflected transfers of certain hybrid financial instruments included in unsecured short- and long-term borrowings to level 2 (principally due to increased price transparency of certain volatility and correlation inputs used to value these instruments) and transfers of certain other secured financings to level 2 (principally due to certain unobservable yield inputs no longer being significant to the valuation of these instruments).

Three Months Ended September 2021. The net realized and unrealized gains on level 3 other financial liabilities of \$638 million (reflecting \$181 million of net realized losses and \$819 million of net unrealized gains) for the three months ended September 2021 included gains/(losses) of \$599 million reported in market making, \$19 million reported in other principal transactions and \$(5) million reported in interest expense in the consolidated statements of earnings, and \$25 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized gains on level 3 other financial liabilities for the three months ended September 2021 primarily reflected gains on certain hybrid financial instruments included in unsecured short- and long-term borrowings (principally due to higher levels of volatility and decreases in the market value of certain underlying equities).

Transfers into level 3 other financial liabilities during the three months ended September 2021 primarily reflected transfers of certain other secured financings from level 2 (principally due to reduced price transparency of certain yield and duration inputs used to value these instruments) and certain hybrid financial instruments included in unsecured short- and long-term borrowings from level 2 (principally due to reduced price transparency of certain volatility and correlation inputs used to value these instruments).

Transfers out of level 3 other financial liabilities during the three months ended September 2021 primarily reflected transfers of certain hybrid financial instruments included in unsecured short- and long-term borrowings to level 2 (principally due to increased price transparency of certain volatility and correlation inputs used to value these instruments).

Nine Months Ended September 2021. The net realized and unrealized gains on level 3 other financial liabilities of \$434 million (reflecting \$388 million of net realized losses and \$822 million of net unrealized gains) for the nine months ended September 2021 included gains/(losses) of \$366 million reported in market making, \$49 million reported in other principal transactions and \$(14) million reported in interest expense in the consolidated statements of earnings, and \$33 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized gains on level 3 other financial liabilities for the nine months ended September 2021 primarily reflected gains on certain hybrid financial instruments included in unsecured long- and short-term borrowings (principally due to higher levels of volatility in certain underlying equities and an increase in interest rates, partially offset by an increase in global equity prices).

Transfers into level 3 other financial liabilities during the nine months ended September 2021 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings from level 2 (principally due to reduced price transparency of certain volatility and correlation inputs used to value these instruments) and certain other secured financings from level 2 (principally due to reduced price transparency of certain yield and duration inputs used to value these instruments).

Transfers out of level 3 other financial liabilities during the nine months ended September 2021 primarily reflected transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings to level 2 (principally due to increased price transparency of certain volatility and correlation inputs used to value these instruments, and certain unobservable volatility inputs no longer being significant to the valuation of these instruments) and certain other secured financings to level 2 (principally due to increased price transparency of certain yield and duration inputs used to value these instruments).

Notes to Consolidated Financial Statements (Unaudited)

Gains and Losses on Other Financial Assets and Liabilities Accounted for at Fair Value Under the Fair Value Option

The table below presents the gains and losses recognized in earnings as a result of the election to apply the fair value option to certain financial assets and liabilities.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Unsecured short-term borrowings	\$ 1,114	\$ 875	\$ 5,379	\$ (935)
Unsecured long-term borrowings	2,445	(128)	8,316	(1,830)
Other	434	54	1,255	(17)
Total	\$ 3,993	\$ 801	\$ 14,950	\$ (2,782)

In the table above:

- Gains/(losses) were substantially all included in market making.
- Gains/(losses) exclude contractual interest, which is included in interest income and interest expense, for all instruments other than hybrid financial instruments. See Note 23 for further information about interest income and interest expense.
- Gains/(losses) included in unsecured short- and long-term borrowings were substantially all related to the embedded derivative component of hybrid financial instruments for each of the three and nine months ended September 2022 and September 2021. These gains and losses would have been recognized under other U.S. GAAP even if the firm had not elected to account for the entire hybrid financial instrument at fair value.
- Other primarily consists of gains/(losses) on deposits, other secured financings and other liabilities.
- Other financial assets and liabilities at fair value are frequently economically hedged with trading assets and liabilities. Accordingly, gains or losses on such other financial assets and liabilities can be partially offset by gains or losses on trading assets and liabilities. As a result, gains or losses on other financial assets and liabilities do not necessarily represent the overall impact on the firm's results of operations, liquidity or capital resources.

See Note 8 for information about gains/(losses) on equity securities and Note 9 for information about gains/(losses) on loans which are accounted for at fair value under the fair value option. Gains/(losses) on trading assets and liabilities accounted for at fair value under the fair value option are included in market making. See Note 5 for further information about gains/(losses) from market making.

Long-Term Debt Instruments

The aggregate contractual principal amount of long-term other secured financings, for which the fair value option was elected, exceeded the related fair value by \$201 million as of September 2022. The related amount was not material as of December 2021.

The aggregate contractual principal amount of unsecured long-term borrowings, for which the fair value option was elected, exceeded the related fair value by \$6.26 billion as of September 2022. The related amount was not material as of December 2021.

These debt instruments include both principal-protected and non-principal-protected long-term borrowings.

Debt Valuation Adjustment

The firm calculates the fair value of financial liabilities for which the fair value option is elected by discounting future cash flows at a rate which incorporates the firm's credit spreads.

The table below presents information about the net debt valuation adjustment (DVA) gains/(losses) on financial liabilities for which the fair value option was elected.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Pre-tax DVA	\$ 907	\$ 92	\$ 3,488	\$ 222
After tax DVA	\$ 673	\$ 67	\$ 2,601	\$ 165

In the table above:

- After tax DVA is included in debt valuation adjustment in the consolidated statements of comprehensive income.
- The gains/(losses) reclassified to market making in the consolidated statements of earnings from accumulated other comprehensive income/(loss) upon extinguishment of such financial liabilities were not material for each of the three and nine months ended September 2022 and September 2021.

Notes to Consolidated Financial Statements (Unaudited)

Loans and Lending Commitments

The table below presents the difference between the aggregate fair value and the aggregate contractual principal amount for loans (included in trading assets and loans in the consolidated balance sheets) for which the fair value option was elected.

\$ in millions	As of	
	September 2022	December 2021
Performing loans		
Aggregate contractual principal in excess of fair value	\$ 3,208	\$ 1,373
Loans on nonaccrual status and/or more than 90 days past due		
Aggregate contractual principal in excess of fair value	\$ 6,319	\$ 8,600
Aggregate fair value	\$ 2,555	\$ 3,559

In the table above, the aggregate contractual principal amount of loans on nonaccrual status and/or more than 90 days past due (which excludes loans carried at zero fair value and considered uncollectible) exceeds the related fair value primarily because the firm regularly purchases loans, such as distressed loans, at values significantly below the contractual principal amounts.

The fair value of unfunded lending commitments for which the fair value option was elected was a liability of \$17 million as of September 2022 and \$20 million as of December 2021, and the related total contractual amount of these lending commitments was \$574 million as of September 2022 and \$611 million as of December 2021. See Note 18 for further information about lending commitments.

Impact of Credit Spreads on Loans and Lending Commitments

The estimated net gain/(loss) attributable to changes in instrument-specific credit spreads on loans and lending commitments for which the fair value option was elected was \$(75) million for the three months ended September 2022, \$87 million for the three months ended September 2021, \$(182) million for the nine months ended September 2022 and \$290 million for the nine months ended September 2021. The firm generally calculates the fair value of loans and lending commitments for which the fair value option is elected by discounting future cash flows at a rate which incorporates the instrument-specific credit spreads. For floating-rate loans and lending commitments, substantially all changes in fair value are attributable to changes in instrument-specific credit spreads, whereas for fixed-rate loans and lending commitments, changes in fair value are also attributable to changes in interest rates.

Note 11.

Collateralized Agreements and Financings

Collateralized agreements are resale agreements and securities borrowed. Collateralized financings are repurchase agreements, securities loaned and other secured financings. The firm enters into these transactions in order to, among other things, facilitate client activities, invest excess cash, acquire securities to cover short positions and finance certain firm activities.

Collateralized agreements and financings are presented on a net-by-counterparty basis when a legal right of setoff exists. Interest on collateralized agreements, which is included in interest income, and collateralized financings, which is included in interest expense, is recognized over the life of the transaction. See Note 23 for further information about interest income and interest expense.

Resale and Repurchase Agreements

A resale agreement is a transaction in which the firm purchases financial instruments from a seller, typically in exchange for cash, and simultaneously enters into an agreement to resell the same or substantially the same financial instruments to the seller at a stated price plus accrued interest at a future date.

A repurchase agreement is a transaction in which the firm sells financial instruments to a buyer, typically in exchange for cash, and simultaneously enters into an agreement to repurchase the same or substantially the same financial instruments from the buyer at a stated price plus accrued interest at a future date.

Even though repurchase and resale agreements (including “repos- and reverses-to-maturity”) involve the legal transfer of ownership of financial instruments, they are accounted for as financing arrangements because they require the financial instruments to be repurchased or resold before or at the maturity of the agreement. The financial instruments purchased or sold in resale and repurchase agreements typically include U.S. government and agency, and investment-grade sovereign obligations.

The firm receives financial instruments purchased under resale agreements and makes delivery of financial instruments sold under repurchase agreements. To mitigate credit exposure, the firm monitors the market value of these financial instruments on a daily basis, and delivers or obtains additional collateral due to changes in the market value of the financial instruments, as appropriate. For resale agreements, the firm typically requires collateral with a fair value approximately equal to the carrying value of the relevant assets in the consolidated balance sheets.

Notes to Consolidated Financial Statements (Unaudited)

Securities Borrowed and Loaned Transactions

In a securities borrowed transaction, the firm borrows securities from a counterparty in exchange for cash or securities. When the firm returns the securities, the counterparty returns the cash or securities. Interest is generally paid periodically over the life of the transaction.

In a securities loaned transaction, the firm lends securities to a counterparty in exchange for cash or securities. When the counterparty returns the securities, the firm returns the cash or securities posted as collateral. Interest is generally paid periodically over the life of the transaction.

The firm receives securities borrowed and makes delivery of securities loaned. To mitigate credit exposure, the firm monitors the market value of these securities on a daily basis, and delivers or obtains additional collateral due to changes in the market value of the securities, as appropriate. For securities borrowed transactions, the firm typically requires collateral with a fair value approximately equal to the carrying value of the securities borrowed transaction.

Securities borrowed and loaned within Fixed Income, Currency and Commodities (FICC) financing are recorded at fair value under the fair value option. See Note 10 for further information about securities borrowed and loaned accounted for at fair value.

Substantially all of the securities borrowed and loaned within Equities financing are recorded based on the amount of cash collateral advanced or received plus accrued interest. The firm also reviews such securities borrowed to determine if an allowance for credit losses should be recorded by taking into consideration the fair value of collateral received. As these agreements generally can be terminated on demand, they exhibit little, if any, sensitivity to changes in interest rates. Therefore, the carrying value of such agreements approximates fair value. As these agreements are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these agreements been included in the firm's fair value hierarchy, they would have been classified in level 2 as of both September 2022 and December 2021.

Offsetting Arrangements

The table below presents resale and repurchase agreements and securities borrowed and loaned transactions included in the consolidated balance sheets, as well as the amounts not offset in the consolidated balance sheets.

\$ in millions	Assets		Liabilities	
	Resale agreements	Securities borrowed	Repurchase agreements	Securities loaned
As of September 2022				
Included in the consolidated balance sheets				
Gross carrying value	\$ 274,034	\$ 198,548	\$ 251,222	\$ 45,402
Counterparty netting	(91,532)	(1,580)	(91,532)	(1,580)
Total	182,502	196,968	159,690	43,822
Amounts not offset				
Counterparty netting	(23,623)	(7,827)	(23,623)	(7,827)
Collateral	(152,988)	(177,823)	(133,537)	(34,824)
Total	\$ 5,891	\$ 11,318	\$ 2,530	\$ 1,171
As of December 2021				
Included in the consolidated balance sheets				
Gross carrying value	\$ 334,725	\$ 190,197	\$ 294,905	\$ 57,931
Counterparty netting	(129,022)	(11,426)	(129,022)	(11,426)
Total	205,703	178,771	165,883	46,505
Amounts not offset				
Counterparty netting	(27,376)	(12,822)	(27,376)	(12,822)
Collateral	(173,915)	(157,752)	(134,465)	(33,143)
Total	\$ 4,412	\$ 8,197	\$ 4,042	\$ 540

In the table above:

- Substantially all of the gross carrying values of these arrangements are subject to enforceable netting agreements.
- Where the firm has received or posted collateral under credit support agreements, but has not yet determined such agreements are enforceable, the related collateral has not been netted.
- Amounts not offset includes counterparty netting that does not meet the criteria for netting under U.S. GAAP and the fair value of collateral received or posted subject to enforceable credit support agreements.
- Resale agreements and repurchase agreements are carried at fair value under the fair value option. See Note 4 for further information about the valuation techniques and significant inputs used to determine fair value.
- Securities borrowed included in the consolidated balance sheets of \$42.51 billion as of September 2022 and \$39.96 billion as of December 2021, and securities loaned of \$7.44 billion as of September 2022 and \$9.17 billion as of December 2021 were at fair value under the fair value option. See Note 10 for further information about securities borrowed and securities loaned accounted for at fair value.

Notes to Consolidated Financial Statements (Unaudited)

Gross Carrying Value of Repurchase Agreements and Securities Loaned

The table below presents the gross carrying value of repurchase agreements and securities loaned by class of collateral pledged.

<i>\$ in millions</i>	Repurchase agreements	Securities loaned
As of September 2022		
Money market instruments	\$ 1,132	\$ —
U.S. government and agency obligations	134,142	443
Non-U.S. government and agency obligations	89,464	958
Securities backed by commercial real estate	211	30
Securities backed by residential real estate	278	—
Corporate debt securities	15,370	428
State and municipal obligations	50	—
Other debt obligations	104	25
Equity securities	10,471	43,518
Total	\$ 251,222	\$ 45,402
As of December 2021		
Money market instruments	\$ 328	\$ 14
U.S. government and agency obligations	132,049	503
Non-U.S. government and agency obligations	126,397	1,254
Securities backed by commercial real estate	362	—
Securities backed by residential real estate	919	—
Corporate debt securities	11,034	510
State and municipal obligations	248	—
Other debt obligations	374	—
Equity securities	23,194	55,650
Total	\$ 294,905	\$ 57,931

The table below presents the gross carrying value of repurchase agreements and securities loaned by maturity.

	As of September 2022	
<i>\$ in millions</i>	Repurchase agreements	Securities loaned
No stated maturity and overnight	\$ 96,905	\$ 26,459
2 - 30 days	67,705	611
31 - 90 days	31,650	863
91 days - 1 year	44,190	11,102
Greater than 1 year	10,772	6,367
Total	\$ 251,222	\$ 45,402

In the table above:

- Repurchase agreements and securities loaned that are repayable prior to maturity at the option of the firm are reflected at their contractual maturity dates.
- Repurchase agreements and securities loaned that are redeemable prior to maturity at the option of the holder are reflected at the earliest dates such options become exercisable.

Other Secured Financings

In addition to repurchase agreements and securities loaned transactions, the firm funds certain assets through the use of other secured financings and pledges financial instruments and other assets as collateral in these transactions. These other secured financings include:

- Liabilities of consolidated VIEs;
- Transfers of assets accounted for as financings rather than sales (e.g., pledged commodities, bank loans and mortgage whole loans); and
- Other structured financing arrangements.

Other secured financings included nonrecourse arrangements. Nonrecourse other secured financings were \$8.19 billion as of September 2022 and \$8.64 billion as of December 2021.

The firm has elected to apply the fair value option to substantially all other secured financings because the use of fair value eliminates non-economic volatility in earnings that would arise from using different measurement attributes. See Note 10 for further information about other secured financings that are accounted for at fair value.

Other secured financings that are not recorded at fair value are recorded based on the amount of cash received plus accrued interest, which generally approximates fair value. As these financings are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these financings been included in the firm's fair value hierarchy, substantially all would have been classified in level 3 as of both September 2022 and December 2021.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information about other secured financings.

<i>\$ in millions</i>	U.S. Dollar	Non-U.S. Dollar	Total
As of September 2022			
Other secured financings (short-term):			
At fair value	\$ 4,983	\$ 2,201	\$ 7,184
At amortized cost	583	152	735
Other secured financings (long-term):			
At fair value	4,470	2,586	7,056
At amortized cost	261	359	620
Total other secured financings	\$ 10,297	\$ 5,298	\$ 15,595
Other secured financings collateralized by:			
Financial instruments	\$ 5,381	\$ 4,272	\$ 9,653
Other assets	\$ 4,916	\$ 1,026	\$ 5,942
As of December 2021			
Other secured financings (short-term):			
At fair value	\$ 5,315	\$ 3,664	\$ 8,979
At amortized cost	—	191	191
Other secured financings (long-term):			
At fair value	4,170	3,925	8,095
At amortized cost	827	452	1,279
Total other secured financings	\$ 10,312	\$ 8,232	\$ 18,544
Other secured financings collateralized by:			
Financial instruments	\$ 5,990	\$ 6,834	\$ 12,824
Other assets	\$ 4,322	\$ 1,398	\$ 5,720

In the table above:

- Short-term other secured financings includes financings maturing within one year of the financial statement date and financings that are redeemable within one year of the financial statement date at the option of the holder.
- U.S. dollar-denominated short-term other secured financings at amortized cost had a weighted average interest rate of 4.13% as of September 2022. These rates include the effect of hedging activities.
- Non-U.S. dollar-denominated short-term other secured financings at amortized cost had a weighted average interest rate of 0.22% as of both September 2022 and December 2021. This rate includes the effect of hedging activities.
- U.S. dollar-denominated long-term other secured financings at amortized cost had a weighted average interest rate of 4.01% as of September 2022 and 1.06% as of December 2021. These rates include the effect of hedging activities.
- Non-U.S. dollar-denominated long-term other secured financings at amortized cost had a weighted average interest rate of 0.46% as of both September 2022 and December 2021. These rates include the effect of hedging activities.
- Total other secured financings included \$1.64 billion as of September 2022 and \$1.97 billion as of December 2021 related to transfers of financial assets accounted for as financings rather than sales. Such financings were collateralized by financial assets, primarily included in trading assets, of \$1.62 billion as of September 2022 and \$2.02 billion as of December 2021.
- Other secured financings collateralized by financial instruments included \$9.03 billion as of September 2022 and \$10.37 billion as of December 2021 of other secured financings collateralized by trading assets, investments and loans, and included \$627 million as of September 2022 and \$2.45 billion as of December 2021 of other secured financings collateralized by financial instruments received as collateral and repledged.

The table below presents other secured financings by maturity.

<i>\$ in millions</i>	As of September 2022
Other secured financings (short-term)	\$ 7,919
Other secured financings (long-term):	
2023	917
2024	2,229
2025	934
2026	1,457
2027	132
2028 - thereafter	2,007
Total other secured financings (long-term)	7,676
Total other secured financings	\$ 15,595

In the table above:

- Long-term other secured financings that are repayable prior to maturity at the option of the firm are reflected at their contractual maturity dates.
- Long-term other secured financings that are redeemable prior to maturity at the option of the holder are reflected at the earliest dates such options become exercisable.

Collateral Received and Pledged

The firm receives cash and securities (e.g., U.S. government and agency obligations, other sovereign and corporate obligations, as well as equity securities) as collateral, primarily in connection with resale agreements, securities borrowed, derivative transactions and customer margin loans. The firm obtains cash and securities as collateral on an upfront or contingent basis for derivative instruments and collateralized agreements to reduce its credit exposure to individual counterparties.

Notes to Consolidated Financial Statements (Unaudited)

In many cases, the firm is permitted to deliver or repledge financial instruments received as collateral when entering into repurchase agreements and securities loaned transactions, primarily in connection with secured client financing activities. The firm is also permitted to deliver or repledge these financial instruments in connection with other secured financings, collateralized derivative transactions and firm or customer settlement requirements.

The firm also pledges certain trading assets in connection with repurchase agreements, securities loaned transactions and other secured financings, and other assets (substantially all real estate and cash) in connection with other secured financings to counterparties who may or may not have the right to deliver or repledge them.

The table below presents financial instruments at fair value received as collateral that were available to be delivered or repledged and were delivered or repledged.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Collateral available to be delivered or repledged	\$ 898,556	\$ 1,057,195
Collateral that was delivered or repledged	\$ 741,587	\$ 875,213

The table below presents information about assets pledged.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Pledged to counterparties that had the right to deliver or repledge		
Trading assets	\$ 77,130	\$ 68,208
Investments	\$ 20,375	\$ 12,840
Pledged to counterparties that did not have the right to deliver or repledge		
Trading assets	\$ 92,793	\$ 102,259
Investments	\$ 22,220	\$ 8,683
Loans	\$ 7,307	\$ 6,808
Other assets	\$ 8,464	\$ 8,878

The firm also segregates securities for regulatory and other purposes related to client activity. Such securities are segregated from trading assets and investments, as well as from securities received as collateral under resale agreements and securities borrowed transactions. Securities segregated by the firm were \$54.71 billion as of September 2022 and \$41.49 billion as of December 2021.

Note 12.

Other Assets

The table below presents other assets by type.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Property, leasehold improvements and equipment	\$ 17,167	\$ 18,094
Goodwill	6,288	4,285
Identifiable intangible assets	1,963	418
Operating lease right-of-use assets	2,067	2,292
Income tax-related assets	5,394	3,860
Miscellaneous receivables and other	6,366	5,659
Total	\$ 39,245	\$ 34,608

During the first nine months of 2022, the firm completed the acquisitions of (i) GreenSky, a leading technology company facilitating point-of-sale financing for merchants and consumers, in an all-stock transaction, (ii) NN Investment Partners (NNIP), a leading European asset manager, in an all-cash transaction, and (iii) NextCapital Group, Inc. (NextCapital), a digital retirement advice provider, in an all-cash transaction. These acquisitions were accounted for under the purchase method of accounting for business combinations and had an aggregate purchase price of \$3.83 billion, substantially all of which related to GreenSky and NNIP. The purchase price of GreenSky has been preliminarily allocated to goodwill of approximately \$1.05 billion, identifiable intangible assets of approximately \$710 million and tangible assets of approximately \$960 million (primarily cash and other assets), and to liabilities assumed of approximately \$990 million (primarily unsecured short-term borrowings and customer and other payables). The purchase price of NNIP has been preliminarily allocated to goodwill of approximately \$890 million, identifiable intangible assets of approximately \$900 million, tangible assets of approximately \$540 million (primarily cash and customer and other receivables), and to liabilities assumed of approximately \$510 million (primarily deferred tax liabilities and customer and other payables). See below for further information about goodwill and identifiable intangible assets related to these acquisitions.

Notes to Consolidated Financial Statements (Unaudited)

Property, Leasehold Improvements and Equipment

Property, leasehold improvements and equipment is net of accumulated depreciation and amortization of \$11.87 billion as of September 2022 and \$10.81 billion as of December 2021. Property, leasehold improvements and equipment included \$7.20 billion as of September 2022 and \$6.71 billion as of December 2021 that the firm uses in connection with its operations, and \$142 million as of September 2022 and \$194 million as of December 2021 of foreclosed real estate primarily related to distressed loans that were purchased by the firm. The remainder is held by investment entities, including VIEs, consolidated by the firm. Substantially all property and equipment is depreciated on a straight-line basis over the useful life of the asset. Leasehold improvements are amortized on a straight-line basis over the shorter of the useful life of the improvement or the term of the lease. Capitalized costs of software developed or obtained for internal use are amortized on a straight-line basis over three years.

The firm tests property, leasehold improvements and equipment for impairment when events or changes in circumstances suggest that an asset's or asset group's carrying value may not be fully recoverable. To the extent the carrying value of an asset or asset group exceeds the projected undiscounted cash flows expected to result from the use and eventual disposal of the asset or asset group, the firm determines the asset or asset group is impaired and records an impairment equal to the difference between the estimated fair value and the carrying value of the asset or asset group. In addition, the firm will recognize an impairment prior to the sale of an asset or asset group if the carrying value of the asset or asset group exceeds its estimated fair value.

There were \$106 million of impairments during the three months ended September 2022 and no material impairments during the three months ended September 2021. There were \$130 million of impairments during the nine months ended September 2022 and \$134 million of impairments during nine months ended September 2021.

Goodwill

Goodwill is the cost of acquired companies in excess of the fair value of net assets, including identifiable intangible assets, at the acquisition date.

The table below presents the carrying value of goodwill by reporting unit.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Investment Banking	\$ 281	\$ 281
Global Markets:		
FICC	269	269
Equities	2,637	2,638
Asset Management	1,299	349
Consumer & Wealth Management:		
Consumer banking	1,102	48
Wealth management	700	700
Total	\$ 6,288	\$ 4,285

In the table above, substantially all of the increase in goodwill from December 2021 to September 2022 was driven by the acquisitions of GreenSky and NNIP.

Goodwill is assessed for impairment annually in the fourth quarter or more frequently if events occur or circumstances change that indicate an impairment may exist. When assessing goodwill for impairment, first, a qualitative assessment can be made to determine whether it is more likely than not that the estimated fair value of a reporting unit is less than its estimated carrying value. If the results of the qualitative assessment are not conclusive, a quantitative goodwill test is performed. Alternatively, a quantitative goodwill test can be performed without performing a qualitative assessment.

The quantitative goodwill test compares the estimated fair value of each reporting unit with its estimated net book value (including goodwill and identifiable intangible assets). If the reporting unit's estimated fair value exceeds its estimated net book value, goodwill is not impaired. An impairment is recognized if the estimated fair value of a reporting unit is less than its estimated net book value.

To estimate the fair value of each reporting unit, other than Consumer banking, a relative value technique is used because the firm believes market participants would use this technique to value these reporting units. The relative value technique applies observable price-to-earnings multiples or price-to-book multiples of comparable competitors to reporting units' net earnings or net book value. To estimate the fair value of Consumer banking, a discounted cash flow valuation approach is used because the firm believes market participants would use this technique to value that reporting unit given its early stage of development. The estimated net carrying value of each reporting unit reflects an allocation of total shareholders' equity and represents the estimated amount of total shareholders' equity required to support the activities of the reporting unit under currently applicable regulatory capital requirements.

Notes to Consolidated Financial Statements (Unaudited)

In the fourth quarter of 2021, the firm performed its annual assessment of goodwill for impairment, for each of its reporting units, by performing a qualitative assessment. Multiple factors, including performance indicators, macroeconomic indicators, firm and industry events, and fair value indicators, were assessed with respect to each of the firm's reporting units to determine whether it was more likely than not that the estimated fair value of any of those reporting units was less than its estimated carrying value. The qualitative assessment also considered changes since a quantitative test was last performed in 2019.

As a result of the qualitative assessment, the firm determined that it was more likely than not that the estimated fair value of each reporting unit exceeded its respective estimated carrying value. Therefore, the firm determined that goodwill for each reporting unit was not impaired and that a quantitative goodwill test was not required.

Based on the evaluation of relevant factors during the first nine months of 2022, the firm determined that it was more likely than not that the estimated fair value of each of the reporting units exceeded its respective estimated carrying value as of September 2022.

Identifiable Intangible Assets

The table below presents identifiable intangible assets by reporting unit and type.

\$ in millions	As of	
	September 2022	December 2021
By Reporting Unit		
Global Markets:		
FICC	\$ 1	\$ 1
Equities	40	43
Asset Management	938	122
Consumer & Wealth Management:		
Consumer banking	764	—
Wealth management	220	252
Total	\$ 1,963	\$ 418
By Type		
Customer lists and merchant relationships		
Gross carrying value	\$ 3,126	\$ 1,460
Accumulated amortization	(1,229)	(1,130)
Net carrying value	1,897	330
Acquired leases and other		
Gross carrying value	487	500
Accumulated amortization	(421)	(412)
Net carrying value	66	88
Total gross carrying value	3,613	1,960
Total accumulated amortization	(1,650)	(1,542)
Total net carrying value	\$ 1,963	\$ 418

The firm acquired approximately \$1.77 billion of identifiable intangible assets (with a weighted average amortization period of 13 years) during the nine months ended September 2022, substantially all in connection with the acquisitions of GreenSky and NNIP. Substantially all of these intangible assets consisted of merchant relationships and customer lists. During 2021, the amount of identifiable intangible assets acquired by the firm was not material.

Substantially all of the firm's identifiable intangible assets have finite useful lives and are amortized over their estimated useful lives generally using the straight-line method.

The tables below present information about the amortization of identifiable intangible assets.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Amortization	\$ 54	\$ 22	\$ 124	\$ 89

\$ in millions	As of September 2022
Estimated future amortization	
Remainder of 2022	\$ 48
2023	\$193
2024	\$181
2025	\$164
2026	\$156
2027	\$155

The firm tests identifiable intangible assets for impairment when events or changes in circumstances suggest that an asset's or asset group's carrying value may not be fully recoverable. To the extent the carrying value of an asset or asset group exceeds the projected undiscounted cash flows expected to result from the use and eventual disposal of the asset or asset group, the firm determines the asset or asset group is impaired and records an impairment equal to the difference between the estimated fair value and the carrying value of the asset or asset group. In addition, the firm will recognize an impairment prior to the sale of an asset or asset group if the carrying value of the asset or asset group exceeds its estimated fair value. There were no material impairments during each of the three and nine months ended September 2022 and September 2021.

Notes to Consolidated Financial Statements (Unaudited)

Operating Lease Right-of-Use Assets

The firm enters into operating leases for real estate, office equipment and other assets, substantially all of which are used in connection with its operations. For leases longer than one year, the firm recognizes a right-of-use asset representing the right to use the underlying asset for the lease term, and a lease liability representing the liability to make payments. The lease term is generally determined based on the contractual maturity of the lease. For leases where the firm has the option to terminate or extend the lease, an assessment of the likelihood of exercising the option is incorporated into the determination of the lease term. Such assessment is initially performed at the inception of the lease and is updated if events occur that impact the original assessment.

An operating lease right-of-use asset is initially determined based on the operating lease liability, adjusted for initial direct costs, lease incentives and amounts paid at or prior to lease commencement. This amount is then amortized over the lease term. Right-of-use assets and operating lease liabilities recognized (in non-cash transactions for leases entered into or assumed) by the firm were \$52 million for the three months ended September 2022, \$86 million for the three months ended September 2021, \$168 million for the nine months ended September 2022 and \$230 million for the nine months ended September 2021. See Note 15 for information about operating lease liabilities.

For leases where the firm will derive no economic benefit from leased space that it has vacated or where the firm has shortened the term of a lease when space is no longer needed, the firm will record an impairment or accelerated amortization of right-of-use assets. There were no material impairments or accelerated amortizations during each of the three and nine months ended September 2022 and September 2021.

Miscellaneous Receivables and Other

Miscellaneous receivables and other included:

- Investments in qualified affordable housing projects of \$751 million as of September 2022 and \$714 million as of December 2021.
- Assets classified as held for sale of \$1.51 billion as of September 2022 and \$1.02 billion as of December 2021 related to certain of the firm's consolidated investments within the Asset Management segment, substantially all of which consisted of property and equipment.

Note 13.

Deposits

The table below presents the types and sources of deposits.

<i>\$ in millions</i>	Savings and Demand		Time	Total		
<u>As of September 2022</u>						
Consumer	\$	91,884	\$	21,566	\$	113,450
Private bank		81,585		13,397		94,982
Brokered certificates of deposit		—		37,578		37,578
Deposit sweep programs		46,165		—		46,165
Transaction banking		73,139		5,572		78,711
Other		1,462		22,385		23,847
Total	\$	294,235	\$	100,498	\$	394,733
<u>As of December 2021</u>						
Consumer	\$	89,150	\$	20,533	\$	109,683
Private bank		85,427		9,665		95,092
Brokered certificates of deposit		—		30,816		30,816
Deposit sweep programs		37,965		—		37,965
Transaction banking		48,618		5,689		54,307
Other		275		36,089		36,364
Total	\$	261,435	\$	102,792	\$	364,227

In the table above:

- Substantially all deposits are interest-bearing.
- Savings and demand accounts consist of money market deposit accounts, negotiable order of withdrawal accounts and demand deposit accounts that have no stated maturity or expiration date.
- Time deposits included \$23.59 billion as of September 2022 and \$35.43 billion as of December 2021 of deposits accounted for at fair value under the fair value option. See Note 10 for further information about deposits accounted for at fair value.
- Time deposits had a weighted average maturity of approximately 0.9 years as of both September 2022 and December 2021.
- Deposit sweep programs include long-term contractual agreements with U.S. broker-dealers who sweep client cash to FDIC-insured deposits.
- Transaction banking deposits consists of deposits that the firm raised through its cash management services business for corporate and other institutional clients.
- Other deposits represent deposits from institutional clients.
- Deposits insured by the FDIC were \$187.64 billion as of September 2022 and \$156.66 billion as of December 2021.
- Deposits insured by non-U.S. insurance programs were \$27.20 billion as of September 2022 and \$31.44 billion as of December 2021.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents the location of deposits.

\$ in millions	As of	
	September 2022	December 2021
U.S. offices	\$ 323,048	\$ 283,705
Non-U.S. offices	71,685	80,522
Total	\$ 394,733	\$ 364,227

In the table above, U.S. deposits were held at Goldman Sachs Bank USA (GS Bank USA) and substantially all non-U.S. deposits were held at Goldman Sachs International Bank (GSIB) and Goldman Sachs Bank Europe SE (GSBE).

The table below presents maturities of time deposits held in U.S. and non-U.S. offices.

\$ in millions	As of September 2022		
	U.S.	Non-U.S.	Total
Remainder of 2022	\$ 16,347	\$ 14,867	\$ 31,214
2023	37,121	12,374	49,495
2024	10,198	94	10,292
2025	3,782	199	3,981
2026	2,432	240	2,672
2027	1,089	170	1,259
2028 - thereafter	1,270	315	1,585
Total	\$ 72,239	\$ 28,259	\$ 100,498

As of September 2022, deposits in U.S. offices included \$20.62 billion and deposits in non-U.S. offices included \$26.68 billion of time deposits in denominations that met or exceeded the applicable insurance limits, or were otherwise not covered by insurance.

The firm's savings and demand deposits are recorded based on the amount of cash received plus accrued interest, which approximates fair value. In addition, the firm designates certain derivatives as fair value hedges to convert a portion of its time deposits not accounted for at fair value from fixed-rate obligations into floating-rate obligations. The carrying value of time deposits not accounted for at fair value approximated fair value as of both September 2022 and December 2021. As these savings and demand deposits and time deposits are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these deposits been included in the firm's fair value hierarchy, they would have been classified in level 2 as of both September 2022 and December 2021.

Note 14.

Unsecured Borrowings

The table below presents information about unsecured borrowings.

\$ in millions	As of	
	September 2022	December 2021
Unsecured short-term borrowings	\$ 51,850	\$ 46,955
Unsecured long-term borrowings	239,965	254,092
Total	\$ 291,815	\$ 301,047

Unsecured Short-Term Borrowings

Unsecured short-term borrowings includes the portion of unsecured long-term borrowings maturing within one year of the financial statement date and unsecured long-term borrowings that are redeemable within one year of the financial statement date at the option of the holder.

The firm accounts for certain hybrid financial instruments at fair value under the fair value option. See Note 10 for further information about unsecured short-term borrowings that are accounted for at fair value. In addition, the firm designates certain derivatives as fair value hedges to convert a portion of its unsecured short-term borrowings not accounted for at fair value from fixed-rate obligations into floating-rate obligations. The carrying value of unsecured short-term borrowings that are not recorded at fair value generally approximates fair value due to the short-term nature of the obligations. As these unsecured short-term borrowings are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these borrowings been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both September 2022 and December 2021.

The table below presents information about unsecured short-term borrowings.

\$ in millions	As of	
	September 2022	December 2021
Current portion of unsecured long-term borrowings	\$ 28,306	\$ 18,118
Hybrid financial instruments	16,322	20,073
Commercial paper	5,152	6,730
Other unsecured short-term borrowings	2,070	2,034
Total unsecured short-term borrowings	\$ 51,850	\$ 46,955
Weighted average interest rate	2.74%	2.34%

In the table above, the weighted average interest rates for these borrowings include the effect of hedging activities and exclude unsecured short-term borrowings accounted for at fair value under the fair value option. See Note 7 for further information about hedging activities.

Notes to Consolidated Financial Statements (Unaudited)

Unsecured Long-Term Borrowings

The table below presents information about unsecured long-term borrowings.

<i>\$ in millions</i>	U.S. Dollar	Non-U.S. Dollar	Total
As of September 2022			
Fixed-rate obligations	\$ 119,962	\$ 35,620	\$ 155,582
Floating-rate obligations	55,812	28,571	84,383
Total	\$ 175,774	\$ 64,191	\$ 239,965
As of December 2021			
Fixed-rate obligations	\$ 126,534	\$ 46,408	\$ 172,942
Floating-rate obligations	50,995	30,155	81,150
Total	\$ 177,529	\$ 76,563	\$ 254,092

In the table above:

- Unsecured long-term borrowings consists principally of senior borrowings, which have maturities extending through 2065.
- Floating-rate obligations includes equity-linked, credit-linked and indexed instruments. Floating interest rates are generally based on SOFR, USD LIBOR, or Euro Interbank Offered Rate.
- U.S. dollar-denominated debt had interest rates ranging from 0.63% to 6.75% (with a weighted average rate of 3.39%) as of September 2022 and 0.48% to 7.68% (with a weighted average rate of 3.34%) as of December 2021. These rates exclude unsecured long-term borrowings accounted for at fair value under the fair value option.
- Non-U.S. dollar-denominated debt had interest rates ranging from 0.13% to 13.00% (with a weighted average rate of 1.84%) as of September 2022 and 0.13% to 13.00% (with a weighted average rate of 1.86%) as of December 2021. These rates exclude unsecured long-term borrowings accounted for at fair value under the fair value option.

The table below presents unsecured long-term borrowings by maturity.

<i>\$ in millions</i>	As of September 2022
2023	\$ 14,609
2024	40,828
2025	34,203
2026	20,824
2027	27,937
2028 - thereafter	101,564
Total	\$ 239,965

In the table above:

- Unsecured long-term borrowings maturing within one year of the financial statement date and unsecured long-term borrowings that are redeemable within one year of the financial statement date at the option of the holder are excluded as they are included in unsecured short-term borrowings.
- Unsecured long-term borrowings that are repayable prior to maturity at the option of the firm are reflected at their contractual maturity dates.
- Unsecured long-term borrowings that are redeemable prior to maturity at the option of the holder are reflected at the earliest dates such options become exercisable.
- Unsecured long-term borrowings included \$(15.25) billion of adjustments to the carrying value of certain unsecured long-term borrowings resulting from the application of hedge accounting by year of maturity as follows: \$(9) million in 2023, \$(513) million in 2024, \$(1.26) billion in 2025, \$(801) million in 2026, \$(1.66) billion in 2027 and \$(11.01) billion in 2028 and thereafter.

The firm designates certain derivatives as fair value hedges to convert a portion of fixed-rate unsecured long-term borrowings not accounted for at fair value into floating-rate obligations. See Note 7 for further information about hedging activities.

The table below presents unsecured long-term borrowings, after giving effect to such hedging activities.

<i>\$ in millions</i>	As of September 2022	December 2021
Fixed-rate obligations:		
At fair value	\$ 5,692	\$ 4,863
At amortized cost	5,411	30,370
Floating-rate obligations:		
At fair value	59,666	47,527
At amortized cost	169,196	171,332
Total	\$ 239,965	\$ 254,092

Notes to Consolidated Financial Statements (Unaudited)

In the table above, the aggregate amounts of unsecured long-term borrowings had weighted average interest rates of 3.80% (4.30% related to fixed-rate obligations and 3.78% related to floating-rate obligations) as of September 2022 and 1.60% (2.25% related to fixed-rate obligations and 1.48% related to floating-rate obligations) as of December 2021. These rates exclude unsecured long-term borrowings accounted for at fair value under the fair value option.

The carrying value of unsecured long-term borrowings for which the firm did not elect the fair value option was \$174.61 billion as of September 2022 and \$201.70 billion as of December 2021. The estimated fair value of such unsecured long-term borrowings was \$170.27 billion as of September 2022 and \$209.37 billion as of December 2021. As these borrowings are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 10. Had these borrowings been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both September 2022 and December 2021.

Subordinated Borrowings

Unsecured long-term borrowings includes subordinated debt and junior subordinated debt. Subordinated debt that matures within one year is included in unsecured short-term borrowings. Junior subordinated debt is junior in right of payment to other subordinated borrowings, which are junior to senior borrowings. Long-term subordinated debt had maturities ranging from 2025 to 2045 as of both September 2022 and December 2021.

The table below presents information about subordinated borrowings.

<i>\$ in millions</i>	Par Amount	Carrying Value	Rate
As of September 2022			
Subordinated debt	\$ 12,118	\$ 11,745	4.54%
Junior subordinated debt	968	1,052	3.76%
Total	\$ 13,086	\$ 12,797	4.49%
As of December 2021			
Subordinated debt	\$ 12,437	\$ 15,571	1.74%
Junior subordinated debt	968	1,321	1.31%
Total	\$ 13,405	\$ 16,892	1.71%

In the table above, the rate is the weighted average interest rate for these borrowings (excluding borrowings accounted for at fair value under the fair value option), including the effect of fair value hedges used to convert fixed-rate obligations into floating-rate obligations. See Note 7 for further information about hedging activities.

Junior Subordinated Debt

In 2004, Group Inc. issued \$2.84 billion of junior subordinated debt to Goldman Sachs Capital I, a Delaware statutory trust. Goldman Sachs Capital I issued \$2.75 billion of guaranteed preferred beneficial interests (Trust Preferred securities) to third parties and \$85 million of common beneficial interests to Group Inc. As of both September 2022 and December 2021, the outstanding par amount of junior subordinated debt held by Goldman Sachs Capital I was \$968 million and the outstanding par amount of Trust Preferred securities and common beneficial interests issued by Goldman Sachs Capital I was \$939 million and \$29 million, respectively. Goldman Sachs Capital I is a wholly-owned finance subsidiary of the firm for regulatory and legal purposes but is not consolidated for accounting purposes.

The firm pays interest semi-annually on the junior subordinated debt at an annual rate of 6.345% and the debt matures on February 15, 2034. The coupon rate and the payment dates applicable to the beneficial interests are the same as the interest rate and payment dates for the junior subordinated debt. The firm has the right, from time to time, to defer payment of interest on the junior subordinated debt, and therefore cause payment on Goldman Sachs Capital I's preferred beneficial interests to be deferred, in each case up to ten consecutive semi-annual periods. During any such deferral period, the firm will not be permitted to, among other things, pay dividends on or make certain repurchases of its common stock. Goldman Sachs Capital I is not permitted to pay any distributions on the common beneficial interests held by Group Inc. unless all dividends payable on the preferred beneficial interests have been paid in full.

Note 15.

Other Liabilities

The table below presents other liabilities by type.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Compensation and benefits	\$ 6,217	\$ 10,838
Income tax-related liabilities	3,274	2,360
Operating lease liabilities	2,057	2,288
Noncontrolling interests	824	840
Employee interests in consolidated funds	28	29
Accrued expenses and other	8,479	8,146
Total	\$ 20,879	\$ 24,501

Notes to Consolidated Financial Statements (Unaudited)

Operating Lease Liabilities

For leases longer than one year, the firm recognizes a right-of-use asset representing the right to use the underlying asset for the lease term, and a lease liability representing the liability to make payments. See Note 12 for information about operating lease right-of-use assets.

The table below presents information about operating lease liabilities.

<i>\$ in millions</i>	Operating lease liabilities
As of September 2022	
Remainder of 2022	\$ 76
2023	327
2024	299
2025	261
2026	217
2027 - thereafter	1,543
Total undiscounted lease payments	2,723
Imputed interest	(666)
Total operating lease liabilities	\$ 2,057
Weighted average remaining lease term	13 years
Weighted average discount rate	3.60%
As of December 2021	
2022	\$ 305
2023	307
2024	284
2025	258
2026	216
2027 - thereafter	1,655
Total undiscounted lease payments	3,025
Imputed interest	(737)
Total operating lease liabilities	\$ 2,288
Weighted average remaining lease term	14 years
Weighted average discount rate	3.61%

In the table above, the weighted average discount rate represents the firm's incremental borrowing rate as of January 2019 for operating leases existing on the date of adoption of ASU No. 2016-02, "Leases (Topic 842)," and at the lease inception date for leases entered into subsequent to the adoption of this ASU.

Operating lease costs were \$111 million for the three months ended September 2022, \$118 million for the three months ended September 2021, \$348 million for the nine months ended September 2022 and \$348 million for the nine months ended September 2021. Variable lease costs, which are included in operating lease costs, were not material for each of the three and nine months ended September 2022 and September 2021. Total occupancy expenses for space held in excess of the firm's current requirements were not material for each of the three and nine months ended September 2022 and September 2021.

Lease payments relating to operating lease arrangements that were signed but had not yet commenced were \$1.43 billion as of September 2022.

Accrued Expenses and Other

Accrued expenses and other included:

- Liabilities classified as held for sale were \$380 million as of September 2022 and \$310 million as of December 2021 related to certain of the firm's consolidated investments within the Asset Management segment, substantially all of which consisted of other secured financings primarily carried at fair value under the fair value option, and were related to assets classified as held for sale. See Note 12 for further information about assets held for sale.
- Contract liabilities, which represent consideration received by the firm in connection with its contracts with clients prior to providing the service, were \$145 million as of September 2022 and were not material as of December 2021.

Note 16.

Securitization Activities

The firm securitizes residential and commercial mortgages, corporate bonds, loans and other types of financial assets by selling these assets to securitization vehicles (e.g., trusts, corporate entities and limited liability companies) or through a resecuritization. The firm acts as underwriter of the beneficial interests that are sold to investors. The firm's residential mortgage securitizations are primarily in connection with government agency securitizations.

Notes to Consolidated Financial Statements (Unaudited)

The firm accounts for a securitization as a sale when it has relinquished control over the transferred financial assets. Prior to securitization, the firm generally accounts for assets pending transfer at fair value and therefore does not typically recognize significant gains or losses upon the transfer of assets. Net revenues from underwriting activities are recognized in connection with the sales of the underlying beneficial interests to investors.

The firm generally receives cash in exchange for the transferred assets but may also have continuing involvement with the transferred financial assets, including ownership of beneficial interests in securitized financial assets, primarily in the form of debt instruments. The firm may also purchase senior or subordinated securities issued by securitization vehicles (which are typically VIEs) in connection with secondary market-making activities.

The primary risks included in beneficial interests and other interests from the firm's continuing involvement with securitization vehicles are the performance of the underlying collateral, the position of the firm's investment in the capital structure of the securitization vehicle and the market yield for the security. Interests accounted for at fair value are primarily classified in level 2 of the fair value hierarchy. Interests not accounted for at fair value are carried at amounts that approximate fair value. See Notes 4 through 10 for further information about fair value measurements.

The table below presents the amount of financial assets securitized and the cash flows received on retained interests in securitization entities in which the firm had continuing involvement as of the end of the period.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Residential mortgages	\$ 6,128	\$ 9,888	\$ 25,069	\$ 19,894
Commercial mortgages	2,306	3,066	13,820	13,832
Other financial assets	902	2,353	3,519	4,017
Total financial assets securitized	\$ 9,336	\$ 15,307	\$ 42,408	\$ 37,743
Retained interests cash flows	\$ 125	\$ 204	\$ 428	\$ 452

The firm securitized assets of \$382 million during the three months ended September 2022, \$266 million during the three months ended September 2021, \$781 million during the nine months ended September 2022 and \$679 million during the nine months ended September 2021, in a non-cash exchange for loans and investments.

The table below presents information about nonconsolidated securitization entities to which the firm sold assets and had continuing involvement as of the end of the period.

\$ in millions	Outstanding Principal Amount	Retained Interests	Purchased Interests
As of September 2022			
U.S. government agency-issued CMOs	\$ 39,848	\$ 1,899	\$ —
Other residential mortgage-backed	27,703	1,233	129
Other commercial mortgage-backed	59,919	1,351	108
Corporate debt and other asset-backed	9,092	425	34
Total	\$ 136,562	\$ 4,908	\$ 271
As of December 2021			
U.S. government agency-issued CMOs	\$ 33,984	\$ 955	\$ 3
Other residential mortgage-backed	23,262	1,114	96
Other commercial mortgage-backed	50,350	1,123	130
Corporate debt and other asset-backed	7,755	360	37
Total	\$ 115,351	\$ 3,552	\$ 266

In the table above:

- CMOs represents collateralized mortgage obligations.
- The outstanding principal amount is presented for the purpose of providing information about the size of the securitization entities and is not representative of the firm's risk of loss.
- The firm's risk of loss from retained or purchased interests is limited to the carrying value of these interests.
- Purchased interests represent senior and subordinated interests, purchased in connection with secondary market-making activities, in securitization entities in which the firm also holds retained interests.
- Substantially all of the total outstanding principal amount and total retained interests relate to securitizations during 2018 and thereafter.
- The fair value of retained interests was \$4.83 billion as of September 2022 and \$3.57 billion as of December 2021.

In addition to the interests in the table above, the firm had other continuing involvement in the form of derivative transactions and commitments with certain nonconsolidated VIEs. The carrying value of these derivatives and commitments was a net asset of \$115 million as of September 2022 and \$81 million as of December 2021, and the notional amount of these derivatives and commitments was \$1.80 billion as of September 2022 and \$1.81 billion as of December 2021. The notional amounts of these derivatives and commitments are included in maximum exposure to loss in the nonconsolidated VIE table in Note 17.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information about the weighted average key economic assumptions used in measuring the fair value of mortgage-backed retained interests.

\$ in millions	As of	
	September 2022	December 2021
Fair value of retained interests	\$ 4,421	\$ 3,209
Weighted average life (years)	6.6	5.1
Constant prepayment rate	8.4%	14.1%
Impact of 10% adverse change	\$ (28)	\$ (38)
Impact of 20% adverse change	\$ (52)	\$ (69)
Discount rate	7.6%	5.6%
Impact of 10% adverse change	\$ (131)	\$ (49)
Impact of 20% adverse change	\$ (251)	\$ (96)

In the table above:

- Amounts do not reflect the benefit of other financial instruments that are held to mitigate risks inherent in these retained interests.
- Changes in fair value based on an adverse variation in assumptions generally cannot be extrapolated because the relationship of the change in assumptions to the change in fair value is not usually linear.
- The impact of a change in a particular assumption is calculated independently of changes in any other assumption. In practice, simultaneous changes in assumptions might magnify or counteract the sensitivities disclosed above.
- The constant prepayment rate is included only for positions for which it is a key assumption in the determination of fair value.
- The discount rate for retained interests that relate to U.S. government agency-issued CMOs does not include any credit loss. Expected credit loss assumptions are reflected in the discount rate for the remainder of retained interests.

The firm has other retained interests not reflected in the table above with a fair value of \$408 million and a weighted average life of 6.1 years as of September 2022, and a fair value of \$360 million and a weighted average life of 3.6 years as of December 2021. Due to the nature and fair value of certain of these retained interests, the weighted average assumptions for constant prepayment and discount rates and the related sensitivity to adverse changes are not meaningful as of both September 2022 and December 2021. The firm's maximum exposure to adverse changes in the value of these interests is the carrying value of \$425 million as of September 2022 and \$360 million as of December 2021.

Note 17.

Variable Interest Entities

A variable interest in a VIE is an investment (e.g., debt or equity) or other interest (e.g., derivatives or loans and lending commitments) that will absorb portions of the VIE's expected losses and/or receive portions of the VIE's expected residual returns.

The firm's variable interests in VIEs include senior and subordinated debt; loans and lending commitments; limited and general partnership interests; preferred and common equity; derivatives that may include foreign currency, equity and/or credit risk; guarantees; and certain of the fees the firm receives from investment funds. Certain interest rate, foreign currency and credit derivatives the firm enters into with VIEs are not variable interests because they create, rather than absorb, risk.

VIEs generally finance the purchase of assets by issuing debt and equity securities that are either collateralized by or indexed to the assets held by the VIE. The debt and equity securities issued by a VIE may include tranches of varying levels of subordination. The firm's involvement with VIEs includes securitization of financial assets, as described in Note 16, and investments in and loans to other types of VIEs, as described below. See Note 3 for the firm's consolidation policies, including the definition of a VIE.

VIE Consolidation Analysis

The enterprise with a controlling financial interest in a VIE is known as the primary beneficiary and consolidates the VIE. The firm determines whether it is the primary beneficiary of a VIE by performing an analysis that principally considers:

- Which variable interest holder has the power to direct the activities of the VIE that most significantly impact the VIE's economic performance;
- Which variable interest holder has the obligation to absorb losses or the right to receive benefits from the VIE that could potentially be significant to the VIE;
- The VIE's purpose and design, including the risks the VIE was designed to create and pass through to its variable interest holders;
- The VIE's capital structure;
- The terms between the VIE and its variable interest holders and other parties involved with the VIE; and
- Related-party relationships.

Notes to Consolidated Financial Statements (Unaudited)

The firm reassesses its evaluation of whether an entity is a VIE when certain reconsideration events occur. The firm reassesses its determination of whether it is the primary beneficiary of a VIE on an ongoing basis based on current facts and circumstances.

VIE Activities

The firm is principally involved with VIEs through the following business activities:

Mortgage-Backed VIEs. The firm sells residential and commercial mortgage loans and securities to mortgage-backed VIEs and may retain beneficial interests in the assets sold to these VIEs. The firm purchases and sells beneficial interests issued by mortgage-backed VIEs in connection with market-making activities. In addition, the firm may enter into derivatives with certain of these VIEs, primarily interest rate swaps, which are typically not variable interests. The firm generally enters into derivatives with other counterparties to mitigate its risk.

Real Estate, Credit- and Power-Related and Other Investing VIEs. The firm purchases equity and debt securities issued by and makes loans to VIEs that hold real estate, performing and nonperforming debt, distressed loans, power-related assets and equity securities. The firm generally does not sell assets to, or enter into derivatives with, these VIEs.

Corporate Debt and Other Asset-Backed VIEs. The firm structures VIEs that issue notes to clients, purchases and sells beneficial interests issued by corporate debt and other asset-backed VIEs in connection with market-making activities, and makes loans to VIEs that warehouse corporate debt. Certain of these VIEs synthetically create the exposure for the beneficial interests they issue by entering into credit derivatives with the firm, rather than purchasing the underlying assets. In addition, the firm may enter into derivatives, such as total return swaps, with certain corporate debt and other asset-backed VIEs, under which the firm pays the VIE a return due to the beneficial interest holders and receives the return on the collateral owned by the VIE. The collateral owned by these VIEs is primarily other asset-backed loans and securities. The firm may be removed as the total return swap counterparty and may enter into derivatives with other counterparties to mitigate its risk related to these swaps. The firm may sell assets to the corporate debt and other asset-backed VIEs it structures.

Principal-Protected Note VIEs. The firm structures VIEs that issue principal-protected notes to clients. These VIEs own portfolios of assets, principally with exposure to hedge funds. Substantially all of the principal protection on the notes issued by these VIEs is provided by the asset portfolio rebalancing that is required under the terms of the notes. The firm enters into total return swaps with these VIEs under which the firm pays the VIE the return due to the principal-protected note holders and receives the return on the assets owned by the VIE. The firm may enter into derivatives with other counterparties to mitigate its risk. The firm also obtains funding through these VIEs.

Investments in Funds. The firm makes equity investments in certain investment fund VIEs it manages and is entitled to receive fees from these VIEs. The firm has generally not sold assets to, or entered into derivatives with, these VIEs.

Nonconsolidated VIEs

The table below presents a summary of the nonconsolidated VIEs in which the firm holds variable interests.

\$ in millions	As of	
	September 2022	December 2021
Total nonconsolidated VIEs		
Assets in VIEs	\$ 184,515	\$ 176,809
Carrying value of variable interests — assets	\$ 12,035	\$ 9,582
Carrying value of variable interests — liabilities	\$ 791	\$ 928
Maximum exposure to loss:		
Retained interests	\$ 4,908	\$ 3,552
Purchased interests	916	1,071
Commitments and guarantees	2,642	2,440
Derivatives	8,128	8,682
Debt and equity	5,887	4,639
Total	\$ 22,481	\$ 20,384

In the table above:

- The nature of the firm's variable interests is described in the rows under maximum exposure to loss.
- The firm's exposure to the obligations of VIEs is generally limited to its interests in these entities. In certain instances, the firm provides guarantees, including derivative guarantees, to VIEs or holders of variable interests in VIEs.
- The maximum exposure to loss excludes the benefit of offsetting financial instruments that are held to mitigate the risks associated with these variable interests.
- The maximum exposure to loss from retained interests, purchased interests, and debt and equity is the carrying value of these interests.
- The maximum exposure to loss from commitments and guarantees, and derivatives is the notional amount, which does not represent anticipated losses and has not been reduced by unrealized losses. As a result, the maximum exposure to loss exceeds liabilities recorded for commitments and guarantees, and derivatives.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information, by principal business activity, for nonconsolidated VIEs included in the summary table above.

\$ in millions	As of	
	September 2022	December 2021
Mortgage-backed		
Assets in VIEs	\$ 129,580	\$ 120,343
Carrying value of variable interests — assets	\$ 4,892	\$ 4,147
Maximum exposure to loss:		
Retained interests	\$ 4,483	\$ 3,192
Purchased interests	408	955
Commitments and guarantees	61	34
Derivatives	13	18
Total	\$ 4,965	\$ 4,199
Real estate, credit- and power-related and other investing		
Assets in VIEs	\$ 27,198	\$ 26,867
Carrying value of variable interests — assets	\$ 4,105	\$ 3,923
Carrying value of variable interests — liabilities	\$ 2	\$ 8
Maximum exposure to loss:		
Commitments and guarantees	\$ 2,061	\$ 2,030
Derivatives	61	64
Debt and equity	4,102	3,923
Total	\$ 6,224	\$ 6,017
Corporate debt and other asset-backed		
Assets in VIEs	\$ 20,700	\$ 18,391
Carrying value of variable interests — assets	\$ 2,757	\$ 1,156
Carrying value of variable interests — liabilities	\$ 789	\$ 920
Maximum exposure to loss:		
Retained interests	\$ 425	\$ 360
Purchased interests	508	116
Commitments and guarantees	367	250
Derivatives	8,052	8,597
Debt and equity	1,504	360
Total	\$ 10,856	\$ 9,683
Investments in funds		
Assets in VIEs	\$ 7,037	\$ 11,208
Carrying value of variable interests — assets	\$ 281	\$ 356
Maximum exposure to loss:		
Commitments and guarantees	\$ 153	\$ 126
Derivatives	2	3
Debt and equity	281	356
Total	\$ 436	\$ 485

As of both September 2022 and December 2021, the carrying values of the firm's variable interests in nonconsolidated VIEs are included in the consolidated balance sheets as follows:

- Mortgage-backed: Assets primarily included in trading assets and loans.
- Real estate, credit- and power-related and other investing: Assets primarily included in investments and loans, and liabilities included in trading liabilities and other liabilities.
- Corporate debt and other asset-backed: Assets included in loans and trading assets, and liabilities included in trading liabilities.
- Investments in funds: Assets included in investments.

Consolidated VIEs

The table below presents a summary of the carrying value and balance sheet classification of assets and liabilities in consolidated VIEs.

\$ in millions	As of	
	September 2022	December 2021
Total consolidated VIEs		
Assets		
Cash and cash equivalents	\$ 918	\$ 501
Customer and other receivables	11	—
Trading assets	145	122
Investments	98	153
Loans	1,293	1,988
Other assets	298	314
Total	\$ 2,763	\$ 3,078
Liabilities		
Other secured financings	\$ 1,348	\$ 1,143
Customer and other payables	5	34
Trading liabilities	1	7
Unsecured short-term borrowings	46	146
Unsecured long-term borrowings	23	81
Other liabilities	128	163
Total	\$ 1,551	\$ 1,574

In the table above:

- Assets and liabilities are presented net of intercompany eliminations and exclude the benefit of offsetting financial instruments that are held to mitigate the risks associated with the firm's variable interests.
- VIEs in which the firm holds a majority voting interest are excluded if (i) the VIE meets the definition of a business and (ii) the VIE's assets can be used for purposes other than the settlement of its obligations.
- Substantially all assets can only be used to settle obligations of the VIE.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information, by principal business activity, for consolidated VIEs included in the summary table above.

\$ in millions	As of	
	September 2022	December 2021
Real estate, credit-related and other investing		
<i>Assets</i>		
Cash and cash equivalents	\$ 301	\$ 274
Customer and other receivables	11	—
Trading assets	30	16
Investments	98	153
Loans	1,293	1,988
Other assets	298	314
Total	\$ 2,031	\$ 2,745
<i>Liabilities</i>		
Other secured financings	\$ 132	\$ 150
Customer and other payables	5	34
Trading liabilities	1	7
Other liabilities	128	163
Total	\$ 266	\$ 354
Corporate debt and other asset-backed		
<i>Assets</i>		
Cash and cash equivalents	\$ 617	\$ 227
Trading assets	70	17
Total	\$ 687	\$ 244
<i>Liabilities</i>		
Other secured financings	\$ 940	\$ 602
Total	\$ 940	\$ 602
Principal-protected notes		
<i>Assets</i>		
Trading assets	\$ 45	\$ 89
Total	\$ 45	\$ 89
<i>Liabilities</i>		
Other secured financings	\$ 276	\$ 391
Unsecured short-term borrowings	46	146
Unsecured long-term borrowings	23	81
Total	\$ 345	\$ 618

In the table above:

- The majority of the assets in principal-protected notes VIEs are intercompany and are eliminated in consolidation.
- Creditors and beneficial interest holders of real estate, credit-related and other investing VIEs do not have recourse to the general credit of the firm.

Note 18.

Commitments, Contingencies and Guarantees

Commitments

The table below presents commitments by type.

\$ in millions	As of	
	September 2022	December 2021
Commitment Type		
Commercial lending:		
Investment-grade	\$ 95,229	\$ 95,585
Non-investment-grade	57,231	69,635
Warehouse financing	8,865	10,391
Consumer	61,612	35,941
Total lending	222,937	211,552
Risk participations	9,486	10,016
Collateralized agreement	104,691	101,031
Collateralized financing	33,858	29,561
Investment	7,246	11,381
Other	12,514	9,143
Total commitments	\$ 390,732	\$ 372,684

The table below presents commitments by expiration.

\$ in millions	As of September 2022			
	Remainder of 2022	2023 - 2024	2025 - 2026	2027 - Thereafter
Commitment Type				
Commercial lending:				
Investment-grade	\$ 3,472	\$ 26,957	\$ 41,053	\$ 23,747
Non-investment-grade	2,040	15,452	23,532	16,207
Warehouse financing	—	5,497	2,989	379
Consumer	60,677	935	—	—
Total lending	66,189	48,841	67,574	40,333
Risk participations	243	5,852	2,261	1,130
Collateralized agreement	95,230	9,461	—	—
Collateralized financing	30,495	3,363	—	—
Investment	1,110	1,325	509	4,302
Other	9,315	2,923	28	248
Total commitments	\$ 202,582	\$ 71,765	\$ 70,372	\$ 46,013

Lending Commitments

The firm's commercial and warehouse financing lending commitments are agreements to lend with fixed termination dates and depend on the satisfaction of all contractual conditions to borrowing. These commitments are presented net of amounts syndicated to third parties. The total commitment amount does not necessarily reflect actual future cash flows because the firm may syndicate portions of these commitments. In addition, commitments can expire unused or be reduced or cancelled at the counterparty's request. The firm also provides credit to consumers by issuing credit card lines and through commitments to provide unsecured installment loans.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information about lending commitments.

\$ in millions	As of	
	September 2022	December 2021
Held for investment	\$ 216,644	\$ 197,120
Held for sale	4,820	13,175
At fair value	1,473	1,257
Total	\$ 222,937	\$ 211,552

In the table above:

- Held for investment lending commitments are accounted for at amortized cost. The carrying value of lending commitments was a liability of \$958 million (including allowance for credit losses of \$739 million) as of September 2022 and \$1.05 billion (including allowance for credit losses of \$776 million) as of December 2021. The estimated fair value of such lending commitments was a liability of \$6.70 billion as of September 2022 and \$4.17 billion as of December 2021. Had these lending commitments been carried at fair value and included in the fair value hierarchy, \$4.00 billion as of September 2022 and \$1.91 billion as of December 2021 would have been classified in level 2, and \$2.70 billion as of September 2022 and \$2.26 billion as of December 2021 would have been classified in level 3.
- Held for sale lending commitments are accounted for at the lower of cost or fair value. The carrying value of lending commitments held for sale was a liability of \$130 million as of September 2022 and \$91 million as of December 2021. The estimated fair value of such lending commitments approximates the carrying value. Had these lending commitments been included in the fair value hierarchy, they would have been primarily classified in level 3 as of both September 2022 and December 2021.
- Gains or losses related to lending commitments at fair value, if any, are generally recorded net of any fees in other principal transactions.

Commercial Lending. The firm's commercial lending commitments were primarily extended to investment-grade corporate borrowers. Such commitments primarily included \$123.83 billion as of September 2022 and \$120.99 billion as of December 2021, related to relationship lending activities (principally used for operating and general corporate purposes), and \$10.27 billion as of September 2022 and \$21.07 billion as of December 2021, related to other investment banking activities (generally extended for contingent acquisition financing and are often intended to be short-term in nature, as borrowers often seek to replace them with other funding sources). The firm also extends lending commitments in connection with other types of corporate lending, as well as commercial real estate financing. See Note 9 for further information about funded loans.

To mitigate the credit risk associated with the firm's commercial lending activities, the firm obtains credit protection on certain loans and lending commitments through credit default swaps, both single-name and index-based contracts, and through the issuance of credit-linked notes.

Warehouse Financing. The firm provides financing to clients who warehouse financial assets. These arrangements are secured by the warehoused assets, primarily consisting of residential real estate, consumer and corporate loans.

Consumer. The firm's consumer lending commitments includes:

- Credit card lines issued by the firm to consumers of \$60.66 billion as of September 2022 and \$33.97 billion as of December 2021. These credit card lines are cancellable by the firm. The increase in credit card lending commitments from December 2021 to September 2022 reflected approximately \$15.0 billion relating to the firm's acquisition of the General Motors co-branded credit card portfolio in February 2022. In addition, consumer lending commitments as of December 2021 included a commitment of approximately \$2.0 billion to acquire the outstanding credit card loans related to the General Motors co-branded credit card portfolio.
- Commitments to provide unsecured installment loans to consumers of \$957 million as of September 2022 and \$9 million as of December 2021. The increase in these commitments from December 2021 to September 2022 primarily relates to commitments extended in connection with point-of-sale financing.

Risk Participations

The firm also risk participates certain of its commercial lending commitments to other financial institutions. In the event of a risk participant's default, the firm will be responsible to fund the borrower.

Collateralized Agreement Commitments/ Collateralized Financing Commitments

Collateralized agreement commitments includes forward starting resale and securities borrowing agreements, and collateralized financing commitments includes forward starting repurchase and secured lending agreements that settle at a future date, generally within three business days. Collateralized agreement commitments also includes transactions where the firm has entered into commitments to provide contingent financing to its clients and counterparties through resale agreements. The firm's funding of these commitments depends on the satisfaction of all contractual conditions to the resale agreement and these commitments can expire unused.

Notes to Consolidated Financial Statements (Unaudited)

Investment Commitments

Investment commitments includes commitments to invest in private equity, real estate and other assets directly and through funds that the firm raises and manages. Investment commitments included \$1.34 billion as of September 2022 and \$1.60 billion as of December 2021, related to commitments to invest in funds managed by the firm. If these commitments are called, they would be funded at market value on the date of investment.

Investment commitments as of December 2021 included approximately \$1.90 billion related to the firm's commitment to acquire NNIP and approximately \$2.0 billion related to the firm's commitment to acquire GreenSky. These acquisitions were completed in the first half of 2022. See Note 12 for information about these acquisitions. In addition, as of December 2021, the firm had an undrawn commitment of approximately \$600 million (included within other commitments) to GreenSky to acquire loans originated by GreenSky's bank partners, which was terminated upon completion of the acquisition.

Contingencies

Legal Proceedings. See Note 27 for information about legal proceedings.

Guarantees

The table below presents derivatives that meet the definition of a guarantee, securities lending and clearing guarantees and certain other financial guarantees.

<i>\$ in millions</i>	Derivatives	Securities lending and clearing	Other financial guarantees
As of September 2022			
Carrying Value of Net Liability	\$ 7,849	\$ —	\$ 400
Maximum Payout/Notional Amount by Period of Expiration			
Remainder of 2022	\$ 21,519	\$ 14,041	\$ 499
2023 - 2024	145,915	—	3,757
2025 - 2026	37,383	—	2,376
2027 - thereafter	33,490	—	421
Total	\$ 238,307	\$ 14,041	\$ 7,053
As of December 2021			
Carrying Value of Net Liability	\$ 3,406	\$ —	\$ 234
Maximum Payout/Notional Amount by Period of Expiration			
2022	\$ 68,212	\$ 11,046	\$ 871
2023 - 2024	48,273	—	3,608
2025 - 2026	19,706	—	2,015
2027 - thereafter	30,006	—	97
Total	\$ 166,197	\$ 11,046	\$ 6,591

In the table above:

- The maximum payout is based on the notional amount of the contract and does not represent anticipated losses.
- Amounts exclude certain commitments to issue standby letters of credit that are included in lending commitments. See the tables in "Commitments" above for a summary of the firm's commitments.

- The carrying value for derivatives included derivative assets of \$682 million as of September 2022 and \$1.10 billion as of December 2021, and derivative liabilities of \$8.53 billion as of September 2022 and \$4.51 billion as of December 2021.

Derivative Guarantees. The firm enters into various derivatives that meet the definition of a guarantee under U.S. GAAP, including written equity and commodity put options, written currency contracts and interest rate caps, floors and swaptions. These derivatives are risk managed together with derivatives that do not meet the definition of a guarantee, and therefore the amounts in the table above do not reflect the firm's overall risk related to derivative activities. Disclosures about derivatives are not required if they may be cash settled and the firm has no basis to conclude it is probable that the counterparties held the underlying instruments at the inception of the contract. The firm has concluded that these conditions have been met for certain large, internationally active commercial and investment bank counterparties, central clearing counterparties, hedge funds and certain other counterparties. Accordingly, the firm has not included such contracts in the table above. See Note 7 for information about credit derivatives that meet the definition of a guarantee, which are not included in the table above.

Derivatives are accounted for at fair value and therefore the carrying value is considered the best indication of payment/performance risk for individual contracts. However, the carrying values in the table above exclude the effect of counterparty and cash collateral netting.

Securities Lending and Clearing Guarantees. Securities lending and clearing guarantees include the indemnifications and guarantees that the firm provides in its capacity as an agency lender and in its capacity as a sponsoring member of the Fixed Income Clearing Corporation.

As an agency lender, the firm indemnifies most of its securities lending customers against losses incurred in the event that borrowers do not return securities and the collateral held is insufficient to cover the market value of the securities borrowed. The maximum payout of such indemnifications was \$14.04 billion as of September 2022 and \$11.05 billion as of December 2021. Collateral held by the lenders in connection with securities lending indemnifications was \$14.50 billion as of September 2022 and \$11.36 billion as of December 2021. Because the contractual nature of these arrangements requires the firm to obtain collateral with a market value that exceeds the value of the securities lent to the borrower, there is minimal performance risk associated with these indemnifications.

Notes to Consolidated Financial Statements (Unaudited)

As a sponsoring member of the Government Securities Division of the Fixed Income Clearing Corporation, the firm guarantees the performance of its sponsored member clients to the Fixed Income Clearing Corporation in connection with certain resale and repurchase agreements. To minimize potential losses on such guarantees, the firm obtains a security interest in the collateral that the sponsored client placed with the Fixed Income Clearing Corporation. Therefore, the risk of loss on such guarantees is minimal. There were no amounts outstanding under the guarantee as of both September 2022 and December 2021.

Other Financial Guarantees. In the ordinary course of business, the firm provides other financial guarantees of the obligations of third parties (e.g., standby letters of credit and other guarantees to enable clients to complete transactions and fund-related guarantees). These guarantees represent obligations to make payments to beneficiaries if the guaranteed party fails to fulfill its obligation under a contractual arrangement with that beneficiary. Other financial guarantees also include a guarantee that the firm has provided to the Government of Malaysia that it will receive, by August 2025, at least \$1.4 billion in assets and proceeds from assets seized by governmental authorities around the world related to 1Malaysia Development Berhad, a sovereign wealth fund in Malaysia (1MDB). In connection with this guarantee, the firm is also required to make a one-time interim payment of \$250 million towards the \$1.4 billion if the Government of Malaysia has not received at least \$500 million in assets and proceeds by August 2022. The firm considers the reports that it receives on a semi-annual basis, expected in February and August, in evaluating the progress of Malaysia's recovery efforts. In the latest report as of August 2022, the Government of Malaysia unilaterally reduced the value of one asset previously included in its prior reports by \$80 million and declined to include substantial additional assets in its accounting of assets and proceeds recovered. The firm and the Government of Malaysia disagree about, and continue to discuss, whether the Government of Malaysia did, in fact, recover at least \$500 million as of August 2022 and whether any interim payment was due. Pursuant to their August 2020 agreement, the parties have a three-month period to try to resolve this dispute, which has commenced. If the parties are unable to reach such a resolution, this dispute would be settled by arbitration. Any amounts paid by the firm would, in any event, be subject to reimbursement in the event the assets and proceeds received by the Government of Malaysia through August 18, 2028 exceed \$1.4 billion. See Note 27 for further information about matters related to 1MDB.

Guarantees of Securities Issued by Trusts. The firm has established trusts, including Goldman Sachs Capital I, Goldman Sachs Capital II and Goldman Sachs Capital III (the Trusts), and other entities, for the limited purpose of issuing securities to third parties, lending the proceeds to the firm and entering into contractual arrangements with the firm and third parties related to this purpose. The firm does not consolidate these entities. See Notes 14 and 19 for further information about the transactions involving the Trusts.

The firm effectively provides for the full and unconditional guarantee of the securities issued by these entities. Timely payment by the firm of amounts due to these entities under the guarantee, borrowing, preferred stock and related contractual arrangements will be sufficient to cover payments due on the securities issued by these entities. No subsidiary of Group Inc. guarantees the securities of the Trusts.

Management believes that it is unlikely that any circumstances will occur, such as nonperformance on the part of paying agents or other service providers, that would make it necessary for the firm to make payments related to these entities other than those required under the terms of the guarantee, borrowing, preferred stock and related contractual arrangements and in connection with certain expenses incurred by these entities.

Indemnities and Guarantees of Service Providers. In the ordinary course of business, the firm indemnifies and guarantees certain service providers, such as clearing and custody agents, trustees and administrators, against specified potential losses in connection with their acting as an agent of, or providing services to, the firm or its affiliates.

The firm may also be liable to some clients or other parties for losses arising from its custodial role or caused by acts or omissions of third-party service providers, including sub-custodians and third-party brokers. In certain cases, the firm has the right to seek indemnification from these third-party service providers for certain relevant losses incurred by the firm. In addition, the firm is a member of payment, clearing and settlement networks, as well as securities exchanges around the world that may require the firm to meet the obligations of such networks and exchanges in the event of member defaults and other loss scenarios.

In connection with the firm's prime brokerage and clearing businesses, the firm agrees to clear and settle transactions entered into by clients with other brokerage firms. The firm's obligations in respect of such transactions are secured by the assets in the client's account and proceeds received from the transactions cleared and settled by the firm on behalf of the client. In connection with joint venture investments, the firm may issue loan guarantees under which it may be liable in the event of fraud, misappropriation, environmental liabilities and other matters involving the borrower.

Notes to Consolidated Financial Statements (Unaudited)

The firm is unable to develop an estimate of the maximum payout under these guarantees and indemnifications. However, management believes that it is unlikely the firm will have to make any material payments under these arrangements, and no material liabilities related to these guarantees and indemnifications have been recognized in the consolidated balance sheets as of both September 2022 and December 2021.

Other Representations, Warranties and Indemnifications. The firm provides representations and warranties to counterparties in connection with a variety of commercial transactions and occasionally indemnifies them against potential losses caused by the breach of those representations and warranties. The firm may also provide indemnifications protecting against changes in or adverse application of certain U.S. tax laws in connection with ordinary-course transactions, such as securities issuances, borrowings or derivatives.

In addition, the firm may provide indemnifications to some counterparties to protect them in the event additional taxes are owed or payments are withheld, due either to a change in or an adverse application of certain non-U.S. tax laws.

These indemnifications generally are standard contractual terms and are entered into in the ordinary course of business. Generally, there are no stated or notional amounts included in these indemnifications, and the contingencies triggering the obligation to indemnify are not expected to occur. The firm is unable to develop an estimate of the maximum payout under these guarantees and indemnifications. However, management believes that it is unlikely the firm will have to make any material payments under these arrangements, and no material liabilities related to these arrangements have been recognized in the consolidated balance sheets as of both September 2022 and December 2021.

Guarantees of Subsidiaries. Group Inc. is the entity that fully and unconditionally guarantees the securities issued by GS Finance Corp., a wholly-owned finance subsidiary of the firm. Group Inc. has guaranteed the payment obligations of Goldman Sachs & Co. LLC (GS&Co.), GS Bank USA and Goldman Sachs Paris Inc. et Cie, subject to certain exceptions. In addition, Group Inc. has provided guarantees to Goldman Sachs International (GSI) and GSBE related to agreements that each entity has entered into with certain of its counterparties. Group Inc. guarantees many of the obligations of its other consolidated subsidiaries on a transaction-by-transaction basis, as negotiated with counterparties. Group Inc. is unable to develop an estimate of the maximum payout under its subsidiary guarantees. However, because these obligations are also obligations of consolidated subsidiaries, Group Inc.'s liabilities as guarantor are not separately disclosed.

Note 19.

Shareholders' Equity

Common Equity

As of both September 2022 and December 2021, the firm had 4.00 billion authorized shares of common stock and 200 million authorized shares of nonvoting common stock, each with a par value of \$0.01 per share. During the first quarter of 2022, in connection with the acquisition of GreenSky, the firm issued approximately 5.5 million shares of common stock, including approximately 325,000 shares subject to future service.

The firm's share repurchase program is intended to help maintain the appropriate level of common equity. The share repurchase program is effected primarily through regular open-market purchases (which may include repurchase plans designed to comply with Rule 10b5-1 and accelerated share repurchases), the amounts and timing of which are determined primarily by the firm's current and projected capital position, and capital deployment opportunities, but which may also be influenced by general market conditions and the prevailing price and trading volumes of the firm's common stock.

The table below presents information about common stock repurchases.

	Three Months Ended September		Nine Months Ended September	
<i>in millions, except per share amounts</i>	2022	2021	2022	2021
Common share repurchases	3.0	2.5	5.9	14.1
Average cost per share	\$ 332.32	\$ 395.28	\$ 337.32	\$ 333.61
Total cost of common share repurchases	\$ 1,000	\$ 1,000	\$ 2,000	\$ 4,700

Pursuant to the terms of certain share-based compensation plans, employees may remit shares to the firm or the firm may cancel share-based awards to satisfy statutory employee tax withholding requirements. Under these plans, during the nine months ended September 2022, 11,644 shares were remitted with a total value of \$4 million and the firm cancelled 4.6 million share-based awards with a total value of \$1.59 billion.

The table below presents common stock dividends declared.

	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Dividends declared per common share	\$ 2.50	\$ 2.00	\$ 6.50	\$ 4.50

On October 17, 2022, the Board of Directors of Group Inc. (Board) declared a dividend of \$2.50 per common share to be paid on December 29, 2022 to common shareholders of record on December 1, 2022.

Notes to Consolidated Financial Statements

(Unaudited)

Preferred Equity

The tables below present information about the perpetual preferred stock issued and outstanding as of September 2022.

Series	Shares Authorized	Shares Issued	Shares Outstanding	Depository Shares Per Share
A	50,000	30,000	29,999	1,000
C	25,000	8,000	8,000	1,000
D	60,000	54,000	53,999	1,000
E	17,500	7,667	7,667	N/A
F	5,000	1,615	1,615	N/A
J	46,000	40,000	40,000	1,000
K	32,200	28,000	28,000	1,000
O	26,000	26,000	26,000	25
P	66,000	60,000	60,000	25
Q	20,000	20,000	20,000	25
R	24,000	24,000	24,000	25
S	14,000	14,000	14,000	25
T	27,000	27,000	27,000	25
U	30,000	30,000	30,000	25
V	30,000	30,000	30,000	25
Total	472,700	400,282	400,280	

Series	Earliest Redemption Date	Liquidation Preference	Redemption Value (\$ in millions)
A	Currently redeemable	\$ 25,000	\$ 750
C	Currently redeemable	\$ 25,000	200
D	Currently redeemable	\$ 25,000	1,350
E	Currently redeemable	\$ 100,000	767
F	Currently redeemable	\$ 100,000	161
J	May 10, 2023	\$ 25,000	1,000
K	May 10, 2024	\$ 25,000	700
O	November 10, 2026	\$ 25,000	650
P	November 10, 2022	\$ 25,000	1,500
Q	August 10, 2024	\$ 25,000	500
R	February 10, 2025	\$ 25,000	600
S	February 10, 2025	\$ 25,000	350
T	May 10, 2026	\$ 25,000	675
U	August 10, 2026	\$ 25,000	750
V	November 10, 2026	\$ 25,000	750
Total		\$	10,703

In the tables above:

- All shares have a par value of \$0.01 per share and, where applicable, each share is represented by the specified number of depository shares.
- The earliest redemption date represents the date on which each share of non-cumulative preferred stock is redeemable at the firm's option.
- Prior to redeeming preferred stock, the firm must receive approval from the FRB.

- The redemption price per share for Series A through F and Series Q through V Preferred Stock is the liquidation preference plus declared and unpaid dividends. The redemption price per share for Series J through P Preferred Stock is the liquidation preference plus accrued and unpaid dividends.
- All series of preferred stock are pari passu and have a preference over the firm's common stock on liquidation.
- The firm's ability to declare or pay dividends on, or purchase, redeem or otherwise acquire, its common stock is subject to certain restrictions in the event that the firm fails to pay or set aside full dividends on the preferred stock for the latest completed dividend period.
- Series E and Series F Preferred Stock are held by Goldman Sachs Capital II and Goldman Sachs Capital III, respectively. These trusts are Delaware statutory trusts sponsored by the firm and wholly-owned finance subsidiaries of the firm for regulatory and legal purposes but are not consolidated for accounting purposes.

In the first half of 2021, the firm redeemed all outstanding shares of its (i) Series N 6.30% Non-Cumulative Preferred Stock with a redemption value of \$675 million (\$25,000 per share), plus accrued and unpaid dividends and (ii) Series M 5.375% Fixed-to-Floating Rate Non-Cumulative Preferred Stock with a redemption value of \$2 billion (\$25,000 per share), plus accrued and unpaid dividends. The difference between the redemption value and net carrying value at the time of these redemptions was \$41 million, which was recorded as an addition to preferred stock dividends in the first half of 2021.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents the dividend rates of perpetual preferred stock as of September 2022.

Series	Per Annum Dividend Rate
A	3 month LIBOR + 0.75%, with floor of 3.75%, payable quarterly
C	3 month LIBOR + 0.75%, with floor of 4.00%, payable quarterly
D	3 month LIBOR + 0.67%, with floor of 4.00%, payable quarterly
E	3 month LIBOR + 0.7675%, with floor of 4.00%, payable quarterly
F	3 month LIBOR + 0.77%, with floor of 4.00%, payable quarterly
J	5.50% to, but excluding, May 10, 2023; 3 month LIBOR + 3.64% thereafter, payable quarterly
K	6.375% to, but excluding, May 10, 2024; 3 month LIBOR + 3.55% thereafter, payable quarterly
O	5.30%, payable semi-annually, from issuance date to, but excluding, November 10, 2026; 3 month LIBOR + 3.834%, payable quarterly, thereafter
P	5.00%, payable semi-annually, from issuance date to, but excluding, November 10, 2022; 3 month LIBOR + 2.874%, payable quarterly, thereafter
Q	5.50%, payable semi-annually, from issuance date to, but excluding, August 10, 2024; 5 year treasury rate + 3.623%, payable semi-annually, thereafter
R	4.95%, payable semi-annually, from issuance date to, but excluding, February 10, 2025; 5 year treasury rate + 3.224%, payable semi-annually, thereafter
S	4.40%, payable semi-annually, from issuance date to, but excluding, February 10, 2025; 5 year treasury rate + 2.85%, payable semi-annually thereafter
T	3.80%, payable semi-annually, from issuance date to, but excluding, May 10, 2026; 5 year treasury rate + 2.969%, payable semi-annually, thereafter
U	3.65%, payable semi-annually, from issuance date to, but excluding, August 10, 2026; 5 year treasury rate + 2.915%, payable semi-annually, thereafter
V	4.125%, payable semi-annually, from issuance date to, but excluding, November 10, 2026; 5 year treasury rate + 2.949%, payable semi-annually, thereafter

In the table above, dividends on each series of preferred stock are payable in arrears for the periods specified.

The table below presents preferred stock dividends declared.

Series	2022		2021	
	per share	\$ in millions	per share	\$ in millions
Three Months Ended September				
A	\$ 239.58	\$ 7	\$ 239.58	\$ 7
C	\$ 255.56	2	\$ 255.56	2
D	\$ 255.56	14	\$ 255.56	14
E	\$ 1,022.22	7	\$ 1,022.22	8
F	\$ 1,022.22	2	\$ 1,022.22	2
J	\$ 343.75	13	\$ 343.75	14
K	\$ 398.44	11	\$ 398.44	11
Q	\$ 687.50	14	\$ 687.50	14
R	\$ 618.75	15	\$ 618.75	15
S	\$ 550.00	8	\$ 550.00	7
U	\$ 456.25	14	\$ —	—
Total	\$	107	\$	94
Nine Months Ended September				
A	\$ 710.93	\$ 21	\$ 710.93	\$ 21
C	\$ 758.34	6	\$ 758.34	6
D	\$ 758.34	41	\$ 758.34	41
E	\$ 3,044.44	23	\$ 3,044.44	23
F	\$ 3,044.44	5	\$ 3,044.44	5
J	\$ 1,031.25	41	\$ 1,031.25	41
K	\$ 1,195.32	33	\$ 1,195.32	33
N	\$ —	—	\$ 787.50	19
O	\$ 662.50	17	\$ 662.50	17
P	\$ 625.00	38	\$ 625.00	38
Q	\$ 1,375.00	28	\$ 1,375.00	28
R	\$ 1,237.50	30	\$ 1,237.50	30
S	\$ 1,100.00	16	\$ 1,100.00	15
T	\$ 475.00	13	\$ —	—
U	\$ 942.92	28	\$ —	—
V	\$ 547.14	16	\$ —	—
Total	\$	356	\$	317

On October 10, 2022, Group Inc. declared dividends of \$239.58 per share of Series A Preferred Stock, \$255.56 per share of Series C Preferred Stock, \$255.56 per share of Series D Preferred Stock, \$343.75 per share of Series J Preferred Stock, \$398.44 per share of Series K Preferred Stock, \$662.50 per share of Series O Preferred Stock, \$625.00 per share of Series P Preferred Stock, \$475.00 per share of Series T Preferred Stock and \$515.63 per share of Series V Preferred Stock to be paid on November 10, 2022 to preferred shareholders of record on October 26, 2022. In addition, the firm declared dividends of \$1,011.11 per share of Series E Preferred Stock and \$1,011.11 per share of Series F Preferred Stock to be paid on December 1, 2022 to preferred shareholders of record on November 16, 2022.

Notes to Consolidated Financial Statements (Unaudited)

Accumulated Other Comprehensive Income/(Loss)

The table below presents changes in accumulated other comprehensive income/(loss), net of tax, by type.

<i>\$ in millions</i>	Beginning balance	Other comprehensive income/(loss) adjustments, net of tax	Ending balance
Three Months Ended September 2022			
Currency translation	\$ (769) \$	26	\$ (743)
Debt valuation adjustment	1,417	673	2,090
Pension and postretirement liabilities	(315)	(2)	(317)
Available-for-sale securities	(2,287)	(615)	(2,902)
Total	\$ (1,954) \$	82	\$ (1,872)
Three Months Ended September 2021			
Currency translation	\$ (712) \$	(20)	\$ (732)
Debt valuation adjustment	(735)	67	(668)
Pension and postretirement liabilities	(361)	—	(361)
Available-for-sale securities	(81)	(114)	(195)
Total	\$ (1,889) \$	(67)	\$ (1,956)
Nine Months Ended September 2022			
Currency translation	\$ (738) \$	(5)	\$ (743)
Debt valuation adjustment	(511)	2,601	2,090
Pension and postretirement liabilities	(327)	10	(317)
Available-for-sale securities	(492)	(2,410)	(2,902)
Total	\$ (2,068) \$	196	\$ (1,872)
Nine Months Ended September 2021			
Currency translation	\$ (696) \$	(36)	\$ (732)
Debt valuation adjustment	(833)	165	(668)
Pension and postretirement liabilities	(368)	7	(361)
Available-for-sale securities	463	(658)	(195)
Total	\$ (1,434) \$	(522)	\$ (1,956)

Note 20.

Regulation and Capital Adequacy

The FRB is the primary regulator of Group Inc., a bank holding company under the U.S. Bank Holding Company Act of 1956 and a financial holding company under amendments to this Act. The firm is subject to consolidated regulatory capital requirements which are calculated in accordance with the regulations of the FRB (Capital Framework).

The capital requirements are expressed as risk-based capital and leverage ratios that compare measures of regulatory capital to risk-weighted assets (RWAs), average assets and off-balance sheet exposures. Failure to comply with these capital requirements would result in restrictions being imposed by the firm's regulators and could limit the firm's ability to repurchase shares, pay dividends and make certain discretionary compensation payments. The firm's capital levels are also subject to qualitative judgments by the regulators about components of capital, risk weightings and other factors. Furthermore, certain of the firm's subsidiaries are subject to separate regulations and capital requirements.

Capital Framework

The regulations under the Capital Framework are largely based on the Basel Committee on Banking Supervision's (Basel Committee) capital framework for strengthening international capital standards (Basel III) and also implement certain provisions of the Dodd-Frank Act. Under the Capital Framework, the firm is an "Advanced approaches" banking organization and has been designated as a global systemically important bank (G-SIB).

The Capital Framework includes the minimum risk-based capital and the capital conservation buffer requirements. The buffer must consist entirely of capital that qualifies as Common Equity Tier 1 (CET1) capital.

The firm calculates its CET1 capital, Tier 1 capital and Total capital ratios in accordance with both the Standardized and Advanced Capital Rules. Each of the ratios calculated under the Standardized and Advanced Capital Rules must meet its respective capital requirements.

Under the Capital Framework, the firm is also subject to leverage requirements which consist of a minimum Tier 1 leverage ratio and a minimum supplementary leverage ratio (SLR), as well as the SLR buffer.

Notes to Consolidated Financial Statements

(Unaudited)

Consolidated Regulatory Capital Requirements

Risk-Based Capital Ratios. The table below presents the risk-based capital requirements.

	Standardized	Advanced
CET1 capital ratio	13.4%	9.5%
Tier 1 capital ratio	14.9%	11.0%
Total capital ratio	16.9%	13.0%

In the table above:

- Under both the Standardized and Advanced Capital Rules, the CET1 capital ratio requirement includes a minimum of 4.5%, the Tier 1 capital ratio requirement includes a minimum of 6.0% and the Total capital ratio requirement includes a minimum of 8.0%. These requirements also include the capital conservation buffer requirements, consisting of the G-SIB surcharge of 2.5% (Method 2) and the countercyclical capital buffer, which the FRB has set to zero percent. In addition, the capital conservation buffer requirements include the stress capital buffer (SCB) of 6.4% under the Standardized Capital Rules and a buffer of 2.5% under the Advanced Capital Rules.
- The G-SIB surcharge is updated annually based on financial data from the prior year and is generally applicable for the following year. The G-SIB surcharge is calculated using two methodologies, the higher of which is reflected in the firm's risk-based capital requirements. The first calculation (Method 1) is based on the Basel Committee's methodology which, among other factors, relies upon measures of the size, activity and complexity of each G-SIB. The second calculation (Method 2) uses similar inputs but includes a measure of reliance on short-term wholesale funding.

Based on the firm's 2022 Comprehensive Capital Analysis and Review (CCAR) submission, the FRB has set the SCB for the firm at 6.3% under the Standardized Capital Rules for the period from October 1, 2022 through September 30, 2023.

The table below presents information about risk-based capital ratios.

<i>\$ in millions</i>	Standardized	Advanced
As of September 2022		
CET1 capital	\$ 98,707	\$ 98,707
Tier 1 capital	\$ 109,214	\$ 109,214
Tier 2 capital	\$ 15,599	\$ 12,555
Total capital	\$ 124,813	\$ 121,769
RWAs	\$ 688,566	\$ 675,075
CET1 capital ratio	14.3%	14.6%
Tier 1 capital ratio	15.9%	16.2%
Total capital ratio	18.1%	18.0%
As of December 2021		
CET1 capital	\$ 96,254	\$ 96,254
Tier 1 capital	\$ 106,766	\$ 106,766
Tier 2 capital	\$ 14,636	\$ 12,051
Total capital	\$ 121,402	\$ 118,817
RWAs	\$ 676,863	\$ 647,921
CET1 capital ratio	14.2%	14.9%
Tier 1 capital ratio	15.8%	16.5%
Total capital ratio	17.9%	18.3%

Leverage Ratios. The table below presents the leverage requirements.

	Requirements
Tier 1 leverage ratio	4.0%
SLR	5.0%

In the table above, the SLR requirement of 5% includes a minimum of 3% and a 2% buffer applicable to G-SIBs.

The table below presents information about leverage ratios.

	For the Three Months Ended or as of	
<i>\$ in millions</i>	September 2022	December 2021
Tier 1 capital	\$ 109,214	\$ 106,766
Average total assets	\$ 1,581,084	\$ 1,466,770
Deductions from Tier 1 capital	(8,333)	(4,583)
Average adjusted total assets	1,572,751	1,462,187
Off-balance sheet and other exposures	382,549	448,334
Total leverage exposure	\$ 1,955,300	\$ 1,910,521
Tier 1 leverage ratio	6.9%	7.3%
SLR	5.6%	5.6%

Notes to Consolidated Financial Statements (Unaudited)

In the table above:

- Average total assets represents the average daily assets for the quarter adjusted for the impact of Current Expected Credit Losses (CECL) transition.
- Off-balance sheet and other exposures primarily includes the monthly average of off-balance sheet exposures, consisting of derivatives, securities financing transactions, commitments and guarantees.
- Tier 1 leverage ratio is calculated as Tier 1 capital divided by average adjusted total assets.
- SLR is calculated as Tier 1 capital divided by total leverage exposure.

Risk-Based Capital. The table below presents information about risk-based capital.

\$ in millions	As of	
	September 2022	December 2021
Common shareholders' equity	\$ 108,587	\$ 99,223
Impact of CECL transition	829	1,105
Deduction for goodwill	(5,606)	(3,610)
Deduction for identifiable intangible assets	(1,717)	(401)
Other adjustments	(3,386)	(63)
CET1 capital	98,707	96,254
Preferred stock	10,703	10,703
Deduction for investments in covered funds	(193)	(189)
Other adjustments	(3)	(2)
Tier 1 capital	\$ 109,214	\$ 106,766
Standardized Tier 2 and Total capital		
Tier 1 capital	\$ 109,214	\$ 106,766
Qualifying subordinated debt	11,011	11,554
Junior subordinated debt	—	94
Allowance for credit losses	4,598	3,034
Other adjustments	(10)	(46)
Standardized Tier 2 capital	15,599	14,636
Standardized Total capital	\$ 124,813	\$ 121,402
Advanced Tier 2 and Total capital		
Tier 1 capital	\$ 109,214	\$ 106,766
Standardized Tier 2 capital	15,599	14,636
Allowance for credit losses	(4,598)	(3,034)
Other adjustments	1,554	449
Advanced Tier 2 capital	12,555	12,051
Advanced Total capital	\$ 121,769	\$ 118,817

In the table above:

- Beginning in January 2022, the firm started to phase in the estimated reduction to regulatory capital as a result of adopting the CECL model. Impact of CECL transition in the table above reflects the total amount of reduction of \$1.11 billion as of December 2021 to be phased in through January 2025 (at 25% per year), of which \$276 million was phased in on January 1, 2022. The total amount to be phased in includes the impact of adopting CECL as of January 1, 2020, as well as 25% of the increase in the allowance for credit losses from January 1, 2020 through December 31, 2021.
- Deduction for goodwill was net of deferred tax liabilities of \$682 million as of September 2022 and \$675 million as of December 2021.
- Deduction for identifiable intangible assets was net of deferred tax liabilities of \$246 million as of September 2022 and \$17 million as of December 2021.
- Deduction for investments in covered funds represents the firm's aggregate investments in applicable covered funds. As of December 2021, this deduction excluded investments that were subject to an extended conformance period. See Note 8 for further information about the Volcker Rule.
- Other adjustments within CET1 capital and Tier 1 capital primarily include credit valuation adjustments on derivative liabilities, the overfunded portion of the firm's defined benefit pension plan obligation net of associated deferred tax liabilities, disallowed deferred tax assets, debt valuation adjustments and other required credit risk-based deductions. Other adjustments within Advanced Tier 2 capital include eligible credit reserves.
- Qualifying subordinated debt is subordinated debt issued by Group Inc. with an original maturity of five years or greater. The outstanding amount of subordinated debt qualifying for Tier 2 capital is reduced upon reaching a remaining maturity of five years. See Note 14 for further information about the firm's subordinated debt.
- Junior subordinated debt is debt issued to a Trust and was fully phased out of regulatory capital on January 1, 2022. As of December 2021, 10% of this debt was included in Tier 2 capital and 90% was phased out of regulatory capital. Junior subordinated debt is reduced by the amount of Trust Preferred securities purchased by the firm. See Note 14 for further information about the firm's junior subordinated debt and Trust Preferred securities.

Notes to Consolidated Financial Statements

(Unaudited)

The table below presents changes in CET1 capital, Tier 1 capital and Tier 2 capital.

<i>\$ in millions</i>	Standardized	Advanced
Nine Months Ended September 2022		
CET1 capital		
Beginning balance	\$ 96,254	\$ 96,254
Change in:		
Common shareholders' equity	9,364	9,364
Impact of CECL transition	(276)	(276)
Deduction for goodwill	(1,996)	(1,996)
Deduction for identifiable intangible assets	(1,316)	(1,316)
Other adjustments	(3,323)	(3,323)
Ending balance	\$ 98,707	\$ 98,707
Tier 1 capital		
Beginning balance	\$ 106,766	\$ 106,766
Change in:		
CET1 capital	2,453	2,453
Deduction for investments in covered funds	(4)	(4)
Other adjustments	(1)	(1)
Ending balance	109,214	109,214
Tier 2 capital		
Beginning balance	14,636	12,051
Change in:		
Qualifying subordinated debt	(543)	(543)
Junior subordinated debt	(94)	(94)
Allowance for credit losses	1,564	—
Other adjustments	36	1,141
Ending balance	15,599	12,555
Total capital	\$ 124,813	\$ 121,769
Year Ended December 2021		
CET1 capital		
Beginning balance	\$ 81,641	\$ 81,641
Change in:		
Common shareholders' equity	14,494	14,494
Impact of CECL transition	(21)	(21)
Deduction for goodwill	42	42
Deduction for identifiable intangible assets	200	200
Other adjustments	(102)	(102)
Ending balance	\$ 96,254	\$ 96,254
Tier 1 capital		
Beginning balance	\$ 92,730	\$ 92,730
Change in:		
CET1 capital	14,613	14,613
Deduction for investments in covered funds	(83)	(83)
Preferred stock	(500)	(500)
Other adjustments	6	6
Ending balance	106,766	106,766
Tier 2 capital		
Beginning balance	15,424	13,279
Change in:		
Qualifying subordinated debt	(642)	(642)
Junior subordinated debt	(94)	(94)
Allowance for credit losses	(61)	—
Other adjustments	9	(492)
Ending balance	14,636	12,051
Total capital	\$ 121,402	\$ 118,817

RWAs. RWAs are calculated in accordance with both the Standardized and Advanced Capital Rules.

Credit Risk

Credit RWAs are calculated based on measures of exposure, which are then risk weighted under the Standardized and Advanced Capital Rules:

- The Standardized Capital Rules apply prescribed risk-weights, which depend largely on the type of counterparty. The exposure measures for derivatives and securities financing transactions are based on specific formulas which take certain factors into consideration.
- Under the Advanced Capital Rules, the firm computes risk-weights for wholesale and retail credit exposures in accordance with the Advanced Internal Ratings-Based approach. The exposure measures for derivatives and securities financing transactions are computed utilizing internal models.
- For both Standardized and Advanced credit RWAs, the risk-weights for securitizations and equities are based on specific required formulaic approaches.

Market Risk

RWAs for market risk in accordance with the Standardized and Advanced Capital Rules are generally consistent. Market RWAs are calculated based on measures of exposure which include the following:

- Value-at-Risk (VaR) is the potential loss in value of trading assets and liabilities, as well as certain investments, loans, and other financial assets and liabilities accounted for at fair value, due to adverse market movements over a defined time horizon with a specified confidence level.

Notes to Consolidated Financial Statements (Unaudited)

For both risk management purposes and regulatory capital calculations, the firm uses a single VaR model which captures risks, including those related to interest rates, equity prices, currency rates and commodity prices. However, VaR used for risk management purposes differs from VaR used for regulatory capital requirements (regulatory VaR) due to differences in time horizons, confidence levels and the scope of positions on which VaR is calculated. For risk management purposes, a 95% one-day VaR is used, whereas for regulatory capital requirements, a 99% 10-day VaR is used to determine Market RWAs and a 99% one-day VaR is used to determine regulatory VaR exceptions. In addition, the daily net revenues used to determine risk management VaR exceptions (i.e., comparing the daily net revenues to the VaR measure calculated as of the end of the prior business day) include intraday activity, whereas the Capital Framework requires that intraday activity be excluded from daily net revenues when calculating regulatory VaR exceptions. Intraday activity includes bid/offer net revenues, which are more likely than not to be positive by their nature. As a result, there may be differences in the number of VaR exceptions and the amount of daily net revenues calculated for regulatory VaR compared to the amounts calculated for risk management VaR.

The firm's positional losses observed on a single day exceeded its 99% one-day regulatory VaR on one occasion during each of the nine months ended September 2022 and the year ended 2021. There was no change in the firm's VaR multiplier used to calculate Market RWAs;

- Stressed VaR is the potential loss in value of trading assets and liabilities, as well as certain investments, loans, and other financial assets and liabilities accounted for at fair value, during a period of significant market stress;
- Incremental risk is the potential loss in value of non-securitized positions due to the default or credit migration of issuers of financial instruments over a one-year time horizon;
- Comprehensive risk is the potential loss in value, due to price risk and defaults, within the firm's credit correlation positions; and
- Specific risk is the risk of loss on a position that could result from factors other than broad market movements, including event risk, default risk and idiosyncratic risk. The standardized measurement method is used to determine specific risk RWAs, by applying supervisory defined risk-weighting factors after applicable netting is performed.

Operational Risk

Operational RWAs are only required to be included under the Advanced Capital Rules. The firm utilizes an internal risk-based model to quantify Operational RWAs.

The table below presents information about RWAs.

<i>\$ in millions</i>	Standardized	Advanced
As of September 2022		
Credit RWAs		
Derivatives	\$168,177	\$122,589
Commitments, guarantees and loans	242,565	179,657
Securities financing transactions	77,807	22,339
Equity investments	31,527	33,165
Other	81,992	96,202
Total Credit RWAs	602,068	453,952
Market RWAs		
Regulatory VaR	22,156	22,156
Stressed VaR	36,208	36,208
Incremental risk	9,324	9,324
Comprehensive risk	3,485	3,485
Specific risk	15,325	15,325
Total Market RWAs	86,498	86,498
Total Operational RWAs	—	134,625
Total RWAs	\$688,566	\$675,075
As of December 2021		
Credit RWAs		
Derivatives	\$175,628	\$109,532
Commitments, guarantees and loans	233,639	182,210
Securities financing transactions	76,346	14,407
Equity investments	43,256	45,582
Other	71,485	86,768
Total Credit RWAs	600,354	438,499
Market RWAs		
Regulatory VaR	13,510	13,510
Stressed VaR	38,922	38,922
Incremental risk	6,867	6,867
Comprehensive risk	2,521	2,521
Specific risk	14,689	14,689
Total Market RWAs	76,509	76,509
Total Operational RWAs	—	132,913
Total RWAs	\$676,863	\$647,921

In the table above:

- Securities financing transactions represents resale and repurchase agreements and securities borrowed and loaned transactions.
- Other includes receivables, certain debt securities, cash and cash equivalents, and other assets.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents changes in RWAs.

<i>\$ in millions</i>	Standardized	Advanced
Nine Months Ended September 2022		
RWAs		
Beginning balance	\$676,863	\$647,921
Credit RWAs		
Change in:		
Derivatives	(7,451)	13,057
Commitments, guarantees and loans	8,926	(2,553)
Securities financing transactions	1,461	7,932
Equity investments	(11,729)	(12,417)
Other	10,507	9,434
Change in Credit RWAs	1,714	15,453
Market RWAs		
Change in:		
Regulatory VaR	8,646	8,646
Stressed VaR	(2,714)	(2,714)
Incremental risk	2,457	2,457
Comprehensive risk	964	964
Specific risk	636	636
Change in Market RWAs	9,989	9,989
Change in Operational RWAs	—	1,712
Ending balance	\$688,566	\$675,075
Year Ended December 2021		
RWAs		
Beginning balance	\$554,162	\$609,750
Credit RWAs		
Change in:		
Derivatives	55,336	(2,159)
Commitments, guarantees and loans	57,138	30,623
Securities financing transactions	4,919	(2,161)
Equity investments	(3,688)	(3,686)
Other	1,211	3,169
Change in Credit RWAs	114,916	25,786
Market RWAs		
Change in:		
Regulatory VaR	(1,403)	(1,403)
Stressed VaR	6,944	6,944
Incremental risk	(1,015)	(1,015)
Comprehensive risk	763	763
Specific risk	2,496	2,496
Change in Market RWAs	7,785	7,785
Change in Operational RWAs	—	4,600
Ending balance	\$676,863	\$647,921

RWAs Rollforward Commentary

Nine Months Ended September 2022. Standardized Credit RWAs as of September 2022 increased by \$1.71 billion compared with December 2021, primarily reflecting an increase in other credit RWAs (principally due to increased customer and other receivables and other assets) and an increase in commitments, guarantees and loans (principally due to increased lending activity). These increases were partially offset by a decrease in equity investments (principally due to reduced exposures as a result of unrealized losses and sales) and a decrease in derivatives (principally due to reduced exposures). Standardized Market RWAs as of September 2022 increased by \$9.99 billion compared with December 2021, primarily reflecting an increase in regulatory VaR (principally due to higher levels of market volatility).

Advanced Credit RWAs as of September 2022 increased by \$15.45 billion compared with December 2021, primarily reflecting an increase in derivatives (principally due to increased counterparty credit risk), an increase in other credit RWAs (principally due to increased customer and other receivables and other assets) and an increase in securities financing transactions (principally due to increased funding exposures). These increases were partially offset by a decrease in equity investments (principally due to reduced exposures as a result of unrealized losses and sales). Advanced Market RWAs as of September 2022 increased by \$9.99 billion compared with December 2021, primarily reflecting an increase in regulatory VaR (principally due to higher levels of market volatility). Advanced Operational RWAs as of September 2022 increased by \$1.71 billion compared with December 2021, primarily associated with litigation and regulatory proceedings.

Year Ended December 2021. Standardized Credit RWAs as of December 2021 increased by \$114.92 billion compared with December 2020, primarily reflecting an increase in commitments, guarantees and loans (principally due to increased lending activity and revisions to certain interpretations of the Capital Rules underlying the RWA calculation based on regulatory feedback) and an increase in derivatives (principally due to increased exposures and the impact of SA-CCR adoption). Standardized Market RWAs as of December 2021 increased by \$7.79 billion compared with December 2020, primarily reflecting an increase in stressed VaR (principally due to increased exposures to interest rates).

Advanced Credit RWAs as of December 2021 increased by \$25.79 billion compared with December 2020, primarily reflecting an increase in commitments, guarantees and loans (principally due to increased lending activity). This increase was partially offset by a decrease in equity investments (principally due to the sale of equity positions). Advanced Market RWAs as of December 2021 increased by \$7.79 billion compared with December 2020, primarily reflecting an increase in stressed VaR (principally due to increased exposures to interest rates). Advanced Operational RWAs as of December 2021 increased by \$4.60 billion compared with December 2020, primarily associated with litigation and regulatory proceedings.

Notes to Consolidated Financial Statements (Unaudited)

Bank Subsidiaries

GS Bank USA. GS Bank USA is the firm's primary U.S. bank subsidiary. GS Bank USA is an FDIC-insured, New York State-chartered bank and a member of the Federal Reserve System, is supervised and regulated by the FRB, the FDIC, the New York State Department of Financial Services (NYDFS) and the Consumer Financial Protection Bureau, and is subject to regulatory capital requirements that are calculated under the Capital Framework. GS Bank USA is an Advanced approaches banking organization under the Capital Framework.

The Capital Framework includes the minimum risk-based capital and the capital conservation buffer requirements (consisting of a 2.5% buffer and the countercyclical capital buffer). The buffer must consist entirely of capital that qualifies as CET1 capital. In addition, the Capital Framework includes the leverage ratio requirement.

GS Bank USA is required to calculate the CET1 capital, Tier 1 capital and Total capital ratios in accordance with both the Standardized and Advanced Capital Rules. The lower of each risk-based capital ratio under the Standardized and Advanced Capital Rules is the ratio against which GS Bank USA's compliance with its risk-based capital requirements is assessed. In addition, under the regulatory framework for prompt corrective action applicable to GS Bank USA, in order to meet the quantitative requirements for a "well-capitalized" depository institution, GS Bank USA must also meet the "well-capitalized" requirements in the table below. GS Bank USA's capital levels and prompt corrective action classification are also subject to qualitative judgments by the regulators about components of capital, risk weightings and other factors. Failure to comply with the capital requirements, including a breach of the buffers described below, would result in restrictions being imposed by the regulators.

The table below presents GS Bank USA's risk-based capital, leverage and "well-capitalized" requirements.

	Requirements	"Well-capitalized" Requirements
Risk-based capital requirements		
CET1 capital ratio	7.0%	6.5%
Tier 1 capital ratio	8.5%	8.0%
Total capital ratio	10.5%	10.0%
Leverage requirements		
Tier 1 leverage ratio	4.0%	5.0%
SLR	3.0%	6.0%

In the table above:

- The CET1 capital ratio requirement includes a minimum of 4.5%, the Tier 1 capital ratio requirement includes a minimum of 6.0% and the Total capital ratio requirement includes a minimum of 8.0%. These requirements also include the capital conservation buffer requirements consisting of a 2.5% buffer and the countercyclical capital buffer, which the FRB has set to zero percent.
- The "well-capitalized" requirements are the binding requirements for leverage ratios.

The table below presents information about GS Bank USA's risk-based capital ratios.

<i>\$ in millions</i>	Standardized	Advanced
As of September 2022		
CET1 capital	\$ 45,578	\$ 45,578
Tier 1 capital	\$ 45,578	\$ 45,578
Tier 2 capital	\$ 7,728	\$ 5,312
Total capital	\$ 53,306	\$ 50,890
RWAs	\$ 343,781	\$ 261,371
CET1 capital ratio	13.3%	17.4%
Tier 1 capital ratio	13.3%	17.4%
Total capital ratio	15.5%	19.5%
As of December 2021		
CET1 capital	\$ 42,535	\$ 42,535
Tier 1 capital	\$ 42,535	\$ 42,535
Tier 2 capital	\$ 6,430	\$ 4,646
Total capital	\$ 48,965	\$ 47,181
RWAs	\$ 312,601	\$ 222,607
CET1 capital ratio	13.6%	19.1%
Tier 1 capital ratio	13.6%	19.1%
Total capital ratio	15.7%	21.2%

In the table above:

- The lower of the Standardized or Advanced ratio is the ratio against which GS Bank USA's compliance with the capital requirements is assessed under the risk-based Capital Rules, and therefore, the Standardized ratios applied to GS Bank USA as of both September 2022 and December 2021.
- Beginning in January 2022, GS Bank USA started to phase in the estimated reduction to regulatory capital as a result of adopting the CECL model. The total amount to be phased in includes the impact of adopting CECL as of January 1, 2020, as well as 25% of the increase in the allowance for credit losses from January 1, 2020 through December 31, 2021.
- The Standardized and Advanced risk-based capital ratios decreased from December 2021 to September 2022, reflecting an increase in both Credit and Market RWAs, partially offset by an increase in capital, principally due to capital contributions and net earnings.

Notes to Consolidated Financial Statements

(Unaudited)

The table below presents information about GS Bank USA's leverage ratios.

	For the Three Months Ended or as of	
	September 2022	December 2021
<i>\$ in millions</i>		
Tier 1 capital	\$ 45,578	\$ 42,535
Average adjusted total assets	\$ 506,003	\$ 409,739
Total leverage exposure	\$ 670,832	\$ 627,799
Tier 1 leverage ratio	9.0%	10.4%
SLR	6.8%	6.8%

In the table above:

- Average adjusted total assets represents the average daily assets for the quarter adjusted for deductions from Tier 1 capital and the impact of CECL transition.
- Tier 1 leverage ratio is calculated as Tier 1 capital divided by average adjusted total assets.
- SLR is calculated as Tier 1 capital divided by total leverage exposure.

The deposits of GS Bank USA are insured by the FDIC to the extent provided by law. The FRB requires that GS Bank USA maintain cash reserves with the Federal Reserve. As of both September 2022 and December 2021, the reserve requirement ratio was zero percent. The amount deposited by GS Bank USA at the Federal Reserve was \$161.28 billion as of September 2022 and \$122.01 billion as of December 2021.

GS Bank USA is a registered swap dealer with the CFTC and a registered security-based swap dealer with the SEC. As of both September 2022 and December 2021, GS Bank USA was subject to and in compliance with applicable capital requirements for swap dealers and security-based swap dealers.

GSIB. GSIB is the firm's U.K. bank subsidiary regulated by the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA). GSIB is subject to the U.K. capital framework, which is largely based on Basel III.

The table below presents GSIB's risk-based capital requirements.

	As of	
	September 2022	December 2021
Risk-based capital requirements		
CET1 capital ratio	9.3%	8.5%
Tier 1 capital ratio	11.5%	10.5%
Total capital ratio	14.5%	13.2%

The table below presents information about GSIB's risk-based capital ratios.

	As of	
	September 2022	December 2021
<i>\$ in millions</i>		
Risk-based capital and risk-weighted assets		
CET1 capital	\$ 3,329	\$ 3,408
Tier 1 capital	\$ 3,329	\$ 3,408
Tier 2 capital	\$ 826	\$ 826
Total capital	\$ 4,155	\$ 4,234
RWAs	\$ 15,542	\$ 17,196
Risk-based capital ratios		
CET1 capital ratio	21.4%	19.8%
Tier 1 capital ratio	21.4%	19.8%
Total capital ratio	26.7%	24.6%

In the table above, the risk-based capital ratios as of September 2022 reflected profits after foreseeable charges that are still subject to verification by GSIB's external auditors and approval by GSIB's Board of Directors for inclusion in risk-based capital. These profits contributed approximately 160 basis points to the CET1 capital ratio as of September 2022.

The eligible retail deposits of GSIB are covered by the U.K. Financial Services Compensation Scheme to the extent provided by law. GSIB is subject to minimum reserve requirements at the Bank of England. The minimum reserve requirement was \$146 million as of September 2022 and \$172 million as of December 2021. The amount deposited by GSIB at the Bank of England was \$710 million as of September 2022 and \$2.20 billion as of December 2021.

GSBE. GSBE is the firm's German bank subsidiary supervised by the European Central Bank, BaFin and Deutsche Bundesbank. GSBE is a non-U.S. banking subsidiary of GS Bank USA and is also subject to standalone regulatory capital requirements noted below. GSBE is subject to the capital requirements prescribed in the amended E.U. Capital Requirements Directive (CRD) and E.U. Capital Requirements Regulation (CRR), which are largely based on Basel III.

The table below presents GSBE's risk-based capital requirements.

	As of	
	September 2022	December 2021
Risk-based capital requirements		
CET1 capital ratio	9.0%	8.7%
Tier 1 capital ratio	11.1%	10.8%
Total capital ratio	13.8%	13.5%

Notes to Consolidated Financial Statements (Unaudited)

The table below presents information about GSBE's risk-based capital ratios.

\$ in millions	As of	
	September 2022	December 2021
Risk-based capital and risk-weighted assets		
CET1 capital	\$ 8,587	\$ 6,527
Tier 1 capital	\$ 8,587	\$ 6,527
Tier 2 capital	\$ 20	\$ 23
Total capital	\$ 8,607	\$ 6,550
RWAs	\$ 31,440	\$ 28,924
Risk-based capital ratios		
CET1 capital ratio	27.3%	22.6%
Tier 1 capital ratio	27.3%	22.6%
Total capital ratio	27.4%	22.6%

In the table above, the risk-based capital ratios as of September 2022 reflected profits after foreseeable charges that are still subject to verification by GSBE's external auditors and approval by GSBE's shareholder (GS Bank USA) for inclusion in risk-based capital. These profits contributed approximately 116 basis points to the CET1 capital ratio as of September 2022.

The table below presents GSBE's leverage ratio requirement and leverage ratios.

	As of	
	September 2022	December 2021
Leverage ratio requirement	3.0%	3.0%
Leverage ratio	7.8%	7.6%

In the table above, the leverage ratio as of September 2022 reflected profits after foreseeable charges that are still subject to verification by GSBE's external auditors and approval by GSBE's shareholder (GS Bank USA) for inclusion in risk-based capital. These profits contributed approximately 33 basis points to the leverage ratio as of September 2022.

The deposits of GSBE are covered by the German statutory deposit protection program to the extent provided by law. In addition, GSBE has elected to participate in the German voluntary deposit protection program which provides insurance for certain eligible deposits not covered by the German statutory deposit program. GSBE is subject to minimum reserve requirements at central banks in certain of the jurisdictions in which it operates. The minimum reserve requirement was \$150 million as of September 2022 and \$189 million as of December 2021. The amount deposited by GSBE at central banks was \$21.56 billion as of September 2022 and \$20.36 billion as of December 2021, substantially all of which was deposited with Deutsche Bundesbank.

GSBE is a registered swap dealer with the CFTC and a registered security-based swap dealer with the SEC. As of both September 2022 and December 2021, GSBE was subject to and in compliance with applicable capital requirements for swap dealers and security-based swap dealers.

Restrictions on Payments

Group Inc. may be limited in its ability to access capital held at certain subsidiaries as a result of regulatory, tax or other constraints. These limitations include provisions of applicable law and regulations and other regulatory restrictions that limit the ability of those subsidiaries to declare and pay dividends without prior regulatory approval. For example, the amount of dividends that may be paid by GS Bank USA are limited to the lesser of the amounts calculated under a recent earnings test and an undivided profits test. As a result of dividends paid in connection with the acquisition of GSBE in July 2021, GS Bank USA cannot currently declare any additional dividends without prior regulatory approval.

In addition, subsidiaries not subject to separate regulatory capital requirements may hold capital to satisfy local tax and legal guidelines, rating agency requirements (for entities with assigned credit ratings) or internal policies, including policies concerning the minimum amount of capital a subsidiary should hold based on its underlying level of risk.

Group Inc.'s equity investment in subsidiaries was \$131.99 billion as of September 2022 and \$118.90 billion as of December 2021, of which Group Inc. was required to maintain \$84.63 billion as of September 2022 and \$77.22 billion as of December 2021, of minimum equity capital in its regulated subsidiaries in order to satisfy the regulatory requirements of such subsidiaries.

Group Inc.'s capital invested in certain non-U.S. dollar functional currency subsidiaries is exposed to foreign exchange risk, substantially all of which is managed through a combination of derivatives and non-U.S. dollar-denominated debt. See Note 7 for information about the firm's net investment hedges used to hedge this risk.

Notes to Consolidated Financial Statements (Unaudited)

Note 21.

Earnings Per Common Share

Basic earnings per common share (EPS) is calculated by dividing net earnings to common by the weighted average number of common shares outstanding and RSUs for which the delivery of the underlying common stock is not subject to satisfaction of future service, performance or market conditions (collectively, basic shares). Diluted EPS includes the determinants of basic EPS and, in addition, reflects the dilutive effect of the common stock deliverable for RSUs for which the delivery of the underlying common stock is subject to satisfaction of future service, performance or market conditions.

The table below presents information about basic and diluted EPS.

<i>in millions, except per share amounts</i>	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Net earnings to common	\$ 2,962	\$ 5,284	\$ 9,579	\$17,342
Weighted average basic shares	352.8	348.3	353.0	351.8
Effect of dilutive RSUs	6.4	5.6	5.6	5.1
Weighted average diluted shares	359.2	353.9	358.6	356.9
Basic EPS	\$ 8.35	\$ 15.14	\$ 27.03	\$ 49.23
Diluted EPS	\$ 8.25	\$ 14.93	\$ 26.71	\$ 48.59

In the table above:

- Net earnings to common represents net earnings applicable to common shareholders, which is calculated as net earnings less preferred stock dividends.
- Unvested share-based awards that have non-forfeitable rights to dividends or dividend equivalents are treated as a separate class of securities under the two-class method. Distributed earnings allocated to these securities reduce net earnings to common to calculate EPS under this method. The impact of applying this methodology was a reduction in basic EPS of \$0.05 for the three months ended September 2022, \$0.03 for the three months ended September 2021, \$0.11 for the nine months ended September 2022 and \$0.07 for the nine months ended September 2021.
- Diluted EPS does not include antidilutive RSUs, including those that are subject to market conditions, of 0.5 million for both the three and nine months ended September 2022, 0.1 million for the three months ended September 2021 and 0.2 million for the nine months ended September 2021.

Note 22.

Transactions with Affiliated Funds

The firm has formed nonconsolidated investment funds with third-party investors. As the firm generally acts as the investment manager for these funds, it is entitled to receive management fees and, in certain cases, advisory fees or incentive fees from these funds. Additionally, the firm invests alongside the third-party investors in certain funds.

The tables below present information about affiliated funds.

<i>\$ in millions</i>	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Fees earned from funds	\$ 1,172	\$ 1,046	\$ 3,422	\$ 2,647

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Fees receivable from funds	\$ 1,187	\$ 873
Aggregate carrying value of interests in funds	\$ 3,784	\$ 4,321

The firm has waived, and may waive in the future, certain management fees on selected money market funds to enhance the yield for investors in such funds. Management fees waived were \$11 million for the three months ended September 2022, \$156 million for the three months ended September 2021, \$110 million for the nine months ended September 2022 and \$422 million for the nine months ended September 2021.

In accordance with the Volcker Rule, the firm does not provide financial support to covered funds. However, in the ordinary course of business, the firm may choose to provide voluntary financial support to funds that are not subject to the Volcker Rule, although any such support is not expected to be material to the results of operations of the firm. Except for the fee waivers noted above, the firm did not provide any additional financial support to its affiliated funds during either the three or nine months ended September 2022 or September 2021.

In addition, in the ordinary course of business, the firm may also engage in other activities with its affiliated funds, including, among others, securities lending, trade execution, market-making, custody, and acquisition and bridge financing. See Note 18 for information about the firm's investment commitments related to these funds.

Notes to Consolidated Financial Statements (Unaudited)

Note 23.

Interest Income and Interest Expense

Interest is recorded over the life of the instrument on an accrual basis based on contractual interest rates.

The table below presents sources of interest income and interest expense.

<i>\$ in millions</i>	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Deposits with banks	\$ 1,107	\$ (13)	\$ 1,392	\$ (9)
Collateralized agreements	1,542	(220)	1,712	(651)
Trading assets	1,334	1,230	3,551	3,553
Investments	578	358	1,433	1,243
Loans	2,487	1,363	5,937	3,878
Other interest	1,502	399	2,588	1,096
Total interest income	8,550	3,117	16,613	9,110
Deposits	1,811	319	2,975	978
Collateralized financings	990	33	1,308	41
Trading liabilities	513	495	1,427	1,240
Short-term borrowings	152	115	333	433
Long-term borrowings	1,503	843	3,433	2,477
Other interest	1,538	(252)	1,533	(734)
Total interest expense	6,507	1,553	11,009	4,435
Net interest income	\$ 2,043	\$ 1,564	\$ 5,604	\$ 4,675

In the table above:

- Collateralized agreements includes rebates paid and interest income on securities borrowed.
- Loans excludes interest on loans held for sale that are accounted for at the lower of cost or fair value. Such interest is included within other interest.
- Other interest income includes interest income on customer debit balances, other interest-earning assets and loans held for sale that are accounted for at the lower of cost or fair value.
- Collateralized financings consists of repurchase agreements and securities loaned.
- Short- and long-term borrowings include both secured and unsecured borrowings.
- Other interest expense includes rebates received on other interest-bearing liabilities and interest expense on customer credit balances.

Note 24.

Income Taxes

Provision for Income Taxes

Income taxes are provided for using the asset and liability method under which deferred tax assets and liabilities are recognized for temporary differences between the financial reporting and tax bases of assets and liabilities. The firm reports interest expense related to income tax matters in provision for taxes and income tax penalties in other expenses.

Deferred Income Taxes

Deferred income taxes reflect the net tax effects of temporary differences between the financial reporting and tax bases of assets and liabilities. These temporary differences result in taxable or deductible amounts in future years and are measured using the tax rates and laws that will be in effect when such differences are expected to reverse. Valuation allowances are established to reduce deferred tax assets to the amount that more likely than not will be realized and primarily relate to the ability to utilize losses in various tax jurisdictions. Tax assets are included in other assets and tax liabilities are included in other liabilities.

Unrecognized Tax Benefits

The firm recognizes tax positions in the consolidated financial statements only when it is more likely than not that the position will be sustained on examination by the relevant taxing authority based on the technical merits of the position. A position that meets this standard is measured at the largest amount of benefit that will more likely than not be realized on settlement. A liability is established for differences between positions taken in a tax return and amounts recognized in the consolidated financial statements.

Regulatory Tax Examinations

The firm is subject to examination by the U.S. Internal Revenue Service (IRS) and other taxing authorities in jurisdictions where the firm has significant business operations, such as the United Kingdom, Japan, Hong Kong and various states, such as New York. The tax years under examination vary by jurisdiction. The firm does not expect completion of these audits to have a material impact on the firm's financial condition, but it may be material to operating results for a particular period, depending, in part, on the operating results for that period.

Notes to Consolidated Financial Statements (Unaudited)

The table below presents the earliest tax years that remain subject to examination by major jurisdiction.

Jurisdiction	As of September 2022
U.S. Federal	2011
New York State and City	2015
United Kingdom	2017
Japan	2016
Hong Kong	2016

The firm has been accepted into the Compliance Assurance Process program by the IRS for each of the tax years from 2013 through 2022. This program allows the firm to work with the IRS to identify and resolve potential U.S. Federal tax issues before the filing of tax returns. All issues for the 2011 tax year have been resolved and completion is pending final administrative settlement. During April 2022, the firm reached an agreement with IRS Appeals on the remaining issues for tax years 2012 through 2018. Subject to final review by the Joint Committee on Taxation, this agreement will not have a material impact on the effective tax rate for 2022. The 2019 through 2021 tax years remain subject to post-filing review. New York State and City examinations of 2015 through 2018 commenced during 2021.

All years, including and subsequent to the years in the table above, remain open to examination by the taxing authorities. The firm believes that the liability for unrecognized tax benefits it has established is adequate in relation to the potential for additional assessments.

Note 25.

Business Segments

The firm reports its activities in four business segments: Investment Banking, Global Markets, Asset Management and Consumer & Wealth Management. See Note 1 for information about the firm's business segments.

Beginning with the fourth quarter of 2022, consistent with the firm's announced organizational changes that will become effective in December 2022, the firm will make certain changes to its business segments and report its results in the following three business segments: Global Banking & Markets, Asset & Wealth Management and Platform Solutions.

Compensation and benefits expenses in the firm's segments reflect, among other factors, the overall performance of the firm, as well as the performance of individual businesses. Consequently, pre-tax margins in one segment of the firm's business may be significantly affected by the performance of the firm's other business segments.

The firm allocates assets (including allocations of global core liquid assets and cash, secured client financing and other assets), revenues and expenses among the four business segments. Due to the integrated nature of these segments, estimates and judgments are made in allocating certain assets, revenues and expenses. The allocation process is based on the manner in which management currently views the performance of the segments.

The allocation of common shareholders' equity and preferred stock dividends to each segment is based on the estimated amount of equity required to support the activities of the segment under relevant regulatory capital requirements.

Net earnings for each segment is calculated by applying the firmwide tax rate to each segment's pre-tax earnings.

Management believes that this allocation provides a reasonable representation of each segment's contribution to consolidated net earnings to common, return on average common equity and total assets. Transactions between segments are based on specific criteria or approximate third-party rates.

Notes to Consolidated Financial Statements (Unaudited)

Segment Results

The table below presents a summary of the firm's segment results.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Investment Banking				
Non-interest revenues	\$ 1,373	\$ 3,599	\$ 5,661	\$ 10,755
Net interest income	203	101	463	325
Total net revenues	1,576	3,700	6,124	11,080
Provision for credit losses	78	41	325	(229)
Operating expenses	1,038	1,343	3,391	5,161
Pre-tax earnings	\$ 460	\$ 2,316	\$ 2,408	\$ 6,148
Net earnings	\$ 370	\$ 1,831	\$ 2,001	\$ 4,942
Net earnings to common	\$ 355	\$ 1,818	\$ 1,950	\$ 4,890
Average common equity	\$ 9,720	\$ 10,346	\$ 10,649	\$ 10,201
Return on average common equity	14.6%	70.3%	24.4%	63.9%
Global Markets				
Non-interest revenues	\$ 5,648	\$ 4,943	\$ 18,770	\$ 16,121
Net interest income	553	668	1,770	1,971
Total net revenues	6,201	5,611	20,540	18,092
Provision for credit losses	(43)	(24)	190	(30)
Operating expenses	3,213	2,794	10,340	10,352
Pre-tax earnings	\$ 3,031	\$ 2,841	\$ 10,010	\$ 7,770
Net earnings	\$ 2,474	\$ 2,244	\$ 8,318	\$ 6,246
Net earnings to common	\$ 2,408	\$ 2,190	\$ 8,102	\$ 6,041
Average common equity	\$ 57,078	\$ 46,959	\$ 54,842	\$ 44,067
Return on average common equity	16.9%	18.7%	19.7%	18.3%
Asset Management				
Non-interest revenues	\$ 1,742	\$ 2,174	\$ 3,107	\$ 11,619
Net interest income	79	105	344	406
Total net revenues	1,821	2,279	3,451	12,025
Provision for credit losses	29	10	129	(2)
Operating expenses	1,565	823	4,121	4,656
Pre-tax earnings/(loss)	\$ 227	\$ 1,446	\$ (799)	\$ 7,371
Net earnings/(loss)	\$ 195	\$ 1,115	\$ (664)	\$ 5,925
Net earnings/(loss) to common	\$ 181	\$ 1,096	\$ (717)	\$ 5,853
Average common equity	\$ 24,587	\$ 25,788	\$ 24,358	\$ 25,294
Return on average common equity	2.9 %	17.0%	(3.9)%	30.9%
Consumer & Wealth Management				
Non-interest revenues	\$ 1,169	\$ 1,328	\$ 3,630	\$ 3,530
Net interest income	1,208	690	3,027	1,973
Total net revenues	2,377	2,018	6,657	5,503
Provision for credit losses	451	148	1,099	274
Operating expenses	1,888	1,631	5,221	4,499
Pre-tax earnings	\$ 38	\$ 239	\$ 337	\$ 730
Net earnings	\$ 30	\$ 188	\$ 280	\$ 587
Net earnings to common	\$ 18	\$ 180	\$ 244	\$ 558
Average common equity	\$ 15,925	\$ 10,740	\$ 14,866	\$ 10,475
Return on average common equity	0.5%	6.7%	2.2%	7.1%
Total				
Non-interest revenues	\$ 9,932	\$ 12,044	\$ 31,168	\$ 42,025
Net interest income	2,043	1,564	5,604	4,675
Total net revenues	11,975	13,608	36,772	46,700
Provision for credit losses	515	175	1,743	13
Operating expenses	7,704	6,591	23,073	24,668
Pre-tax earnings	\$ 3,756	\$ 6,842	\$ 11,956	\$ 22,019
Net earnings	\$ 3,069	\$ 5,378	\$ 9,935	\$ 17,700
Net earnings to common	\$ 2,962	\$ 5,284	\$ 9,579	\$ 17,342
Average common equity	\$ 107,310	\$ 93,833	\$ 104,715	\$ 90,037
Return on average common equity	11.0%	22.5%	12.2%	25.7%

In the table above:

- Revenues and expenses directly associated with each segment are included in determining pre-tax earnings.
- Net revenues in the firm's segments include allocations of interest income and expense to specific positions in relation to the cash generated by, or funding requirements of, such positions. Net interest is included in segment net revenues as it is consistent with how management assesses segment performance.
- Overhead expenses not directly allocable to specific segments are allocated ratably based on direct segment expenses.
- The firm reviews and makes any necessary adjustments to attributed equity in January of each year, to reflect, among other things, the results of the latest CCAR process, as well as projected changes in the firm's balance sheet. The average common equity balances above incorporate such impact, as well as the changes in the size and composition of assets held in each of the firm's segments that occurred during the respective periods.

The table below presents depreciation and amortization expense by segment.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Investment Banking	\$ 49	\$ 50	\$ 142	\$ 144
Global Markets	221	209	665	571
Asset Management	259	153	557	539
Consumer & Wealth Management	137	97	364	273
Total	\$ 666	\$ 509	\$ 1,728	\$ 1,527

Segment Assets

The table below presents assets by segment.

\$ in millions	As of	
	September 2022	December 2021
Investment Banking	\$ 145,563	\$ 144,157
Global Markets	1,163,721	1,082,378
Asset Management	85,814	91,115
Consumer & Wealth Management	160,896	146,338
Total	\$ 1,555,994	\$ 1,463,988

Notes to Consolidated Financial Statements (Unaudited)

Geographic Information

Due to the highly integrated nature of international financial markets, the firm manages its businesses based on the profitability of the enterprise as a whole. The methodology for allocating profitability to geographic regions is dependent on estimates and management judgment because a significant portion of the firm's activities require cross-border coordination in order to facilitate the needs of the firm's clients. Geographic results are generally allocated as follows:

- Investment Banking: location of the client and investment banking team.
- Global Markets: FICC and Equities intermediation: location of the market-making desk; FICC and Equities financing (excluding prime brokerage financing): location of the desk; prime brokerage financing: location of the primary market for the underlying security.
- Asset Management (excluding Equity investments and Lending and debt investments): location of the sales team; Equity investments: location of the investment; Lending and debt investments: location of the client.
- Consumer & Wealth Management: Wealth management: location of the sales team; Consumer banking: location of the client.

The table below presents total net revenues and pre-tax earnings by geographic region.

<i>\$ in millions</i>	2022		2021	
<u>Three Months Ended September</u>				
Americas	\$ 7,542	63%	\$ 8,169	60%
EMEA	3,094	26%	3,394	25%
Asia	1,339	11%	2,045	15%
Total net revenues	\$ 11,975	100%	\$ 13,608	100%
Americas	\$ 2,280	61%	\$ 4,004	59%
EMEA	1,235	33%	1,922	28%
Asia	241	6%	916	13%
Total pre-tax earnings	\$ 3,756	100%	\$ 6,842	100%
<u>Nine Months Ended September</u>				
Americas	\$ 21,975	60%	\$ 28,951	62%
EMEA	10,344	28%	11,585	25%
Asia	4,453	12%	6,164	13%
Total net revenues	\$ 36,772	100%	\$ 46,700	100%
Americas	\$ 6,424	54%	\$ 13,484	61%
EMEA	4,399	37%	6,012	27%
Asia	1,133	9%	2,523	12%
Total pre-tax earnings	\$ 11,956	100%	\$ 22,019	100%

In the table above:

- Substantially all of the amounts in Americas were attributable to the U.S.
- Asia includes Australia and New Zealand.

Note 26.

Credit Concentrations

The firm's concentrations of credit risk arise from its market-making, client facilitation, investing, underwriting, lending and collateralized transactions, and cash management activities, and may be impacted by changes in economic, industry or political factors. These activities expose the firm to many different industries and counterparties, and may also subject the firm to a concentration of credit risk to a particular central bank, counterparty, borrower or issuer, including sovereign issuers, or to a particular clearing house or exchange. The firm seeks to mitigate credit risk by actively monitoring exposures and obtaining collateral from counterparties as deemed appropriate.

The firm measures and monitors its credit exposure based on amounts owed to the firm after taking into account risk mitigants that the firm considers when determining credit risk. Such risk mitigants include netting and collateral arrangements and economic hedges, such as credit derivatives, futures and forward contracts. Netting and collateral agreements permit the firm to offset receivables and payables with such counterparties and/or enable the firm to obtain collateral on an upfront or contingent basis.

The table below presents the credit concentrations included in trading cash instruments and investments.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
U.S. government and agency obligations	\$ 185,061	\$ 141,191
Percentage of total assets	11.9%	9.6%
Non-U.S. government and agency obligations	\$ 71,787	\$ 51,426
Percentage of total assets	4.6%	3.5%

In addition, the firm had \$245.63 billion as of September 2022 and \$222.20 billion as of December 2021 of cash deposits held at central banks (included in cash and cash equivalents), of which \$161.28 billion as of September 2022 and \$122.01 billion as of December 2021 was held at the Federal Reserve.

As of both September 2022 and December 2021, the firm did not have credit exposure to any other counterparty that exceeded 2% of total assets.

Notes to Consolidated Financial Statements (Unaudited)

Collateral obtained by the firm related to derivative assets is principally cash and is held by the firm or a third-party custodian. Collateral obtained by the firm related to resale agreements and securities borrowed transactions is primarily U.S. government and agency obligations and non-U.S. government and agency obligations. See Note 11 for further information about collateralized agreements and financings.

The table below presents U.S. government and agency obligations and non-U.S. government and agency obligations that collateralize resale agreements and securities borrowed transactions.

	As of	
	September 2022	December 2021
<i>\$ in millions</i>		
U.S. government and agency obligations	\$ 94,016	\$ 86,274
Non-U.S. government and agency obligations	\$ 108,677	\$ 141,588

In the table above:

- Non-U.S. government and agency obligations primarily consists of securities issued by the governments of the U.K., Japan, Germany and France.
- Given that the firm's primary credit exposure on such transactions is to the counterparty to the transaction, the firm would be exposed to the collateral issuer only in the event of counterparty default.

Note 27.

Legal Proceedings

The firm is involved in a number of judicial, regulatory and arbitration proceedings (including those described below) concerning matters arising in connection with the conduct of the firm's businesses. Many of these proceedings are in early stages, and many of these cases seek an indeterminate amount of damages.

Under ASC 450, an event is "reasonably possible" if "the chance of the future event or events occurring is more than remote but less than likely" and an event is "remote" if "the chance of the future event or events occurring is slight." Thus, references to the upper end of the range of reasonably possible loss for cases in which the firm is able to estimate a range of reasonably possible loss mean the upper end of the range of loss for cases for which the firm believes the risk of loss is more than slight.

With respect to matters described below for which management has been able to estimate a range of reasonably possible loss where (i) actual or potential plaintiffs have claimed an amount of money damages, (ii) the firm is being, or threatened to be, sued by purchasers in a securities offering and is not being indemnified by a party that the firm believes will pay the full amount of any judgment, or (iii) the purchasers are demanding that the firm repurchase securities, management has estimated the upper end of the range of reasonably possible loss based on (a) in the case of (i), the amount of money damages claimed, (b) in the case of (ii), the difference between the initial sales price of the securities that the firm sold in such offering and the estimated lowest subsequent price of such securities prior to the action being commenced and (c) in the case of (iii), the price that purchasers paid for the securities less the estimated value, if any, as of September 2022 of the relevant securities, in each of cases (i), (ii) and (iii), taking into account any other factors believed to be relevant to the particular matter or matters of that type. As of the date hereof, the firm has estimated the upper end of the range of reasonably possible aggregate loss for such matters and for any other matters described below where management has been able to estimate a range of reasonably possible aggregate loss to be approximately \$2.3 billion in excess of the aggregate reserves for such matters.

Management is generally unable to estimate a range of reasonably possible loss for matters other than those included in the estimate above, including where (i) actual or potential plaintiffs have not claimed an amount of money damages, except in those instances where management can otherwise determine an appropriate amount, (ii) matters are in early stages, (iii) matters relate to regulatory investigations or reviews, except in those instances where management can otherwise determine an appropriate amount, (iv) there is uncertainty as to the likelihood of a class being certified or the ultimate size of the class, (v) there is uncertainty as to the outcome of pending appeals or motions, (vi) there are significant factual issues to be resolved, and/or (vii) there are novel legal issues presented. For example, the firm's potential liabilities with respect to the investigations and reviews described below in "Regulatory Investigations and Reviews and Related Litigation" generally are not included in management's estimate of reasonably possible loss. However, management does not believe, based on currently available information, that the outcomes of such other matters will have a material adverse effect on the firm's financial condition, though the outcomes could be material to the firm's operating results for any particular period, depending, in part, upon the operating results for such period.

Notes to Consolidated Financial Statements (Unaudited)

1MDB-Related Matters

Between 2012 and 2013, subsidiaries of the firm acted as arrangers or purchasers of approximately \$6.5 billion of debt securities of 1MDB.

On November 1, 2018, the U.S. Department of Justice (DOJ) unsealed a criminal information and guilty plea by Tim Leissner, a former participating managing director of the firm, and an indictment against Ng Chong Hwa, a former managing director of the firm. On August 28, 2018, Leissner was adjudicated guilty by the U.S. District Court for the Eastern District of New York of conspiring to launder money and to violate the U.S. Foreign Corrupt Practices Act's (FCPA) anti-bribery and internal accounting controls provisions. Ng was charged with conspiring to launder money and to violate the FCPA's anti-bribery and internal accounting controls provisions. On April 8, 2022, Ng was found guilty on all counts following a trial.

On August 18, 2020, the firm announced that it entered into a settlement agreement with the Government of Malaysia to resolve the criminal and regulatory proceedings in Malaysia involving the firm, which includes a guarantee that the Government of Malaysia receives at least \$1.4 billion in assets and proceeds from assets seized by governmental authorities around the world related to 1MDB. See Note 18 for further information about this guarantee.

On October 22, 2020, the firm announced that it reached settlements of governmental and regulatory investigations relating to 1MDB with the DOJ, the SEC, the FRB, the NYDFS, the FCA, the PRA, the Singapore Attorney General's Chambers, the Singapore Commercial Affairs Department, the Monetary Authority of Singapore and the Hong Kong Securities and Futures Commission. Group Inc. entered into a three-year deferred prosecution agreement with the DOJ, in which a charge against the firm, one count of conspiracy to violate the FCPA, was filed and will later be dismissed if the firm abides by the terms of the agreement. In addition, GS Malaysia pleaded guilty to one count of conspiracy to violate the FCPA, and was sentenced on June 9, 2021. In May 2021, the U.S. Department of Labor granted the firm a five-year exemption to maintain its status as a qualified professional asset manager (QPAM).

The firm has received multiple demands, beginning in November 2018, from alleged shareholders under Section 220 of the Delaware General Corporation Law for books and records relating to, among other things, the firm's involvement with 1MDB and the firm's compliance procedures.

On February 19, 2019, a purported shareholder derivative action relating to 1MDB was filed in the U.S. District Court for the Southern District of New York against Group Inc. and the directors at the time and a former chairman and chief executive officer of the firm. The second amended complaint filed on November 13, 2020, alleges breaches of fiduciary duties, including in connection with alleged insider trading by certain current and former directors, unjust enrichment and violations of the anti-fraud provisions of the Exchange Act, including in connection with Group Inc.'s common stock repurchases and solicitation of proxies, and seeks unspecified damages, disgorgement and injunctive relief. On September 16, 2022, the court preliminarily approved a settlement among the parties pursuant to which the firm agreed to a payment of \$79.5 million to be made to the firm by its insurers, which the firm has agreed to use for compliance purposes after payment of any attorneys' fees and reimbursement of expenses awarded to plaintiffs.

In January and February 2021, respectively, the firm received two demands (in addition to three demands that the Board had previously rejected and were subsequently settled) from alleged shareholders to investigate and pursue claims related to 1MDB (and, for one of the demands, other matters) against other parties, including certain current and former directors and executive officers of the firm. In December 2021, the Board voted to reject the two demands.

On December 20, 2018, a putative securities class action lawsuit was filed in the U.S. District Court for the Southern District of New York against Group Inc. and certain former officers of the firm alleging violations of the anti-fraud provisions of the Exchange Act with respect to Group Inc.'s disclosures and public statements concerning 1MDB and seeking unspecified damages. The plaintiffs filed the second amended complaint on October 28, 2019. On June 28, 2021, the court dismissed the claims against one of the individual defendants but denied the defendants' motion to dismiss with respect to the firm and the remaining individual defendants. On November 12, 2021, the plaintiffs moved for class certification.

Notes to Consolidated Financial Statements (Unaudited)

Mortgage-Related Matters

Beginning in April 2010, a number of purported securities law class actions were filed in the U.S. District Court for the Southern District of New York challenging the adequacy of Group Inc.'s public disclosure of, among other things, the firm's activities in the collateralized debt obligation market, and the firm's conflict of interest management.

The consolidated amended complaint filed on July 25, 2011, which named as defendants Group Inc. and certain current and former officers and employees of Group Inc. and its affiliates, generally alleges violations of Sections 10(b) and 20(a) of the Exchange Act and seeks monetary damages. The defendants have moved for summary judgment. On April 7, 2020, the U.S. Court of Appeals for the Second Circuit affirmed the district court's August 14, 2018 grant of class certification. On June 21, 2021, the United States Supreme Court vacated the judgment of the Second Circuit and remanded the case for further proceedings, and on August 26, 2021, the Second Circuit vacated the district court's grant of class certification and remanded the case for further proceedings. On December 8, 2021, the district court granted the plaintiffs' motion for class certification. On March 9, 2022, the Second Circuit granted defendants' petition seeking interlocutory review of the district court's grant of class certification.

Complaints were filed in the U.S. District Court for the Southern District of New York on July 25, 2019 and May 29, 2020 against Goldman Sachs Mortgage Company and GS Mortgage Securities Corp. by U.S. Bank National Association, as trustee for two residential mortgage-backed securitization trusts that issued \$1.7 billion of securities. The complaints generally allege that mortgage loans in the trusts failed to conform to applicable representations and warranties and seek specific performance or, alternatively, compensatory damages and other relief. On November 23, 2020, the court granted in part and denied in part defendants' motion to dismiss the complaint in the first action and denied defendants' motion to dismiss the complaint in the second action. On January 14, 2021, amended complaints were filed in both actions.

Currencies-Related Litigation

GS&Co. and Group Inc. are among the defendants named in an action filed in the U.S. District Court for the Southern District of New York on November 7, 2018, and GSI, GSIB, Goldman Sachs Group UK Limited and GS Bank USA are among the defendants in an action filed in the High Court of England and Wales on November 11, 2020 and subsequently transferred to the U.K. Competition Appeal Tribunal, in each case by certain direct purchasers of foreign exchange instruments that opted out of a class settlement reached with, among others, GS&Co. and Group Inc. The third amended complaint in the U.S. district court action, filed on August 3, 2020, generally alleges that the defendants violated federal antitrust law and state common law in connection with an alleged conspiracy to manipulate the foreign currency exchange markets and seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, punitive, treble and other damages. The claim in the English action is for breaches of English and E.U. competition rules from 2003 to 2013 and alleges manipulation of foreign exchange rates and bid/offer spreads, the exchange of commercially sensitive information among defendants and collusive trading.

GS&Co. is among the defendants named in a putative class action filed in the U.S. District Court for the Southern District of New York on August 4, 2021. The amended complaint, filed on January 6, 2022, generally asserts claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to manipulate auctions for foreign exchange transactions on an electronic trading platform, as well as claims under the Racketeer Influenced and Corrupt Organizations Act. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of treble and other damages. On March 18, 2022, the defendants moved to dismiss the amended complaint.

Notes to Consolidated Financial Statements (Unaudited)

Banco Espirito Santo S.A. and Oak Finance

Beginning in February 2015, GSI commenced actions against Novo Banco S.A. (Novo Banco) in the English Commercial Court and the Bank of Portugal (BoP) in Portuguese Administrative Court in response to BoP's decisions in December 2014, September 2015 and December 2015 to reverse an earlier transfer to Novo Banco of an \$835 million facility agreement (the Facility), structured by GSI, between Oak Finance Luxembourg S.A. (Oak Finance), a special purpose vehicle formed in connection with the Facility, and Banco Espirito Santo S.A. (BES) prior to the failure of BES. In July 2018, the English Supreme Court found that the English courts will not have jurisdiction over GSI's action unless and until the Portuguese Administrative Court finds against BoP in GSI's parallel action. In July 2018, the Liquidation Committee for BES issued a decision seeking to claw back from GSI \$54 million paid to GSI and \$50 million allegedly paid to Oak Finance in connection with the Facility, alleging that GSI acted in bad faith in extending the Facility, including because GSI allegedly knew that BES was at risk of imminent failure. In October 2018, GSI commenced an action in Lisbon Commercial Court challenging the Liquidation Committee's decision and has since also issued a claim against the Portuguese State seeking compensation for losses of approximately \$222 million related to the failure of BES, together with a contingent claim for the \$104 million sought by the Liquidation Committee.

Financial Advisory Services

Group Inc. and certain of its affiliates are from time to time parties to various civil litigation and arbitration proceedings and other disputes with clients and third parties relating to the firm's financial advisory activities. These claims generally seek, among other things, compensatory damages and, in some cases, punitive damages, and in certain cases allege that the firm did not appropriately disclose or deal with conflicts of interest.

Archegos-Related Matters

GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 13, 2021 in New York Supreme Court, County of New York, relating to ViacomCBS Inc.'s (ViacomCBS) March 2021 public offerings of \$1.7 billion of common stock and \$1.0 billion of preferred stock. In addition to the underwriters, the defendants include ViacomCBS and certain of its officers and directors. GS&Co. underwrote 646,154 shares of common stock representing an aggregate offering price of approximately \$55 million and 323,077 shares of preferred stock representing an aggregate offering price of approximately \$32 million. The complaint asserts claims under the federal securities laws and alleges that the offering documents contained material misstatements and omissions, including, among other things, that the offering documents failed to disclose that Archegos Capital Management (Archegos) had substantial exposure to ViacomCBS, including through total return swaps to which certain of the underwriters, including GS&Co., were allegedly counterparties, and that such underwriters failed to disclose their exposure to Archegos. The complaint seeks rescission and compensatory damages in unspecified amounts. On November 5, 2021, the plaintiffs filed an amended complaint, and, on December 22, 2021, the defendants filed motions to dismiss the amended complaint. On January 4, 2022, the plaintiffs moved for class certification.

Group Inc. is also a defendant in putative securities class actions filed beginning in October 2021 and consolidated in the U.S. District Court for the Southern District of New York. The complaints allege that Group Inc., along with another financial institution, sold shares in Baidu Inc. (Baidu), Discovery Inc. (Discovery), GSX Techedu Inc. (Gaotu), iQIYI Inc. (iQIYI), Tencent Music Entertainment Group (Tencent), ViacomCBS, and Vipshop Holdings Ltd. (Vipshop) based on material nonpublic information regarding the liquidation of Archegos' position in Baidu, Discovery, Gaotu, iQIYI, Tencent, ViacomCBS and Vipshop, respectively. The complaints generally assert violations of Sections 10(b), 20A and 20(a) of the Exchange Act and seek unspecified damages. On June 13, 2022, the plaintiffs in the class actions filed amended complaints. On August 12, 2022, the defendants filed motions to dismiss the amended complaints.

On January 24, 2022, the firm received a demand from an alleged shareholder under Section 220 of the Delaware General Corporation Law for books and records relating to, among other things, the firm's involvement with Archegos and the firm's controls with respect to insider trading.

Notes to Consolidated Financial Statements (Unaudited)

Underwriting Litigation

Firm affiliates are among the defendants in a number of proceedings in connection with securities offerings. In these proceedings, including those described below, the plaintiffs assert class action or individual claims under federal and state securities laws and in some cases other applicable laws, allege that the offering documents for the securities that they purchased contained material misstatements and omissions, and generally seek compensatory and rescissory damages in unspecified amounts, as well as rescission. Certain of these proceedings involve additional allegations.

Uber Technologies, Inc. GS&Co. is among the underwriters named as defendants in several putative securities class actions filed beginning in September 2019 in California Superior Court, County of San Francisco and the U.S. District Court for the Northern District of California, relating to Uber Technologies, Inc.'s (Uber) \$8.1 billion May 2019 initial public offering. In addition to the underwriters, the defendants include Uber and certain of its officers and directors. GS&Co. underwrote 35,864,408 shares of common stock representing an aggregate offering price of approximately \$1.6 billion. On November 16, 2020, the court in the state court action granted defendants' motion to dismiss the consolidated amended complaint filed on February 11, 2020, and on December 16, 2020, plaintiffs appealed. On August 7, 2020, defendants' motion to dismiss the district court action was denied. On September 25, 2020, the plaintiffs in the district court action moved for class certification. On December 5, 2020, the plaintiffs in the state court action filed a complaint in the district court, which was consolidated with the existing district court action on January 25, 2021. On May 14, 2021, the plaintiffs filed a second amended complaint in the district court, purporting to add the plaintiffs from the state court action as additional class representatives. On October 1, 2021, defendants' motion to dismiss the additional class representatives from the second amended complaint was denied, and on July 26, 2022, the district court granted the plaintiffs' motion for class certification. On August 9, 2022, defendants filed a petition with the U.S. Court of Appeals for the Ninth Circuit seeking interlocutory review of the district court's grant of class certification.

Venator Materials PLC. GS&Co. is among the underwriters named as defendants in putative securities class actions in Texas District Court, Dallas County, New York Supreme Court, New York County, and the U.S. District Court for the Southern District of Texas, filed beginning in February 2019, relating to Venator Materials PLC's (Venator) \$522 million August 2017 initial public offering and \$534 million December 2017 secondary equity offering. In addition to the underwriters, the defendants include Venator, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 6,351,347 shares of common stock in the August 2017 initial public offering representing an aggregate offering price of approximately \$127 million and 5,625,768 shares of common stock in the December 2017 secondary equity offering representing an aggregate offering price of approximately \$127 million. On January 21, 2020, the Texas Court of Appeals reversed the Texas District Court and dismissed the claims against the underwriter defendants, including GS&Co., in the Texas state court action for lack of personal jurisdiction. On March 22, 2021, the defendants' motion to dismiss the New York state court action was granted and the plaintiffs filed a notice of appeal. On July 7, 2021, the court in the federal action granted in part and denied in part defendants' motion to dismiss the consolidated complaint. On August 16, 2021, the plaintiffs in the federal action filed an amended consolidated complaint. On November 19, 2021, the plaintiffs in the federal action moved for class certification. On February 28, 2022, the plaintiffs stipulated to withdraw the appeal in the New York state court action after the parties reached a settlement, and on March 29, 2022, the Appellate Division of the Supreme Court of the State of New York for the First Department deemed the appeal withdrawn. On September 15, 2022, the federal court approved a settlement among the parties. Under the terms of the settlement, the firm is not required to contribute to the settlement.

GoHealth, Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions filed beginning on September 21, 2020 and consolidated in the U.S. District Court for the Northern District of Illinois relating to GoHealth, Inc.'s (GoHealth) \$914 million July 2020 initial public offering. In addition to the underwriters, the defendants include GoHealth, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 11,540,550 shares of common stock representing an aggregate offering price of approximately \$242 million. On February 25, 2021, the plaintiffs filed a consolidated complaint. On April 5, 2022, the defendants' motion to dismiss the consolidated complaint was denied. On September 23, 2022, the plaintiffs moved for class certification.

Notes to Consolidated Financial Statements (Unaudited)

Array Technologies, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on May 14, 2021 in the U.S. District Court for the Southern District of New York relating to Array Technologies, Inc.'s (Array) \$1.2 billion October 2020 initial public offering of common stock, \$1.3 billion December 2020 offering of common stock and \$993 million March 2021 offering of common stock. In addition to the underwriters, the defendants include Array and certain of its officers and directors. GS&Co. underwrote an aggregate of 31,912,213 shares of common stock in the three offerings representing an aggregate offering price of approximately \$877 million. On December 7, 2021, the plaintiffs filed an amended consolidated complaint. On October 17, 2022, the defendants moved to dismiss the amended consolidated complaint.

Skillz Inc. GS&Co. was among the underwriters named as defendants in an amended consolidated complaint for a putative securities class action filed on October 8, 2021 in the U.S. District Court for the Northern District of California relating to Skillz Inc.'s (Skillz) approximately \$883 million March 2021 public offering of common stock. In addition to the underwriters, the defendants included Skillz and certain of its officers and directors. GS&Co. underwrote 8,832,000 shares of common stock representing an aggregate offering price of approximately \$212 million. On July 5, 2022, the defendants' motion to dismiss the amended consolidated complaint was granted with leave to replead. On August 4, 2022, the plaintiffs filed a second amended consolidated complaint naming only Skillz and certain of its officers as defendants.

ContextLogic Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions filed beginning on May 17, 2021 and consolidated in the U.S. District Court for the Northern District of California, relating to ContextLogic Inc.'s (ContextLogic) \$1.1 billion December 2020 initial public offering of common stock. In addition to the underwriters, the defendants include ContextLogic and certain of its officers and directors. GS&Co. underwrote 16,169,000 shares of common stock representing an aggregate offering price of approximately \$388 million. On July 15, 2022, the plaintiffs filed a consolidated amended complaint. On September 16, 2022, the defendants moved to dismiss the consolidated amended complaint.

DiDi Global Inc. Goldman Sachs (Asia) L.L.C. (GS Asia) is among the underwriters named as defendants in putative securities class actions filed beginning on July 6, 2021 in the U.S. District Courts for the Southern District of New York and the Central District of California and New York Supreme Court, County of New York, relating to DiDi Global Inc.'s (DiDi) \$4.4 billion June 2021 initial public offering of American Depositary Shares (ADS). In addition to the underwriters, the defendants include DiDi and certain of its officers and directors. GS Asia underwrote 104,554,000 ADS representing an aggregate offering price of approximately \$1.5 billion. On September 22, 2021, plaintiffs in the California action voluntarily dismissed their claims without prejudice. On May 5, 2022, plaintiffs in the consolidated federal action filed a second consolidated amended complaint, which includes allegations of violations of Sections 10(b) and 20A of the Exchange Act against the underwriter defendants. On June 3, 2022, the defendants moved to dismiss the second consolidated amended complaint.

Vroom Inc. GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on October 4, 2021 in the U.S. District Court for the Southern District of New York relating to Vroom Inc.'s (Vroom) approximately \$589 million September 2020 public offering of common stock. In addition to the underwriters, the defendants include Vroom and certain of its officers and directors. GS&Co. underwrote 3,886,819 shares of common stock representing an aggregate offering price of approximately \$212 million. On December 20, 2021, the defendants served a motion to dismiss the consolidated complaint.

Zymergen Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 4, 2021 in the U.S. District Court for the Northern District of California relating to Zymergen Inc.'s (Zymergen) \$575 million April 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Zymergen and certain of its officers and directors. GS&Co. underwrote 5,750,345 shares of common stock representing an aggregate offering price of approximately \$178 million. On February 24, 2022, the plaintiffs filed an amended complaint, and on April 25, 2022, the defendants moved to dismiss the amended complaint.

Notes to Consolidated Financial Statements (Unaudited)

Waterdrop Inc. GS Asia is among the underwriters named as defendants in a putative securities class action filed on September 14, 2021 in the U.S. District Court for the Southern District of New York relating to Waterdrop Inc.'s (Waterdrop) \$360 million May 2021 initial public offering of ADS. In addition to the underwriters, the defendants include Waterdrop and certain of its officers and directors. GS Asia underwrote 15,300,000 ADS representing an aggregate offering price of approximately \$184 million. On February 21, 2022, the plaintiffs filed an amended complaint, and on April 22, 2022, the defendants moved to dismiss the amended complaint.

Sea Limited. GS Asia is among the underwriters named as defendants in putative securities class actions filed on February 11, 2022 and June 17, 2022, respectively, in New York Supreme Court, County of New York, relating to Sea Limited's approximately \$4.0 billion September 2021 public offering of ADS and approximately \$2.9 billion September 2021 public offering of convertible senior notes, respectively. In addition to the underwriters, the defendants include Sea Limited, certain of its officers and directors and certain of its shareholders. GS Asia underwrote 8,222,500 ADS representing an aggregate offering price of approximately \$2.6 billion and convertible senior notes representing an aggregate offering price of approximately \$1.9 billion. On August 3, 2022, the actions were consolidated, and on August 9, 2022, the plaintiffs filed a consolidated amended complaint. The defendants had previously moved to dismiss the action on July 15, 2022, with the parties stipulating that the motion would apply to the consolidated amended complaint.

Rivian Automotive Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on March 7, 2022 in the U.S. District Court for the Central District of California relating to Rivian Automotive Inc.'s (Rivian) approximately \$13.7 billion November 2021 initial public offering. In addition to the underwriters, the defendants include Rivian and certain of its officers and directors. GS&Co. underwrote 44,733,050 shares of common stock representing an aggregate offering price of approximately \$3.5 billion. On July 22, 2022, the plaintiffs filed a consolidated complaint, and on August 29, 2022, the defendants moved to dismiss the consolidated complaint.

Natera Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions in New York Supreme Court, County of New York and the U.S. District Court for the Western District of Texas filed on March 10, 2022 and October 7, 2022, respectively, relating to Natera Inc.'s (Natera) approximately \$585 million July 2021 public offering of common stock. In addition to the underwriters, the defendants include Natera and certain of its officers and directors. GS&Co. underwrote 1,449,000 shares of common stock representing an aggregate offering price of approximately \$164 million. On July 15, 2022, the parties in the state court action filed a stipulation and proposed order approving the discontinuance of the action without prejudice.

Robinhood Markets, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on December 17, 2021 in the U.S. District Court for the Northern District of California relating to Robinhood Markets, Inc.'s (Robinhood) approximately \$2.2 billion July 2021 initial public offering. In addition to the underwriters, the defendants include Robinhood and certain of its officers and directors. GS&Co. underwrote 18,039,706 shares of common stock representing an aggregate offering price of approximately \$686 million. On June 20, 2022, the plaintiffs filed an amended complaint. On August 18, 2022, the defendants moved to dismiss the amended complaint.

ON24, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on November 3, 2021 in the U.S. District Court for the Northern District of California relating to ON24, Inc.'s (ON24) approximately \$492 million February 2021 initial public offering of common stock. In addition to the underwriters, the defendants include ON24 and certain of its officers and directors. GS&Co. underwrote 3,616,785 shares of common stock representing an aggregate offering price of approximately \$181 million. On March 18, 2022, the plaintiffs filed a consolidated complaint. On May 2, 2022, the defendants moved to dismiss the consolidated complaint.

Riskified Ltd. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on May 2, 2022 in the U.S. District Court for the Southern District of New York relating to Riskified Ltd.'s (Riskified) approximately \$423 million July 2021 initial public offering. In addition to the underwriters, the defendants include Riskified and certain of its officers and directors. GS&Co. underwrote 6,981,128 shares of common stock representing an aggregate offering price of approximately \$147 million. On September 15, 2022, the plaintiffs filed an amended complaint. On October 28, 2022, the defendants moved to dismiss the amended complaint.

Notes to Consolidated Financial Statements (Unaudited)

Oscar Health, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on May 12, 2022 in the U.S. District Court for the Southern District of New York relating to Oscar Health, Inc.'s (Oscar Health) approximately \$1.4 billion March 2021 initial public offering. In addition to the underwriters, the defendants include Oscar Health and certain of its officers and directors. GS&Co. underwrote 12,760,633 shares of common stock representing an aggregate offering price of approximately \$498 million.

Oak Street Health, Inc. GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on May 25, 2022 in the U.S. District Court for the Northern District of Illinois relating to Oak Street Health, Inc.'s (Oak Street) \$377 million August 2020 initial public offering, \$298 million December 2020 secondary equity offering, \$691 million February 2021 secondary equity offering and \$747 million May 2021 secondary equity offering. In addition to the underwriters, the defendants include Oak Street, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 4,157,103 shares of common stock in the August 2020 initial public offering representing an aggregate offering price of approximately \$87 million, 1,503,944 shares of common stock in the December 2020 secondary equity offering representing an aggregate offering price of approximately \$69 million, 3,083,098 shares of common stock in the February 2021 secondary equity offering representing an aggregate offering price of approximately \$173 million and 3,013,065 shares of common stock in the May 2021 secondary equity offering representing an aggregate offering price of approximately \$187 million. On July 25, 2022, the defendants moved to dismiss the amended complaint.

Reata Pharmaceuticals, Inc. GS&Co. is among the underwriters named as defendants in a consolidated amended complaint for a putative securities class action filed on June 21, 2022 in the U.S. District Court for the Eastern District of Texas relating to Reata Pharmaceuticals, Inc.'s (Reata) approximately \$282 million December 2020 public offering of common stock. In addition to the underwriters, the defendants include Reata and certain of its officers and directors. GS&Co. underwrote 1,000,000 shares of common stock representing an aggregate offering price of approximately \$141 million. On September 7, 2022, the defendants moved to dismiss the consolidated amended complaint.

Bright Health Group, Inc. GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on June 24, 2022 in the U.S. District Court for the Eastern District of New York relating to Bright Health Group, Inc.'s (Bright Health) approximately \$924 million June 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Bright Health and certain of its officers and directors. GS&Co. underwrote 11,297,000 shares of common stock representing an aggregate offering price of approximately \$203 million. On October 12, 2022, the defendants moved to dismiss the amended complaint.

17 Education & Technology Group Inc. GS Asia is among the underwriters named as defendants in a putative securities class action filed on July 19, 2022 in the U.S. District Court for the Central District of California relating to 17 Education & Technology Group Inc.'s (17EdTech) approximately \$331 million December 2020 initial public offering of ADS. In addition to the underwriters, the defendants include 17EdTech and certain of its officers and directors. GS Asia underwrote 12,604,000 ADS representing an aggregate offering price of approximately \$132 million.

LifeStance Health Group, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 10, 2022 in the U.S. District Court for the Southern District of New York relating to LifeStance Health Group, Inc.'s (LifeStance) approximately \$828 million June 2021 initial public offering of common stock. In addition to the underwriters, the defendants include LifeStance and certain of its officers and directors. GS&Co. underwrote 10,580,000 shares of common stock representing an aggregate offering price of approximately \$190 million.

MINISO Group Holding Limited. GS Asia is among the underwriters named as defendants in a putative securities class action filed on August 17, 2022 in the U.S. District Court for the Central District of California relating to MINISO Group Holding Limited's (MINISO) approximately \$656 million October 2020 initial public offering of ADS. In addition to the underwriters, the defendants include MINISO and certain of its officers and directors. GS Asia underwrote 16,408,093 ADS representing an aggregate offering price of approximately \$328 million.

Notes to Consolidated Financial Statements (Unaudited)

Coupang, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 26, 2022 in the U.S. District Court for the Southern District of New York relating to Coupang, Inc.'s (Coupang) approximately \$4.6 billion March 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Coupang and certain of its officers and directors. GS&Co. underwrote 42,900,000 shares of common stock representing an aggregate offering price of approximately \$1.5 billion.

Yatsen Holding Limited. GS Asia is among the underwriters named as defendants in a putative securities class action filed on September 23, 2022 in the U.S. District Court for the Southern District of New York relating to Yatsen Holding Limited's (Yatsen) approximately \$617 million November 2020 initial public offering of ADS. In addition to the underwriters, the defendants include Yatsen, certain of its officers and directors and one of its shareholders. GS Asia underwrote 22,912,500 ADS representing an aggregate offering price of approximately \$241 million.

Investment Management Services

Group Inc. and certain of its affiliates are parties to various civil litigation and arbitration proceedings and other disputes with clients relating to losses allegedly sustained as a result of the firm's investment management services. These claims generally seek, among other things, restitution or other compensatory damages and, in some cases, punitive damages.

Securities Lending Antitrust Litigation

Group Inc. and GS&Co. were among the defendants named in a putative antitrust class action and three individual actions relating to securities lending practices filed in the U.S. District Court for the Southern District of New York beginning in August 2017. The complaints generally assert claims under federal and state antitrust law and state common law in connection with an alleged conspiracy among the defendants to preclude the development of electronic platforms for securities lending transactions. The individual complaints also assert claims for tortious interference with business relations and under state trade practices law and, in the second and third individual actions, unjust enrichment under state common law. The complaints seek declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble, punitive and other damages. Group Inc. was voluntarily dismissed from the putative class action on January 26, 2018. Defendants' motion to dismiss the class action complaint was denied on September 27, 2018. Defendants' motion to dismiss the first individual action was granted on August 7, 2019. On September 30, 2021, the defendants' motion to dismiss the second and third individual actions, which were consolidated in June 2019, was granted. On October 25, 2021, the plaintiff in the second individual action appealed to the U.S. Court of Appeals for the Second Circuit. On June 30, 2022, the Magistrate Judge recommended that the plaintiffs' motion for class certification in the putative class action be granted in part and denied in part.

Notes to Consolidated Financial Statements (Unaudited)

Variable Rate Demand Obligations Antitrust Litigation

GS&Co. is among the defendants named in a putative class action relating to variable rate demand obligations (VRDOs), filed beginning in February 2019 under separate complaints and consolidated in the U.S. District Court for the Southern District of New York. The consolidated amended complaint, filed on May 31, 2019, generally asserts claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to manipulate the market for VRDOs. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble and other damages. On November 2, 2020, the court granted in part and denied in part the defendants' motion to dismiss, dismissing the state common law claims against GS&Co., but denying dismissal of the federal antitrust law claims.

GS&Co. is also among the defendants named in a related putative class action filed on June 2, 2021 in the U.S. District Court for the Southern District of New York. The complaint alleges the same conspiracy in the market for VRDOs as that alleged in the consolidated amended complaint filed on May 31, 2019, and asserts federal antitrust law, state law and state common law claims against the defendants. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble and other damages. On August 6, 2021, plaintiffs in the May 31, 2019 action filed an amended complaint consolidating the June 2, 2021 action with the May 31, 2019 action. On September 14, 2021, defendants filed a joint partial motion to dismiss the August 6, 2021 amended consolidated complaint. On June 28, 2022, the court granted in part and denied in part the defendants' motion to dismiss, dismissing the state breach of fiduciary duty claim against GS&Co., but declining to dismiss any portion of the federal antitrust law claims. On October 27, 2022, the plaintiffs moved for class certification.

Interest Rate Swap Antitrust Litigation

Group Inc., GS&Co., GSI, GS Bank USA and Goldman Sachs Financial Markets, L.P. are among the defendants named in a putative antitrust class action relating to the trading of interest rate swaps, filed in November 2015 and consolidated in the U.S. District Court for the Southern District of New York. The same Goldman Sachs entities are also among the defendants named in two antitrust actions relating to the trading of interest rate swaps, commenced in April 2016 and June 2018, respectively, in the U.S. District Court for the Southern District of New York by three operators of swap execution facilities and certain of their affiliates. These actions have been consolidated for pretrial proceedings. The complaints generally assert claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to preclude exchange trading of interest rate swaps. The complaints in the individual actions also assert claims under state antitrust law. The complaints seek declaratory and injunctive relief, as well as treble damages in an unspecified amount. Defendants moved to dismiss the class and the first individual action and the district court dismissed the state common law claims asserted by the plaintiffs in the first individual action and otherwise limited the state common law claim in the putative class action and the antitrust claims in both actions to the period from 2013 to 2016. On November 20, 2018, the court granted in part and denied in part the defendants' motion to dismiss the second individual action, dismissing the state common law claims for unjust enrichment and tortious interference, but denying dismissal of the federal and state antitrust claims. On March 13, 2019, the court denied the plaintiffs' motion in the putative class action to amend their complaint to add allegations related to conduct from 2008 to 2012, but granted the motion to add limited allegations from 2013 to 2016, which the plaintiffs added in a fourth consolidated amended complaint filed on March 22, 2019. The plaintiffs in the putative class action moved for class certification on March 7, 2019.

Notes to Consolidated Financial Statements (Unaudited)

Commodities-Related Litigation

GSI is among the defendants named in putative class actions relating to trading in platinum and palladium, filed beginning on November 25, 2014 and most recently amended on May 15, 2017, in the U.S. District Court for the Southern District of New York. The amended complaint generally alleges that the defendants violated federal antitrust laws and the Commodity Exchange Act in connection with an alleged conspiracy to manipulate a benchmark for physical platinum and palladium prices and seek declaratory and injunctive relief, as well as treble damages in an unspecified amount. On March 29, 2020, the court granted the defendants' motions to dismiss and for reconsideration, resulting in the dismissal of all claims. On April 27, 2020, plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit.

GS&Co., GSI, J. Aron & Company and Metro International Trade Services (Metro), a previously consolidated subsidiary of Group Inc. that was sold in the fourth quarter of 2014, are among the defendants in a number of putative class and individual actions filed beginning on August 1, 2013 and consolidated in the U.S. District Court for the Southern District of New York. The complaints generally allege violations of federal antitrust laws and state laws in connection with the storage of aluminum and aluminum trading. The complaints seek declaratory, injunctive and other equitable relief, as well as unspecified monetary damages, including treble damages. In December 2016, the district court granted defendants' motions to dismiss and on August 27, 2019, the Second Circuit vacated the district court's dismissals and remanded the case to district court for further proceedings. On July 23, 2020, the district court denied the class plaintiffs' motion for class certification, and on December 16, 2020 the Second Circuit denied leave to appeal the denial. On February 17, 2021, the district court granted defendants' motion for summary judgment with respect to the claims of most of the individual plaintiffs. On April 14, 2021, the plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit. On May 31, 2022, the two remaining individual plaintiffs entered into a settlement with the defendants. The firm has paid the full amount of its contribution to the settlement.

In connection with the sale of Metro, the firm agreed to provide indemnities to the buyer, including for any potential liabilities for legal or regulatory proceedings arising out of the conduct of Metro's business while the firm owned it.

U.S. Treasury Securities Litigation

GS&Co. is among the primary dealers named as defendants in several putative class actions relating to the market for U.S. Treasury securities, filed beginning in July 2015 and consolidated in the U.S. District Court for the Southern District of New York. GS&Co. is also among the primary dealers named as defendants in a similar individual action filed in the U.S. District Court for the Southern District of New York on August 25, 2017. The consolidated class action complaint, filed on December 29, 2017, generally alleges that the defendants violated antitrust laws in connection with an alleged conspiracy to manipulate the when-issued market and auctions for U.S. Treasury securities and that certain defendants, including GS&Co., colluded to preclude trading of U.S. Treasury securities on electronic trading platforms in order to impede competition in the bidding process. The individual action alleges a similar conspiracy regarding manipulation of the when-issued market and auctions, as well as related futures and options in violation of the Commodity Exchange Act. The complaints seek declaratory and injunctive relief, treble damages in an unspecified amount and restitution. Defendants' motion to dismiss was granted on March 31, 2021. On May 14, 2021, plaintiffs filed an amended complaint. Defendants' motion to dismiss the amended complaint was granted on March 31, 2022. On April 28, 2022, plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit.

Corporate Bonds Antitrust Litigation

Group Inc. and GS&Co. are among the dealers named as defendants in a putative class action relating to the secondary market for odd-lot corporate bonds, filed on April 21, 2020 in the U.S. District Court for the Southern District of New York. The amended consolidated complaint, filed on October 29, 2020, asserts claims under federal antitrust law in connection with alleged anti-competitive conduct by the defendants in the secondary market for odd-lots of corporate bonds, and seeks declaratory and injunctive relief, as well as unspecified monetary damages, including treble and punitive damages and restitution. On October 25, 2021, the court granted defendants' motion to dismiss with prejudice. On November 23, 2021, plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit. On March 30, 2022, the plaintiffs filed a motion for an indicative ruling in the district court that the judgment should be vacated because the wife of the district judge owned stock in one of the defendants and the district judge did not recuse himself.

Notes to Consolidated Financial Statements (Unaudited)

Credit Default Swap Antitrust Litigation

Group Inc., GS&Co. and GSI were among the defendants named in a putative antitrust class action relating to the settlement of credit default swaps, filed on June 30, 2021 in the U.S. District Court for the District of New Mexico. The complaint generally asserts claims under federal antitrust law and the Commodity Exchange Act in connection with an alleged conspiracy among the defendants to manipulate the benchmark price used to value credit default swaps for settlement. The complaint also asserts a claim for unjust enrichment under state common law. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of treble and other damages. On November 15, 2021, the defendants filed a motion to dismiss the complaint. On February 4, 2022, the plaintiffs filed an amended complaint and voluntarily dismissed Group Inc. from the action. On April 5, 2022, the defendants filed a motion to dismiss the amended complaint.

Employment-Related Matters

On September 15, 2010, a putative class action was filed in the U.S. District Court for the Southern District of New York by three female former employees. The complaint, as subsequently amended, alleges that Group Inc. and GS&Co. have systematically discriminated against female employees in respect of compensation, promotion and performance evaluations. The complaint alleges a class consisting of all female employees employed at specified levels in specified areas by Group Inc. and GS&Co. since July 2002, and asserts claims under federal and New York City discrimination laws. The complaint seeks class action status, injunctive relief and unspecified amounts of compensatory, punitive and other damages.

On March 30, 2018, the district court certified a damages class as to the plaintiffs' disparate impact and treatment claims. On September 4, 2018, the U.S. Court of Appeals for the Second Circuit denied defendants' petition for interlocutory review of the district court's class certification decision and subsequently denied defendants' petition for rehearing. On September 27, 2018, plaintiffs advised the district court that they would not seek to certify a class for injunctive and declaratory relief. On March 26, 2020, the Magistrate Judge in the district court granted in part a motion to compel arbitration as to class members who are parties to certain agreements with Group Inc. and/or GS&Co. in which they agreed to arbitrate employment-related disputes. On April 16, 2020, plaintiffs submitted objections to the Magistrate Judge's order and defendants submitted conditional objections in the event that the district judge overturned any portion of the Magistrate Judge's order. On July 22, 2021, defendants filed a motion to decertify the class. On September 15, 2021, the district court affirmed the decision of the Magistrate Judge to compel arbitration. On March 17, 2022, the district court denied the plaintiffs' motion for partial summary judgment as to a portion of the disparate impact claim, granted in part and denied in part the defendants' motion for summary judgment as to plaintiffs' disparate impact and treatment claims, denied the defendants' motion to decertify the class, and granted in part and denied in part the parties' respective motions to preclude certain expert testimony. On August 22, 2022, the district court granted in part and denied in part the defendants' motion for reconsideration of the portion of its March 17, 2022 decision that denied the defendants' motion to decertify the class, denying the defendants' motion to decertify the class but narrowing the class definition.

Communications Recordkeeping Investigation and Review

On September 27, 2022, the firm entered into settlements with the SEC and CFTC to resolve investigations of the firm's compliance with records preservation requirements relating to business communications sent over electronic messaging channels that have not been approved by the firm. Under the terms of the settlements, the firm paid \$125 million to the SEC and \$75 million to the CFTC and has agreed to cease and desist from further violations of certain records preservation requirements, to retain a compliance consultant and to implement improvements to its related compliance policies and procedures.

Notes to Consolidated Financial Statements (Unaudited)

Consumer Investigation and Review

The firm is cooperating with the Consumer Financial Protection Bureau in connection with an investigation of GS Bank USA's credit card account management practices, including with respect to the application of refunds, crediting of nonconforming payments, billing error resolution, advertisements, and reporting to credit bureaus.

Regulatory Investigations and Reviews and Related Litigation

Group Inc. and certain of its affiliates are subject to a number of other investigations and reviews by, and in some cases have received subpoenas and requests for documents and information from, various governmental and regulatory bodies and self-regulatory organizations and litigation and shareholder requests relating to various matters relating to the firm's businesses and operations, including:

- The securities offering process and underwriting practices;
- The firm's investment management and financial advisory services;
- Conflicts of interest;
- Research practices, including research independence and interactions between research analysts and other firm personnel, including investment banking personnel, as well as third parties;
- Transactions involving government-related financings and other matters, municipal securities, including wall-cross procedures and conflict of interest disclosure with respect to state and municipal clients, the trading and structuring of municipal derivative instruments in connection with municipal offerings, political contribution rules, municipal advisory services and the possible impact of credit default swap transactions on municipal issuers;
- Consumer lending, as well as residential mortgage lending, servicing and securitization, and compliance with related consumer laws;
- The offering, auction, sales, trading and clearance of corporate and government securities, currencies, commodities and other financial products and related sales and other communications and activities, as well as the firm's supervision and controls relating to such activities, including compliance with applicable short sale rules, algorithmic, high-frequency and quantitative trading, the firm's U.S. alternative trading system (dark pool), futures trading, options trading, when-issued trading, transaction reporting, technology systems and controls, communications recordkeeping and recording, securities lending practices, prime brokerage activities, trading and clearance of credit derivative instruments and interest rate swaps, commodities activities and metals storage, private placement practices, allocations of and trading in securities, and trading activities and communications in connection with the establishment of benchmark rates, such as currency rates;
- Compliance with the FCPA;
- The firm's hiring and compensation practices;
- The firm's system of risk management and controls; and
- Insider trading, the potential misuse and dissemination of material nonpublic information regarding corporate and governmental developments and the effectiveness of the firm's insider trading controls and information barriers.

The firm is cooperating with all such governmental and regulatory investigations and reviews.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and the Shareholders of The Goldman Sachs Group, Inc.:

Results of Review of Interim Financial Statements

We have reviewed the accompanying consolidated balance sheet of The Goldman Sachs Group, Inc. and its subsidiaries (the Company) as of September 30, 2022, the related consolidated statements of earnings, comprehensive income and changes in shareholders' equity for the three and nine month periods ended September 30, 2022 and 2021, and the consolidated statements of cash flows for the nine month periods ended September 30, 2022 and 2021, including the related notes (collectively referred to as the "interim financial statements"). Based on our reviews, we are not aware of any material modifications that should be made to the accompanying interim financial statements for them to be in conformity with accounting principles generally accepted in the United States of America.

We have previously audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheet of the Company as of December 31, 2021, and the related consolidated statements of earnings, comprehensive income, changes in shareholders' equity and cash flows for the year then ended (not presented herein), and in our report dated February 24, 2022, which included a paragraph describing a change in the manner of accounting for credit losses on certain financial instruments in the 2020 consolidated financial statements, we expressed an unqualified opinion on those consolidated financial statements. In our opinion, the information set forth in the accompanying consolidated balance sheet as of December 31, 2021 is fairly stated in all material respects in relation to the consolidated balance sheet from which it has been derived.

Basis for Review Results

These interim financial statements are the responsibility of the Company's management. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our review in accordance with the standards of the PCAOB. A review of interim financial information consists principally of applying analytical procedures and making inquiries of persons responsible for financial and accounting matters. It is substantially less in scope than an audit conducted in accordance with the standards of the PCAOB, the objective of which is the expression of an opinion regarding the financial statements taken as a whole. Accordingly, we do not express such an opinion.

/s/ PricewaterhouseCoopers LLP

New York, New York
November 2, 2022

Statistical Disclosures

Distribution of Assets, Liabilities and Shareholders' Equity

The tables below present information about average balances, interest and average interest rates.

\$ in millions	Average Balance for the			
	Three Months		Nine Months	
	Ended September	2021	Ended September	2021
2022	2022	2022	2022	2021
Assets				
U.S.	\$ 168,084	\$ 111,594	\$ 149,241	\$ 99,735
Non-U.S.	120,200	113,906	112,938	93,179
Deposits with banks	288,284	225,500	262,179	192,914
U.S.	227,090	220,289	249,144	201,353
Non-U.S.	174,042	148,367	173,144	133,384
Collateralized agreements	401,132	368,656	422,288	334,737
U.S.	165,218	165,341	163,125	173,691
Non-U.S.	125,816	135,757	127,958	135,784
Trading assets	291,034	301,098	291,083	309,475
U.S.	106,377	70,566	90,758	69,849
Non-U.S.	13,569	18,658	15,069	18,660
Investments	119,946	89,224	105,827	88,509
U.S.	150,531	112,818	141,455	103,414
Non-U.S.	21,543	21,652	22,861	21,406
Loans	172,074	134,470	164,316	124,820
U.S.	91,188	98,929	98,721	93,677
Non-U.S.	68,052	55,161	64,623	54,459
Other interest-earning assets	159,240	154,090	163,344	148,136
Interest-earning assets	1,431,710	1,273,038	1,409,037	1,198,591
Cash and due from banks	7,619	9,569	8,053	11,053
Other non-interest-earning assets	140,926	126,506	140,390	129,226
Assets	\$1,580,255	\$1,409,113	\$1,557,480	\$1,338,870
Liabilities				
U.S.	\$ 316,845	\$ 239,996	\$ 300,297	\$ 220,106
Non-U.S.	71,787	75,853	75,102	71,420
Interest-bearing deposits	388,632	315,849	375,399	291,526
U.S.	106,562	111,012	110,478	106,427
Non-U.S.	89,191	82,501	87,584	68,522
Collateralized financings	195,753	193,513	198,062	174,949
U.S.	90,801	68,803	84,748	71,691
Non-U.S.	83,924	76,562	86,175	73,154
Trading liabilities	174,725	145,365	170,923	144,845
U.S.	36,371	31,248	32,875	33,993
Non-U.S.	30,263	34,097	29,788	35,492
Short-term borrowings	66,634	65,345	62,663	69,485
U.S.	218,298	224,645	224,555	213,048
Non-U.S.	39,900	30,577	36,047	29,357
Long-term borrowings	258,198	255,222	260,602	242,405
U.S.	166,913	143,807	167,553	134,356
Non-U.S.	100,113	88,103	98,679	82,522
Other interest-bearing liabilities	267,026	231,910	266,232	216,878
Interest-bearing liabilities	1,350,968	1,207,204	1,333,881	1,140,088
Non-interest-bearing deposits	4,509	5,822	4,875	6,120
Other non-interest-bearing liabilities	106,765	92,488	103,306	92,997
Liabilities	1,462,242	1,305,514	1,442,062	1,239,205
Shareholders' equity				
Preferred stock	10,703	9,766	10,703	9,628
Common stock	107,310	93,833	104,715	90,037
Shareholders' equity	118,013	103,599	115,418	99,665
Liabilities and shareholders' equity	\$1,580,255	\$1,409,113	\$1,557,480	\$1,338,870
Percentage attributable to non-U.S. operations				
Interest-earning assets	36.55%	38.77%	36.66%	38.12%
Interest-bearing liabilities	30.73%	32.11%	30.99%	31.62%

\$ in millions	Interest for the			
	Three Months		Nine Months	
	Ended September	2021	Ended September	2021
2022	2022	2022	2022	2021
Assets				
U.S.	\$ 958	\$ 46	\$ 1,330	\$ 101
Non-U.S.	149	(59)	62	(110)
Deposits with banks	1,107	(13)	1,392	(9)
U.S.	1,176	(85)	1,448	(254)
Non-U.S.	366	(135)	264	(397)
Collateralized agreements	1,542	(220)	1,712	(651)
U.S.	843	747	2,282	2,185
Non-U.S.	491	483	1,269	1,368
Trading assets	1,334	1,230	3,551	3,553
U.S.	458	210	1,027	792
Non-U.S.	120	148	406	451
Investments	578	358	1,433	1,243
U.S.	2,212	1,139	5,160	3,215
Non-U.S.	275	224	777	663
Loans	2,487	1,363	5,937	3,878
U.S.	972	329	1,777	909
Non-U.S.	530	70	811	187
Other interest-earning assets	1,502	399	2,588	1,096
Interest-earning assets	\$ 8,550	\$ 3,117	\$ 16,613	\$ 9,110
Liabilities				
U.S.	\$ 1,568	\$ 265	\$ 2,522	\$ 822
Non-U.S.	243	54	453	156
Interest-bearing deposits	1,811	319	2,975	978
U.S.	718	50	998	109
Non-U.S.	272	(17)	310	(68)
Collateralized financings	990	33	1,308	41
U.S.	217	214	649	479
Non-U.S.	296	281	778	761
Trading liabilities	513	495	1,427	1,240
U.S.	110	103	241	391
Non-U.S.	42	12	92	42
Short-term borrowings	152	115	333	433
U.S.	1,471	823	3,333	2,413
Non-U.S.	32	20	100	64
Long-term borrowings	1,503	843	3,433	2,477
U.S.	887	(188)	728	(608)
Non-U.S.	651	(64)	805	(126)
Other interest-bearing liabilities	1,538	(252)	1,533	(734)
Interest-bearing liabilities	\$ 6,507	\$ 1,553	\$ 11,009	\$ 4,435
Net interest income				
U.S.	\$ 1,648	\$ 1,119	\$ 4,553	\$ 3,342
Non-U.S.	395	445	1,051	1,333
Net interest income	\$ 2,043	\$ 1,564	\$ 5,604	\$ 4,675

Statistical Disclosures

	Annualized Average Rate for the			
	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Assets				
U.S.	2.26 %	0.16 %	1.19 %	0.14 %
Non-U.S.	0.49 %	(0.21)%	0.07 %	(0.16)%
Deposits with banks	1.52 %	(0.02)%	0.71 %	(0.01)%
U.S.	2.05 %	(0.15)%	0.77 %	(0.17)%
Non-U.S.	0.83 %	(0.36)%	0.20 %	(0.40)%
Collateralized agreements	1.52 %	(0.24)%	0.54 %	(0.26)%
U.S.	2.02 %	1.79 %	1.87 %	1.68 %
Non-U.S.	1.54 %	1.41 %	1.32 %	1.35 %
Trading assets	1.81 %	1.62 %	1.63 %	1.53 %
U.S.	1.70 %	1.18 %	1.51 %	1.52 %
Non-U.S.	3.50 %	3.15 %	3.59 %	3.23 %
Investments	1.91 %	1.59 %	1.81 %	1.88 %
U.S.	5.81 %	4.01 %	4.86 %	4.16 %
Non-U.S.	5.05 %	4.10 %	4.53 %	4.14 %
Loans	5.72 %	4.02 %	4.82 %	4.15 %
U.S.	4.22 %	1.32 %	2.40 %	1.30 %
Non-U.S.	3.08 %	0.50 %	1.67 %	0.46 %
Other interest-earning assets	3.73 %	1.03 %	2.11 %	0.99 %
Interest-earning assets	2.36 %	0.97 %	1.57 %	1.02 %
Liabilities				
U.S.	1.96 %	0.44 %	1.12 %	0.50 %
Non-U.S.	1.34 %	0.28 %	0.80 %	0.29 %
Interest-bearing deposits	1.84 %	0.40 %	1.06 %	0.45 %
U.S.	2.67 %	0.18 %	1.20 %	0.14 %
Non-U.S.	1.21 %	(0.08)%	0.47 %	(0.13)%
Collateralized financings	2.00 %	0.07 %	0.88 %	0.03 %
U.S.	0.95 %	1.23 %	1.02 %	0.89 %
Non-U.S.	1.40 %	1.46 %	1.20 %	1.39 %
Trading liabilities	1.16 %	1.35 %	1.11 %	1.14 %
U.S.	1.20 %	1.31 %	0.98 %	1.54 %
Non-U.S.	0.55 %	0.14 %	0.41 %	0.16 %
Short-term borrowings	0.90 %	0.70 %	0.71 %	0.83 %
U.S.	2.67 %	1.45 %	1.98 %	1.51 %
Non-U.S.	0.32 %	0.26 %	0.37 %	0.29 %
Long-term borrowings	2.30 %	1.31 %	1.76 %	1.37 %
U.S.	2.10 %	(0.52)%	0.58 %	(0.61)%
Non-U.S.	2.57 %	(0.29)%	1.09 %	(0.20)%
Other interest-bearing liabilities	2.28 %	(0.43)%	0.77 %	(0.45)%
Interest-bearing liabilities	1.91 %	0.51 %	1.10 %	0.52 %
Interest rate spread	0.45 %	0.46 %	0.47 %	0.50 %
U.S.	0.72 %	0.57 %	0.68 %	0.60 %
Non-U.S.	0.30 %	0.36 %	0.27 %	0.39 %
Net yield on interest-earning assets	0.56 %	0.49 %	0.53 %	0.52 %

In the tables above:

- Assets, liabilities and interest are classified as U.S. and non-U.S. based on the location of the legal entity in which the assets and liabilities are held.
- Derivative instruments and commodities are included in other non-interest-earning assets and other non-interest-bearing liabilities.
- Collateralized agreements included \$201.70 billion of resale agreements and \$199.43 billion of securities borrowed for the three months ended September 2022, \$179.46 billion of resale agreements and \$189.19 billion of securities borrowed for the three months ended September 2021, \$228.21 billion of resale agreements and \$194.08 billion of securities borrowed for the nine months ended September 2022, and \$152.27 billion of resale agreements and \$182.47 billion of securities borrowed for the nine months ended September 2021.
- Other interest-earning assets primarily consists of receivables from customers and counterparties.
- Collateralized financings included \$158.89 billion of repurchase agreements and \$36.86 billion of securities loaned for the three months ended September 2022, \$156.26 billion of repurchase agreements and \$37.25 billion of securities loaned for the three months ended September 2021, \$156.99 billion of repurchase agreements and \$41.07 billion of securities loaned for the nine months ended September 2022, and \$140.45 billion of repurchase agreements and \$34.50 billion of securities loaned for the nine months ended September 2021.
- Substantially all of the other interest-bearing liabilities consists of payables to customers and counterparties.
- Interest rates for borrowings include the effects of interest rate swaps accounted for as hedges.
- Loans exclude loans held for sale that are accounted for at the lower of cost or fair value. Such loans are included within other interest-earning assets.
- Short- and long-term borrowings include both secured and unsecured borrowings.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

Introduction

The Goldman Sachs Group, Inc. (Group Inc. or parent company), a Delaware corporation, together with its consolidated subsidiaries, is a leading global financial institution that delivers a broad range of financial services across investment banking, securities, investment management and consumer banking to a large and diversified client base that includes corporations, financial institutions, governments and individuals. Founded in 1869, we are headquartered in New York and maintain offices in all major financial centers around the world. We report our activities in four business segments: Investment Banking, Global Markets, Asset Management, and Consumer & Wealth Management. See "Results of Operations" for further information about our business segments.

When we use the terms "we," "us" and "our," we mean Group Inc. and its consolidated subsidiaries. When we use the term "our subsidiaries," we mean the consolidated subsidiaries of Group Inc.

Group Inc. is a bank holding company (BHC) and a financial holding company regulated by the Board of Governors of the Federal Reserve System (FRB).

This Management's Discussion and Analysis of Financial Condition and Results of Operations should be read in conjunction with our Annual Report on Form 10-K for the year ended December 31, 2021. References to "the 2021 Form 10-K" are to our Annual Report on Form 10-K for the year ended December 31, 2021. References to "this Form 10-Q" are to our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2022. All references to "the consolidated financial statements" or "Statistical Disclosures" are to Part I, Item 1 of this Form 10-Q. The consolidated financial statements are unaudited. All references to September 2022, June 2022 and September 2021 refer to our periods ended, or the dates, as the context requires, September 30, 2022, June 30, 2022 and September 30, 2021, respectively. All references to December 2021 refer to the date December 31, 2021. Any reference to a future year refers to a year ending on December 31 of that year. Certain reclassifications have been made to previously reported amounts to conform to the current presentation.

Executive Overview

Three Months Ended September 2022 versus September 2021. We generated net earnings of \$3.07 billion for the third quarter of 2022, compared with \$5.38 billion for the third quarter of 2021. Diluted earnings per common share (EPS) was \$8.25 for the third quarter of 2022 compared with \$14.93 for the third quarter of 2021. Annualized return on average common shareholders' equity (ROE) was 11.0% for the third quarter of 2022, compared with 22.5% for the third quarter of 2021. Book value per common share was \$308.22 as of September 2022, 2.1% higher compared with June 2022 and 8.4% higher compared with December 2021.

Net revenues were \$11.98 billion for the third quarter of 2022, 12% lower than a strong third quarter of 2021, reflecting significantly lower net revenues in Investment Banking and Asset Management, partially offset by higher net revenues in Global Markets and Consumer & Wealth Management. Net revenues in Investment Banking primarily reflected significantly lower net revenues in Underwriting and Financial advisory compared with a strong prior year period, and net revenues in Asset Management primarily reflected significantly lower net revenues in Equity investments and Lending and debt investments, partially offset by higher Management and other fees. Net revenues in Global Markets reflected significantly higher net revenues in Fixed Income, Currency and Commodities (FICC), partially offset by lower net revenues in Equities compared with a strong prior year period, and net revenues in Consumer & Wealth Management reflected growth in Consumer banking net revenues.

Provision for credit losses was \$515 million for the third quarter of 2022, compared with \$175 million for the third quarter of 2021. Provisions for the third quarter of 2022 primarily reflected consumer portfolio growth, net charge-offs and the continued impact of broad macroeconomic concerns. The third quarter of 2021 primarily reflected provisions related to portfolio growth (primarily in credit cards).

Management's Discussion and Analysis

Operating expenses were \$7.70 billion for the third quarter of 2022, 17% higher than the third quarter of 2021, reflecting significantly higher non-compensation expenses and higher compensation and benefits expenses (reflecting a smaller reduction in the year-to-date ratio of compensation and benefits to net revenues, net of provision for credit losses, compared with the prior year period). Our efficiency ratio (total operating expenses divided by total net revenues) for the third quarter of 2022 was 64.3%, compared with 48.4% for the third quarter of 2021.

During the third quarter of 2022, we returned \$1.89 billion of capital to common shareholders, including \$1.00 billion of common share repurchases and \$893 million of common stock dividends. As of September 2022, our Common Equity Tier 1 (CET1) capital ratio was 14.3% under the Standardized Capital Rules and 14.6% under the Advanced Capital Rules. See Note 20 to the consolidated financial statements for further information about our capital ratios.

Beginning with the fourth quarter of 2022, consistent with our announced organizational changes that will become effective in December 2022, we will make certain changes to our business segments and report our results in the following three business segments: Global Banking & Markets, Asset & Wealth Management and Platform Solutions.

Nine Months Ended September 2022 versus September 2021. We generated net earnings of \$9.94 billion for the first nine months of 2022, compared with \$17.70 billion for the first nine months of 2021. Diluted EPS was \$26.71 for the first nine months of 2022, compared with \$48.59 for the first nine months of 2021. Annualized ROE was 12.2% for the first nine months of 2022, compared with 25.7% for the first nine months of 2021.

Net revenues were \$36.77 billion for the first nine months of 2022, 21% lower than a strong first nine months of 2021, reflecting significantly lower net revenues in Asset Management and Investment Banking, partially offset by higher net revenues in Global Markets and significantly higher net revenues in Consumer & Wealth Management. Broad macroeconomic and geopolitical concerns led to volatility in global equity prices and wider credit spreads, contributing to significantly lower net revenues in Equity investments and Lending and debt investments within Asset Management and significantly lower net revenues in Underwriting within Investment Banking. Net revenues in Global Markets reflected significantly higher net revenues in FICC, partially offset by lower net revenues in Equities compared with a strong prior year period, and net revenues in Consumer & Wealth Management reflected growth in both Consumer banking and Wealth management net revenues.

Provision for credit losses was \$1.74 billion for the first nine months of 2022, compared with \$13 million in the first nine months of 2021. Provisions in the first nine months of 2022 primarily reflected consumer portfolio growth (primarily in credit cards) and the impact of broad macroeconomic and geopolitical concerns. The first nine months of 2021 reflected portfolio growth, largely offset by reserve reductions as the broad economic environment continued to improve following the initial impact of the coronavirus (COVID-19) pandemic.

Operating expenses were \$23.07 billion for the first nine months of 2022, 6% lower than the first nine months of 2021, reflecting significantly lower compensation and benefits expenses (reflecting a decline in operating performance compared with a strong prior year period), partially offset by higher non-compensation expenses. Our efficiency ratio for the first nine months of 2022 was 62.7%, compared with 52.8% for the first nine months of 2021.

During the first nine months of 2022, we returned \$4.32 billion of capital to common shareholders, including \$2.00 billion of common share repurchases and \$2.32 billion of common stock dividends.

Business Environment

During the third quarter of 2022, the continuation of broad macroeconomic and geopolitical concerns, including inflationary pressures and the prolonged war in Ukraine, and uncertainty about the outlook, weighed on economic activity and kept market volatility high. In response, global central banks have generally continued to tighten monetary policy with additional policy interest rate increases during the quarter. These factors contributed to a decrease in global equity prices compared with the end of the second quarter of 2022.

The economic outlook remains uncertain, reflecting concerns about the continuation or escalation of the war between Russia and Ukraine and other geopolitical risks, inflation, and supply chain complications. See “Results of Operations — Segment Assets and Operating Results — Segment Operating Results” for further information about the operating environment for each of our business segments.

Critical Accounting Policies

Fair Value

Fair Value Hierarchy. Trading assets and liabilities, certain investments and loans, and certain other financial assets and liabilities, are included in our consolidated balance sheets at fair value (i.e., marked-to-market), with related gains or losses generally recognized in our consolidated statements of earnings. The use of fair value to measure financial instruments is fundamental to our risk management practices and is our most critical accounting policy.

The fair value of a financial instrument is the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. We measure certain financial assets and liabilities as a portfolio (i.e., based on its net exposure to market and/or credit risks). In determining fair value, the hierarchy under U.S. generally accepted accounting principles (U.S. GAAP) gives (i) the highest priority to unadjusted quoted prices in active markets for identical, unrestricted assets or liabilities (level 1 inputs), (ii) the next priority to inputs other than level 1 inputs that are observable, either directly or indirectly (level 2 inputs), and (iii) the lowest priority to inputs that cannot be observed in market activity (level 3 inputs). In evaluating the significance of a valuation input, we consider, among other factors, a portfolio's net risk exposure to that input. Assets and liabilities are classified in their entirety based on the lowest level of input that is significant to their fair value measurement.

The fair values for substantially all of our financial assets and liabilities are based on observable prices and inputs and are classified in levels 1 and 2 of the fair value hierarchy. Certain level 2 and level 3 financial assets and liabilities may require appropriate valuation adjustments that a market participant would require to arrive at fair value for factors, such as counterparty and our credit quality, funding risk, transfer restrictions, liquidity and bid/offer spreads.

Instruments classified in level 3 of the fair value hierarchy are those which require one or more significant inputs that are not observable. Level 3 financial assets represented 1.9% as of September 2022, 1.8% as of June 2022 and 1.6% as of December 2021 of our total assets. See Notes 4 through 10 to the consolidated financial statements for further information about level 3 financial assets, including changes in level 3 financial assets and related fair value measurements. Absent evidence to the contrary, instruments classified in level 3 of the fair value hierarchy are initially valued at transaction price, which is considered to be the best initial estimate of fair value. Subsequent to the transaction date, we use other methodologies to determine fair value, which vary based on the type of instrument. Estimating the fair value of level 3 financial instruments requires judgments to be made. These judgments include:

- Determining the appropriate valuation methodology and/or model for each type of level 3 financial instrument;
- Determining model inputs based on an evaluation of all relevant empirical market data, including prices evidenced by market transactions, interest rates, credit spreads, volatilities and correlations; and
- Determining appropriate valuation adjustments, including those related to illiquidity or counterparty credit quality.

Regardless of the methodology, valuation inputs and assumptions are only changed when corroborated by substantive evidence.

Controls Over Valuation of Financial Instruments.

Market makers and investment professionals in our revenue-producing units are responsible for pricing our financial instruments. Our control infrastructure is independent of the revenue-producing units and is fundamental to ensuring that all of our financial instruments are appropriately valued at market-clearing levels. In the event that there is a difference of opinion in situations where estimating the fair value of financial instruments requires judgment (e.g., calibration to market comparables or trade comparison, as described below), the final valuation decision is made by senior managers in independent risk oversight and control functions. This independent price verification is critical to ensuring that our financial instruments are properly valued.

Management's Discussion and Analysis

Price Verification. All financial instruments at fair value classified in levels 1, 2 and 3 of the fair value hierarchy are subject to our independent price verification process. The objective of price verification is to have an informed and independent opinion with regard to the valuation of financial instruments under review. Instruments that have one or more significant inputs which cannot be corroborated by external market data are classified in level 3 of the fair value hierarchy. Price verification strategies utilized by our independent risk oversight and control functions include:

- **Trade Comparison.** Analysis of trade data (both internal and external, where available) is used to determine the most relevant pricing inputs and valuations.
- **External Price Comparison.** Valuations and prices are compared to pricing data obtained from third parties (e.g., brokers or dealers, IHS Markit, Bloomberg, IDC, TRACE). Data obtained from various sources is compared to ensure consistency and validity. When broker or dealer quotations or third-party pricing vendors are used for valuation or price verification, greater priority is generally given to executable quotations.
- **Calibration to Market Comparables.** Market-based transactions are used to corroborate the valuation of positions with similar characteristics, risks and components.
- **Relative Value Analyses.** Market-based transactions are analyzed to determine the similarity, measured in terms of risk, liquidity and return, of one instrument relative to another or, for a given instrument, of one maturity relative to another.
- **Collateral Analyses.** Margin calls on derivatives are analyzed to determine implied values, which are used to corroborate our valuations.
- **Execution of Trades.** Where appropriate, market-making desks are instructed to execute trades in order to provide evidence of market-clearing levels.
- **Backtesting.** Valuations are corroborated by comparison to values realized upon sales.

See Note 4 to the consolidated financial statements for further information about fair value measurements.

Review of Net Revenues. Independent risk oversight and control functions ensure adherence to our pricing policy through a combination of daily procedures, including the explanation and attribution of net revenues based on the underlying factors. Through this process, we independently validate net revenues, identify and resolve potential fair value or trade booking issues on a timely basis and seek to ensure that risks are being properly categorized and quantified.

Review of Valuation Models. Our independent model risk management group (Model Risk), consisting of quantitative professionals who are separate from model developers, performs an independent model review and validation process of our valuation models. New or changed models are reviewed and approved prior to implementation. Models are reviewed annually to assess the impact of any changes in the product or market and any market developments in pricing theories. See “Risk Management — Model Risk Management” for further information about the review and validation of our valuation models.

Allowance for Credit Losses

We estimate and record an allowance for credit losses related to our loans held for investment that are accounted for at amortized cost. To determine the allowance for credit losses, we classify our loans accounted for at amortized cost into wholesale and consumer portfolios. These portfolios represent the level at which we have developed and documented our methodology to determine the allowance for credit losses. The allowance for credit losses is measured on a collective basis for loans that exhibit similar risk characteristics using a modeled approach and on an asset-specific basis for loans that do not share similar risk characteristics.

The allowance for credit losses takes into account the weighted average of a range of forecasts of future economic conditions over the expected life of the loans and lending commitments. The expected life of each loan or lending commitment is determined based on the contractual term adjusted for extension options or demand features, or is modeled in the case of revolving credit card loans. The forecasts include baseline, favorable and adverse economic scenarios over a three-year period. For loans with expected lives beyond three years, the model reverts to historical loss information based on a non-linear modeled approach. We apply judgment in weighting individual scenarios each quarter based on a variety of factors, including our internally derived economic outlook, market consensus, recent macroeconomic conditions and industry trends. The forecasted economic scenarios consider a number of risk factors relevant to the wholesale and consumer portfolios. Risk factors for wholesale loans include internal credit ratings, industry default and loss data, expected life, macroeconomic indicators (e.g., unemployment rates and GDP), the borrower's capacity to meet its financial obligations, the borrower's country of risk and industry, loan seniority and collateral type. In addition, for loans backed by real estate, risk factors include loan-to-value ratio, debt service ratio and home price index. Risk factors for installment and credit card loans include Fair Isaac Corporation (FICO) credit scores, delinquency status, loan vintage and macroeconomic indicators.

Management's Discussion and Analysis

The allowance for credit losses also includes qualitative components which allow management to reflect the uncertain nature of economic forecasting, capture uncertainty regarding model inputs, and account for model imprecision and concentration risk.

Our estimate of credit losses entails judgment about collectability at the reporting dates, and there are uncertainties inherent in those judgments. The allowance for credit losses is subject to a governance process that involves review and approval by senior management within our independent risk oversight and control functions. Personnel within our independent risk oversight and control functions are responsible for forecasting the economic variables that underlie the economic scenarios that are used in the modeling of expected credit losses. While we use the best information available to determine this estimate, future adjustments to the allowance may be necessary based on, among other things, changes in the economic environment or variances between actual results and the original assumptions used. Loans are charged off against the allowance for loan losses when deemed to be uncollectible.

We also record an allowance for credit losses on lending commitments which are held for investment that are accounted for at amortized cost. Such allowance is determined using the same methodology as the allowance for loan losses, while also taking into consideration the probability of drawdowns or funding, and whether such commitments are cancellable by us.

To estimate the potential impact of an adverse macroeconomic environment on our allowance for credit losses, we, among other things, compared the expected credit losses under the weighted average forecast used in the calculation of allowance for credit losses as of September 2022 (which was weighted towards the baseline and adverse economic scenarios) to the expected credit losses under a 100% weighted adverse economic scenario. The adverse economic scenario of the forecast model reflects a global recession in the fourth quarter of 2022 through the second half of 2023 resulting in an economic contraction, decline in consumer spending and rising unemployment rates. A 100% weighting to the adverse economic scenario would have resulted in an approximate \$1.0 billion increase in our allowance for credit losses as of September 2022. This hypothetical increase does not take into consideration any potential adjustments to qualitative reserves. The forecasts of macroeconomic conditions are inherently uncertain and do not take into account any other offsetting or correlated effects. The actual credit loss in an adverse macroeconomic environment may differ significantly from this estimate. See Note 9 to the consolidated financial statements for further information about the allowance for credit losses.

Use of Estimates

U.S. GAAP requires us to make certain estimates and assumptions. In addition to the estimates we make in connection with fair value measurements and the allowance for credit losses on loans and lending commitments held for investment and accounted for at amortized cost, the use of estimates and assumptions is also important in determining discretionary compensation accruals, the accounting for goodwill and identifiable intangible assets, provisions for losses that may arise from litigation and regulatory proceedings (including governmental investigations), and accounting for income taxes.

A substantial portion of our compensation and benefits represents discretionary compensation, which is finalized at year-end. We believe the most appropriate way to allocate estimated year-end discretionary compensation among interim periods is in proportion to the net revenues net of provision for credit losses earned in such periods. In addition to the level of net revenues net of provision for credit losses, our overall compensation expense in any given year is also influenced by, among other factors, overall financial performance, prevailing labor markets, business mix, the structure of our share-based compensation programs and the external environment.

Goodwill is assessed for impairment annually in the fourth quarter or more frequently if events occur or circumstances change that indicate an impairment may exist. When assessing goodwill for impairment, first, a qualitative assessment can be made to determine whether it is more likely than not that the estimated fair value of a reporting unit is less than its estimated carrying value. If the results of the qualitative assessment are not conclusive, a quantitative goodwill test is performed. Alternatively, a quantitative goodwill test can be performed without performing a qualitative assessment. Estimating the fair value of our reporting units requires judgment. Critical inputs to the fair value estimates include projected earnings and allocated equity. There is inherent uncertainty in the projected earnings. The estimated carrying value of each reporting unit reflects an allocation of total shareholders' equity and represents the estimated amount of total shareholders' equity required to support the activities of the reporting unit under currently applicable regulatory capital requirements. See Note 12 to the consolidated financial statements for further information about goodwill. If we experience a prolonged or severe period of weakness in the business environment, financial markets, our performance or our common stock price, or additional increases in capital requirements, our goodwill could be impaired in the future.

Management's Discussion and Analysis

Identifiable intangible assets are tested for impairment when events or changes in circumstances suggest that an asset's or asset group's carrying value may not be fully recoverable. Judgment is required to evaluate whether indications of potential impairment have occurred, and to test identifiable intangible assets for impairment, if required. An impairment is recognized if the estimated undiscounted cash flows relating to the asset or asset group is less than the corresponding carrying value. See Note 12 to the consolidated financial statements for further information about identifiable intangible assets.

We also estimate and provide for potential losses that may arise out of litigation and regulatory proceedings to the extent that such losses are probable and can be reasonably estimated. In addition, we estimate the upper end of the range of reasonably possible aggregate loss in excess of the related reserves for litigation and regulatory proceedings where we believe the risk of loss is more than slight. See Notes 18 and 27 to the consolidated financial statements for information about certain judicial, litigation and regulatory proceedings. Significant judgment is required in making these estimates and our final liabilities may ultimately be materially different. Our total estimated liability in respect of litigation and regulatory proceedings is determined on a case-by-case basis and represents an estimate of probable losses after considering, among other factors, the progress of each case, proceeding or investigation, our experience and the experience of others in similar cases, proceedings or investigations, and the opinions and views of legal counsel.

In accounting for income taxes, we recognize tax positions in the financial statements only when it is more likely than not that the position will be sustained on examination by the relevant taxing authority based on the technical merits of the position. We use estimates to recognize current and deferred income taxes in the U.S. federal, state and local and non-U.S. jurisdictions in which we operate. The income tax laws in these jurisdictions are complex and can be subject to different interpretations between taxpayers and taxing authorities. Disputes may arise over these interpretations and can be settled by audit, administrative appeals or judicial proceedings. Our interpretations are reevaluated quarterly based on guidance currently available, tax examination experience and the opinions of legal counsel, among other factors. We recognize deferred taxes based on the amount that will more likely than not be realized in the future based on enacted income tax laws. Our estimate for deferred taxes includes estimates for future taxable earnings, including the level and character of those earnings, and various tax planning strategies. See Note 24 to the consolidated financial statements in Part II, Item 8 of the 2021 Form 10-K for further information about income taxes.

Recent Accounting Developments

See Note 3 to the consolidated financial statements for information about Recent Accounting Developments.

Results of Operations

The composition of our net revenues has varied over time as financial markets and the scope of our operations have changed. The composition of net revenues can also vary over the shorter term due to fluctuations in U.S. and global economic and market conditions. See "Risk Factors" in Part I, Item 1A of the 2021 Form 10-K for further information about the impact of economic and market conditions on our results of operations.

Management's Discussion and Analysis

Financial Overview

The table below presents an overview of our financial results and selected financial ratios.

\$ in millions, except per share amounts	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Net revenues	\$11,975	\$13,608	\$36,772	\$46,700
Pre-tax earnings	\$ 3,756	\$ 6,842	\$11,956	\$22,019
Net earnings	\$ 3,069	\$ 5,378	\$ 9,935	\$17,700
Net earnings to common	\$ 2,962	\$ 5,284	\$ 9,579	\$17,342
Diluted EPS	\$ 8.25	\$ 14.93	\$ 26.71	\$ 48.59
ROE	11.0%	22.5%	12.2%	25.7%
ROTE	12.0%	23.8%	13.1%	27.2%
Net earnings to average assets	0.8%	1.5%	0.9%	1.8%
Return on shareholders' equity	10.4%	20.8%	11.5%	23.7%
Average equity to average assets	7.5%	7.4%	7.4%	7.4%
Dividend payout ratio	30.3%	13.4%	24.3%	9.3%

In the table above:

- Net earnings to common represents net earnings applicable to common shareholders, which is calculated as net earnings less preferred stock dividends.
- ROE, return on average tangible common shareholders' equity (ROTE), net earnings to average assets and return on average shareholders' equity are annualized amounts.
- ROE is calculated by dividing annualized net earnings to common by average monthly common shareholders' equity. Tangible common shareholders' equity is calculated as total shareholders' equity less preferred stock, goodwill and identifiable intangible assets. ROTE is calculated by dividing annualized net earnings to common by average monthly tangible common shareholders' equity. We believe that tangible common shareholders' equity is meaningful because it is a measure that we and investors use to assess capital adequacy and that ROTE is meaningful because it measures the performance of businesses consistently, whether they were acquired or developed internally. Tangible common shareholders' equity and ROTE are non-GAAP measures and may not be comparable to similar non-GAAP measures used by other companies.
- Net earnings to average assets is calculated by dividing annualized net earnings by average total assets.
- Return on shareholders' equity is calculated by dividing annualized net earnings by average monthly shareholders' equity.
- Average equity to average assets is calculated by dividing average total shareholders' equity by average total assets.
- Dividend payout ratio is calculated by dividing dividends declared per common share by diluted EPS.

The table below presents our average equity and the reconciliation of average common shareholders' equity to average tangible common shareholders' equity.

\$ in millions	Average for the			
	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Total shareholders' equity	\$118,013	\$103,599	\$115,418	\$ 99,665
Preferred stock	(10,703)	(9,766)	(10,703)	(9,628)
Common shareholders' equity	107,310	93,833	104,715	90,037
Goodwill	(6,242)	(4,331)	(5,546)	(4,332)
Identifiable intangible assets	(1,987)	(510)	(1,463)	(558)
Tangible common shareholders' equity	\$ 99,081	\$ 88,992	\$ 97,706	\$ 85,147

Net Revenues

The table below presents our net revenues by line item.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Investment banking	\$ 1,541	\$ 3,548	\$ 5,457	\$ 10,564
Investment management	2,276	2,139	6,733	5,840
Commissions and fees	995	860	3,079	2,766
Market making	4,642	3,929	15,561	13,096
Other principal transactions	478	1,568	338	9,759
Total non-interest revenues	9,932	12,044	31,168	42,025
Interest income	8,550	3,117	16,613	9,110
Interest expense	6,507	1,553	11,009	4,435
Net interest income	2,043	1,564	5,604	4,675
Total net revenues	\$ 11,975	\$ 13,608	\$ 36,772	\$ 46,700

In the table above:

- Investment banking consists of revenues (excluding net interest) from financial advisory and underwriting assignments. These activities are included in our Investment Banking segment.
- Investment management consists of revenues (excluding net interest) from providing asset management services across all major asset classes to a diverse set of asset management clients (included in our Asset Management segment), as well as asset management services, wealth advisory services and certain transaction services for wealth management clients (included in our Consumer & Wealth Management segment).
- Commissions and fees consists of revenues from executing and clearing client transactions on major stock, options and futures exchanges worldwide, as well as over-the-counter (OTC) transactions. These activities are included in our Global Markets and Consumer & Wealth Management segments.
- Market making consists of revenues (excluding net interest) from client execution activities related to making markets in interest rate products, credit products, mortgages, currencies, commodities and equity products. These activities are included in our Global Markets segment.

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- Other principal transactions consists of revenues (excluding net interest) from our equity investing activities, including revenues related to our consolidated investments (included in our Asset Management segment), and debt investing and lending activities (included across our four segments).

Operating Environment. During the third quarter of 2022, the operating environment continued to be generally characterized by broad macroeconomic and geopolitical concerns and market volatility, which contributed to a decrease in global equity prices compared with the end of the second quarter of 2022. These factors contributed to solid market-making activity levels, a decline in industry-wide mergers and acquisitions transactions volumes and low industry-wide underwriting volumes. Additionally, global central banks continued to react to inflationary pressures by generally increasing policy interest rates.

If concerns about the economic outlook grow, including those about the continuation or escalation of geopolitical events, inflation and supply chain complications, and the persistence of COVID-19-related effects, it may lead to a continued decline in equity prices, a continued widening of credit spreads, a decline in market-making activity levels, or a continued decline in investment banking volumes, and net revenues and provision for credit losses would likely be negatively impacted. See “Segment Assets and Operating Results — Segment Operating Results” for information about the operating environment and material trends and uncertainties that may impact our results of operations.

Three Months Ended September 2022 versus September 2021. Net revenues in the consolidated statements of earnings were \$11.98 billion for the third quarter of 2022, 12% lower than a strong third quarter of 2021, primarily reflecting significantly lower investment banking revenues and other principal transactions revenues, partially offset by higher market making revenues and significantly higher net interest income.

Non-Interest Revenues. Investment banking revenues in the consolidated statements of earnings were \$1.54 billion for the third quarter of 2022, 57% lower than a strong third quarter of 2021, due to significantly lower revenues in both equity underwriting and debt underwriting, reflecting a significant decline in industry-wide activity, and in financial advisory, reflecting a significant decline in industry-wide completed mergers and acquisitions transactions compared with elevated activity levels in the prior year period.

Investment management revenues in the consolidated statements of earnings were \$2.28 billion for the third quarter of 2022, 6% higher than the third quarter of 2021, due to higher management and other fees, reflecting the inclusion of NN Investment Partners (NNIP) and the impact of fee waivers on money market funds in the prior year period.

Commissions and fees in the consolidated statements of earnings were \$995 million for the third quarter of 2022, 16% higher than the third quarter of 2021, primarily due to higher commissions and fees in Equities, reflecting generally higher volumes.

Market making revenues in the consolidated statements of earnings were \$4.64 billion for the third quarter of 2022, 18% higher than the third quarter of 2021, primarily reflecting significantly higher revenues in interest rate products and currencies, partially offset by significantly lower revenues in equity products.

Other principal transactions revenues in the consolidated statements of earnings were \$478 million for the third quarter of 2022, 70% lower than the third quarter of 2021, primarily reflecting significantly lower net gains from investments in private equities and, to a lesser extent, from debt investments, partially offset by mark-to-market net gains from investments in public equities compared with significant net losses in the third quarter of 2021.

Net Interest Income. Net interest income in the consolidated statements of earnings was \$2.04 billion for the third quarter of 2022, 31% higher than the third quarter of 2021, reflecting an increase in interest income primarily related to collateralized agreements, deposits with banks, and other interest-earning assets, each reflecting the impact of higher average interest rates, and loans, reflecting the impact of higher average interest rates and higher average balances. The increase in interest income was partially offset by an increase in interest expense related to other interest-bearing liabilities, deposits, collateralized financings, and borrowings, each reflecting the impact of higher average interest rates. See “Statistical Disclosures — Distribution of Assets, Liabilities and Shareholders’ Equity” for further information about our sources of net interest income.

Nine Months Ended September 2022 versus September 2021. Net revenues in the consolidated statements of earnings were \$36.77 billion for the first nine months of 2022, 21% lower than a strong first nine months of 2021, primarily reflecting significantly lower other principal transactions revenues and investment banking revenues, partially offset by higher market making revenues and significantly higher net interest income.

Non-Interest Revenues. Investment banking revenues in the consolidated statements of earnings were \$5.46 billion for the first nine months of 2022, 48% lower than the first nine months of 2021, due to significantly lower revenues in both equity and debt underwriting, reflecting a significant decline in industry-wide activity, and lower revenues in financial advisory, reflecting a decline in industry-wide completed mergers and acquisitions transactions.

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Investment management revenues in the consolidated statements of earnings were \$6.73 billion for the first nine months of 2022, 15% higher than the first nine months of 2021, primarily due to higher management and other fees, reflecting the inclusion of NNIP, the impact of fee waivers on money market funds in the prior year period and the impact of higher average assets under supervision.

Commissions and fees in the consolidated statements of earnings were \$3.08 billion for the first nine months of 2022, 11% higher than the first nine months of 2021, primarily due to higher commissions and fees in Equities, reflecting generally higher volumes.

Market making revenues in the consolidated statements of earnings were \$15.56 billion for the first nine months of 2022, 19% higher than the first nine months of 2021, primarily reflecting significantly higher revenues in currencies, interest rate products and commodities, partially offset by lower revenues in equity products and negative revenues in mortgages.

Other principal transactions revenues in the consolidated statements of earnings were \$338 million for the first nine months of 2022, compared with \$9.76 billion for the first nine months of 2021, primarily reflecting significantly lower net gains from investments in private equities, significant mark-to-market net losses from investments in public equities and net mark-downs in debt investments compared with net mark-ups in the prior year period.

Net Interest Income. Net interest income in the consolidated statements of earnings was \$5.60 billion for the first nine months of 2022, 20% higher than the first nine months of 2021, reflecting an increase in interest income primarily related to collateralized agreements, other interest-earning assets and deposits with banks, each reflecting the impact of higher average interest rates, and loans, reflecting the impact of higher average balances and higher interest rates. The increase in interest income was partially offset by an increase in interest expense primarily related to other interest-bearing liabilities, collateralized financings, and borrowings, each reflecting the impact of higher average interest rates, and deposits, reflecting the impact of higher average interest rates and higher average balances. See “Statistical Disclosures — Distribution of Assets, Liabilities and Shareholders’ Equity” for further information about our sources of net interest income.

Provision for Credit Losses

Provision for credit losses consists of provision for credit losses on loans and lending commitments held for investment and accounted for at amortized cost. See Note 9 to the consolidated financial statements for further information about the provision for credit losses.

The table below presents our provision for credit losses.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Provision for credit losses	\$ 515	\$ 175	\$ 1,743	\$ 13

Three Months Ended September 2022 versus September 2021. Provision for credit losses in the consolidated statements of earnings was \$515 million for the third quarter of 2022, compared with \$175 million for the third quarter of 2021. Provisions for the third quarter of 2022 primarily reflected consumer portfolio growth, net charge-offs and the continued impact of broad macroeconomic concerns. The third quarter of 2021 primarily reflected provisions related to portfolio growth (primarily in credit cards).

Nine Months Ended September 2022 versus September 2021. Provision for credit losses in the consolidated statements of earnings was \$1.74 billion for the first nine months of 2022, compared with \$13 million for the first nine months of 2021. Provisions for the first nine months of 2022 primarily reflected consumer portfolio growth (primarily in credit cards) and the impact of broad macroeconomic and geopolitical concerns. The first nine months of 2021 reflected portfolio growth, largely offset by reserve reductions as the broad economic environment continued to improve following the initial impact of the COVID-19 pandemic.

Operating Expenses

Our operating expenses are primarily influenced by compensation, headcount and levels of business activity. Compensation and benefits includes salaries, estimated year-end discretionary compensation, amortization of equity awards and other items such as benefits. Discretionary compensation is significantly impacted by, among other factors, the level of net revenues net of provision for credit losses, overall financial performance, prevailing labor markets, business mix, the structure of our share-based compensation programs and the external environment.

The table below presents our operating expenses by line item and headcount.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Compensation and benefits	\$ 3,606	\$ 3,167	\$11,384	\$14,473
Transaction based	1,317	1,139	3,878	3,520
Market development	199	165	596	360
Communications and technology	459	397	1,327	1,143
Depreciation and amortization	666	509	1,728	1,527
Occupancy	255	239	765	727
Professional fees	465	433	1,392	1,137
Other expenses	737	542	2,003	1,781
Total operating expenses	\$ 7,704	\$ 6,591	\$23,073	\$24,668
Headcount at period-end	49,100	43,000		

Management's Discussion and Analysis

Three Months Ended September 2022 versus September 2021.

Operating expenses in the consolidated statements of earnings were \$7.70 billion for the third quarter of 2022, 17% higher than the third quarter of 2021. Our efficiency ratio for the third quarter of 2022 was 64.3%, compared with 48.4% for the third quarter of 2021.

The increase in operating expenses compared with the third quarter of 2021 included higher compensation and benefits expenses (reflecting a smaller reduction in the year-to-date ratio of compensation and benefits to net revenues, net of provision for credit losses, compared with the prior year period), the inclusion of NNIP and GreenSky, Inc. (GreenSky), higher net provisions for litigation and regulatory proceedings, and higher transaction based expenses. While certain non-compensation expenses (e.g., occupancy and market development) were impacted by inflationary pressures, the overall impact of higher inflation was not material for the three months ended September 2022.

Net provisions for litigation and regulatory proceedings for the third quarter of 2022 were \$191 million compared with \$52 million for the third quarter of 2021.

Headcount increased 4% compared with June 2022, primarily reflecting the timing of campus hires and investments in growth initiatives.

Nine Months Ended September 2022 versus September 2021.

Operating expenses in the consolidated statements of earnings were \$23.07 billion for the first nine months of 2022, 6% lower than the first nine months of 2021. Our efficiency ratio for the first nine months of 2022 was 62.7%, compared with our medium-term target efficiency ratio of approximately 60.0%. Our efficiency ratio for the first nine months of 2021 was 52.8%.

The decrease in operating expenses compared with the first nine months of 2021 was due to significantly lower compensation and benefits expenses (reflecting a decline in operating performance compared with a strong prior year period), partially offset by increases from the inclusion of NNIP and GreenSky, technology expenses, market development expenses, transaction based expenses and professional fees.

Net provisions for litigation and regulatory proceedings for the first nine months of 2022 were \$407 million compared with \$352 million for the first nine months of 2021.

As of September 2022, headcount increased 12% compared with December 2021, primarily reflecting investments in growth initiatives and the acquisitions of NNIP and GreenSky.

Provision for Taxes

The effective income tax rate for the first nine months of 2022 was 16.9%, down from the full year income tax rate of 20.0% for 2021, primarily due to an increase in the impact of permanent tax benefits in the first nine months of 2022 compared with the full year of 2021. The increase compared with 16.3% for the first half of 2022 was primarily due to a decrease in the impact of tax benefits on the settlement of employee share-based awards in the first nine months of 2022 compared with the first half of 2022.

The Finance Act 2022, which decreases the U.K. bank surcharge tax rate by 5% from April 1, 2023, was enacted in February 2022. This bank surcharge is currently applicable to certain of our U.K. subsidiaries and branches, including Goldman Sachs International (GSI) and Goldman Sachs International Bank (GSIB). During the first nine months of 2022, certain U.K. deferred tax assets and liabilities were remeasured and a net reduction in deferred tax assets of approximately \$50 million was recognized.

In August 2022, the Inflation Reduction Act of 2022 was signed into law. The Inflation Reduction Act of 2022 includes income tax incentives to encourage investments in clean energy and a new 15% corporate alternative minimum tax (CAMT). The CAMT applies to corporations with average annual profits over \$1 billion and is calculated on their financial statement income, with certain adjustments, for years beginning after December 31, 2022. The legislation will have no impact on our 2022 annual effective tax rate and based on our current understanding of the CAMT, is not expected to have a material impact on our 2023 annual effective tax rate.

Segment Assets and Operating Results

Segment Assets. The table below presents assets by segment.

\$ in millions	As of	
	September 2022	December 2021
Investment Banking	\$ 145,563	\$ 144,157
Global Markets	1,163,721	1,082,378
Asset Management	85,814	91,115
Consumer & Wealth Management	160,896	146,338
Total	\$ 1,555,994	\$ 1,463,988

The allocation process for segment assets is based on the activities of these segments. The allocation of assets includes allocation of global core liquid assets (GCLA) (which consists of unencumbered, highly liquid securities and cash), which is generally included within cash and cash equivalents, collateralized agreements and trading assets on our balance sheet. Due to the integrated nature of these segments, estimates and judgments are made in allocating these assets. See "Risk Management — Liquidity Risk Management" for further information about our GCLA.

Management's Discussion and Analysis

Segment Operating Results. The table below presents our segment operating results.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Investment Banking				
Net revenues	\$ 1,576	\$ 3,700	\$ 6,124	\$ 11,080
Provision for credit losses	78	41	325	(229)
Operating expenses	1,038	1,343	3,391	5,161
Pre-tax earnings	\$ 460	\$ 2,316	\$ 2,408	\$ 6,148
Net earnings to common	\$ 355	\$ 1,818	\$ 1,950	\$ 4,890
Average common equity	\$ 9,720	\$ 10,346	\$ 10,649	\$ 10,201
Return on average common equity	14.6%	70.3%	24.4%	63.9%
Global Markets				
Net revenues	\$ 6,201	\$ 5,611	\$ 20,540	\$ 18,092
Provision for credit losses	(43)	(24)	190	(30)
Operating expenses	3,213	2,794	10,340	10,352
Pre-tax earnings	\$ 3,031	\$ 2,841	\$ 10,010	\$ 7,770
Net earnings to common	\$ 2,408	\$ 2,190	\$ 8,102	\$ 6,041
Average common equity	\$ 57,078	\$ 46,959	\$ 54,842	\$ 44,067
Return on average common equity	16.9%	18.7%	19.7%	18.3%
Asset Management				
Net revenues	\$ 1,821	\$ 2,279	\$ 3,451	\$ 12,025
Provision for credit losses	29	10	129	(2)
Operating expenses	1,565	823	4,121	4,656
Pre-tax earnings/(loss)	\$ 227	\$ 1,446	\$ (799)	\$ 7,371
Net earnings/(loss) to common	\$ 181	\$ 1,096	\$ (717)	\$ 5,853
Average common equity	\$ 24,587	\$ 25,788	\$ 24,358	\$ 25,294
Return on average common equity	2.9 %	17.0%	(3.9)%	30.9%
Consumer & Wealth Management				
Net revenues	\$ 2,377	\$ 2,018	\$ 6,657	\$ 5,503
Provision for credit losses	451	148	1,099	274
Operating expenses	1,888	1,631	5,221	4,499
Pre-tax earnings	\$ 38	\$ 239	\$ 337	\$ 730
Net earnings to common	\$ 18	\$ 180	\$ 244	\$ 558
Average common equity	\$ 15,925	\$ 10,740	\$ 14,866	\$ 10,475
Return on average common equity	0.5%	6.7%	2.2%	7.1%
Total				
Net revenues	\$ 11,975	\$ 13,608	\$ 36,772	\$ 46,700
Provision for credit losses	515	175	1,743	13
Operating expenses	7,704	6,591	23,073	24,668
Pre-tax earnings	\$ 3,756	\$ 6,842	\$ 11,956	\$ 22,019
Net earnings to common	\$ 2,962	\$ 5,284	\$ 9,579	\$ 17,342
Average common equity	\$ 107,310	\$ 93,833	\$ 104,715	\$ 90,037
Return on average common equity	11.0%	22.5%	12.2%	25.7%

Net revenues in our segments include allocations of interest income and expense to specific positions in relation to the cash generated by, or funding requirements of, such positions. See Note 25 to the consolidated financial statements for further information about our business segments.

The allocation of common shareholders' equity and preferred stock dividends to each segment is based on the estimated amount of equity required to support the activities of the segment under relevant regulatory capital requirements. Net earnings for each segment is calculated by applying the firmwide tax rate to each segment's pre-tax earnings.

We review and make any necessary adjustments to attributed equity in January of each year, to reflect, among other things, the results of the latest Comprehensive Capital Analysis and Review (CCAR) process, as well as projected changes in our balance sheet. See "Capital Management and Regulatory Capital — Capital Management" for information about the impact of these updates on the allocation of attributed equity among our segments as of the beginning of the first quarter of 2022. The average common equity balances above incorporate such impact, as well as the changes in the size and composition of assets held in each of our segments that occurred during the respective periods.

Compensation and benefits expenses within our segments reflect, among other factors, our overall performance, as well as the performance of individual businesses. Consequently, pre-tax margins in one segment of our business may be significantly affected by the performance of our other business segments. A description of segment operating results follows.

Investment Banking

Investment Banking generates revenues from the following:

- **Financial advisory.** Includes strategic advisory assignments with respect to mergers and acquisitions, divestitures, corporate defense activities, restructurings and spin-offs.
- **Underwriting.** Includes public offerings and private placements, including local and cross-border transactions and acquisition financing, of a wide range of securities and other financial instruments, including loans.
- **Corporate lending.** Includes lending to corporate clients, including through relationship lending, middle-market lending and acquisition financing. We also provide transaction banking services to certain of our corporate clients.

The table below presents our Investment Banking assets.

\$ in millions	As of	
	September 2022	December 2021
Cash and cash equivalents	\$ 66,458	\$ 64,437
Collateralized agreements	17,670	21,354
Customer and other receivables	2,550	5,248
Trading assets	23,271	20,338
Investments	1,080	1,053
Loans	32,317	29,555
Other assets	2,217	2,172
Total	\$ 145,563	\$ 144,157

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The table below presents details about our Investment Banking loans.

\$ in millions	As of	
	September 2022	December 2021
Corporate	\$ 33,280	\$ 30,421
Loans, gross	33,280	30,421
Allowance for loan losses	(963)	(866)
Total loans	\$ 32,317	\$ 29,555

The table below presents our average Investment Banking gross loans by loan type.

\$ in millions	Average for the			
	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Corporate	\$33,664	\$26,439	\$32,808	\$26,714
Loans, gross	\$33,664	\$26,439	\$32,808	\$26,714

The table below presents our Investment Banking operating results.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Financial advisory	\$ 972	\$ 1,648	\$ 3,296	\$ 4,022
Equity underwriting	241	1,174	633	3,986
Debt underwriting	328	726	1,528	2,556
Underwriting	569	1,900	2,161	6,542
Corporate lending	35	152	667	516
Net revenues	1,576	3,700	6,124	11,080
Provision for credit losses	78	41	325	(229)
Operating expenses	1,038	1,343	3,391	5,161
Pre-tax earnings	460	2,316	2,408	6,148
Provision for taxes	90	485	407	1,206
Net earnings	370	1,831	2,001	4,942
Preferred stock dividends	15	13	51	52
Net earnings to common	\$ 355	\$ 1,818	\$ 1,950	\$ 4,890
Average common equity	\$ 9,720	\$10,346	\$10,649	\$10,201
Return on average common equity	14.6%	70.3%	24.4%	63.9%

The table below presents our financial advisory and underwriting transaction volumes.

\$ in billions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Announced mergers and acquisitions	\$ 189	\$ 471	\$ 1,004	\$ 1,414
Completed mergers and acquisitions	\$ 225	\$ 418	\$ 988	\$ 1,070
Equity and equity-related offerings	\$ 10	\$ 25	\$ 27	\$ 111
Debt offerings	\$ 39	\$ 81	\$ 177	\$ 269

In the table above:

- Volumes are per Dealogic.
- Announced and completed mergers and acquisitions volumes are based on full credit to each of the advisors in a transaction. Equity and equity-related and debt offerings are based on full credit for single book managers and equal credit for joint book managers. Transaction volumes may not be indicative of net revenues in a given period. In addition, transaction volumes for prior periods may vary from amounts previously reported due to the subsequent withdrawal or a change in the value of a transaction.

- Equity and equity-related offerings includes Rule 144A and public common stock offerings, convertible offerings and rights offerings.
- Debt offerings includes non-convertible preferred stock, mortgage-backed securities, asset-backed securities and taxable municipal debt. Includes publicly registered and Rule 144A issues and excludes leveraged loans.

Operating Environment. During the third quarter of 2022, Investment Banking operated in an environment generally characterized by continued broad macroeconomic and geopolitical concerns. As a result, compared with the second quarter of 2022, industry-wide completed mergers and acquisitions transactions declined, industry-wide equity underwriting volumes remained low amid volatile equity markets and a decline in prices, and industry-wide debt underwriting volumes declined across leveraged finance and investment-grade issuances amid rising interest rates.

In the future, if market and economic conditions deteriorate further, and industry-wide mergers and acquisitions transactions and underwriting volumes continue to decline, or credit spreads related to hedges on our relationship lending portfolio tighten further, net revenues in Investment Banking would likely be negatively impacted. In addition, if economic conditions deteriorate further or if the creditworthiness of borrowers deteriorates, provision for credit losses would likely be negatively impacted.

Three Months Ended September 2022 versus September 2021. Net revenues in Investment Banking were \$1.58 billion for the third quarter of 2022, 57% lower than a strong third quarter of 2021, reflecting significantly lower net revenues in Underwriting, Financial advisory and Corporate lending.

The decrease in Underwriting net revenues was due to significantly lower net revenues in both Equity and Debt underwriting, reflecting a significant decline in industry-wide volumes. The decrease in Financial advisory net revenues reflected a significant decline in industry-wide completed mergers and acquisitions transactions from elevated activity levels in the prior year period. The decrease in Corporate lending net revenues was primarily due to net mark-downs on acquisition financing activities and net losses on hedges.

Provision for credit losses was \$78 million for the third quarter of 2022, compared with \$41 million for the third quarter of 2021. Provisions in the third quarter of 2022 reflected the continued impact of broad macroeconomic concerns.

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Operating expenses were \$1.04 billion for the third quarter of 2022, 23% lower than the third quarter of 2021, reflecting significantly lower compensation and benefits expenses. Pre-tax earnings were \$460 million for the third quarter of 2022, 80% lower than the third quarter of 2021.

As of September 2022, our investment banking transaction backlog was essentially unchanged compared with June 2022.

Our backlog represents an estimate of our net revenues from future transactions where we believe that future revenue realization is more likely than not. We believe changes in our backlog may be a useful indicator of client activity levels which, over the long term, impact our net revenues. However, the time frame for completion and corresponding revenue recognition of transactions in our backlog varies based on the nature of the assignment, as certain transactions may remain in our backlog for longer periods of time. In addition, our backlog is subject to certain limitations, such as assumptions about the likelihood that individual client transactions will occur in the future. Transactions may be cancelled or modified, and transactions not included in the estimate may also occur.

Nine Months Ended September 2022 versus September 2021. Net revenues in Investment Banking were \$6.12 billion for the first nine months of 2022, 45% lower than the first nine months of 2021, primarily reflecting significantly lower net revenues in Underwriting and lower net revenues in Financial advisory.

The decrease in Underwriting net revenues was due to significantly lower net revenues in both Equity and Debt underwriting, reflecting a significant decline in industry-wide volumes. The decrease in Financial advisory reflected a decline in industry-wide completed mergers and acquisitions transactions. Corporate lending net revenues were significantly higher, primarily due to net gains from hedges related to relationship lending activities compared with net losses in the prior year period and higher net revenues from transaction banking, partially offset by net mark-downs on acquisition financing activities.

Provision for credit losses was \$325 million for the first nine months of 2022, compared with a net benefit of \$229 million for the first nine months of 2021. Provisions for the first nine months of 2022 primarily reflected the impact of broad macroeconomic and geopolitical concerns, while the net benefit in the first nine months of 2021 reflected reserve reductions as the broad economic environment continued to improve following the initial impact of the COVID-19 pandemic.

Operating expenses were \$3.39 billion for the first nine months of 2022, 34% lower than the first nine months of 2021, primarily reflecting significantly lower compensation and benefits expenses. Pre-tax earnings were \$2.41 billion for the first nine months of 2022, 61% lower than the first nine months of 2021.

As of September 2022, our investment banking transaction backlog decreased compared with December 2021, due to significantly lower estimated net revenues from potential debt underwriting transactions (primarily from leveraged finance transactions).

Global Markets

Our Global Markets segment consists of:

FICC. FICC generates revenues from intermediation and financing activities.

- **FICC intermediation.** Includes client execution activities related to making markets in both cash and derivative instruments, as detailed below.

Interest Rate Products. Government bonds (including inflation-linked securities) across maturities, other government-backed securities, and interest rate swaps, options and other derivatives.

Credit Products. Investment-grade and high-yield corporate securities, credit derivatives, exchange-traded funds (ETFs), bank and bridge loans, municipal securities, emerging market and distressed debt, and trade claims.

Mortgages. Commercial mortgage-related securities, loans and derivatives, residential mortgage-related securities, loans and derivatives (including U.S. government agency-issued collateralized mortgage obligations and other securities and loans), and other asset-backed securities, loans and derivatives.

Currencies. Currency options, spot/forwards and other derivatives on G-10 currencies and emerging-market products.

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Commodities. Commodity derivatives and, to a lesser extent, physical commodities, involving crude oil and petroleum products, natural gas, agricultural, base, precious and other metals, electricity, including renewable power, environmental products and other commodity products.

For further information about market-making activities, see "Market-Making Activities" below.

- **FICC financing.** Includes providing financing to our clients through warehouse loans backed by mortgages (including residential and commercial mortgage loans), corporate loans and consumer loans (including auto loans and private student loans). We also provide financing to clients through structured credit, asset-backed lending, and through securities purchased under agreements to resell (resale agreements).

Equities. Equities generates revenues from intermediation and financing activities.

- **Equities intermediation.** We make markets in equity securities and equity-related products, including ETFs, convertible securities, options, futures and OTC derivative instruments. We also structure and make markets in derivatives on indices, industry sectors, financial measures and individual company stocks. Our exchange-based market-making activities include making markets in stocks and ETFs, futures and options on major exchanges worldwide. In addition, we generate commissions and fees from executing and clearing institutional client transactions on major stock, options and futures exchanges worldwide, as well as OTC transactions. For further information about market-making activities, see "Market-Making Activities" below.
- **Equities financing.** Includes prime brokerage and other equities financing activities, including securities lending, margin lending and swaps. We earn fees by providing clearing, settlement and custody services globally. We provide services that principally involve borrowing and lending securities to cover institutional clients' short sales and borrowing securities to cover our short sales and to make deliveries into the market. In addition, we are an active participant in broker-to-broker securities lending and third-party agency lending activities. We provide financing to our clients for their securities trading activities through margin loans that are collateralized by securities, cash or other acceptable collateral. In addition, we execute swap transactions to provide our clients with exposure to securities and indices.

Market-Making Activities

As a market maker, we facilitate transactions in both liquid and less liquid markets, primarily for institutional clients, such as corporations, financial institutions, investment funds and governments, to assist clients in meeting their investment objectives and in managing their risks. In this role, we seek to earn the difference between the price at which a market participant is willing to sell an instrument to us and the price at which another market participant is willing to buy it from us, and vice versa (i.e., bid/offer spread). In addition, we maintain (i) market-making positions, typically for a short period of time, in response to, or in anticipation of, client demand, and (ii) positions to actively manage our risk exposures that arise from these market-making activities (collectively, inventory). Our inventory is recorded in trading assets (long positions) or trading liabilities (short positions) in our consolidated balance sheets.

Our results are influenced by a combination of interconnected drivers, including (i) client activity levels and transactional bid/offer spreads (collectively, client activity), and (ii) changes in the fair value of our inventory and interest income and interest expense related to the holding, hedging and funding of our inventory (collectively, market-making inventory changes). Due to the integrated nature of our market-making activities, disaggregation of net revenues into client activity and market-making inventory changes is judgmental and has inherent complexities and limitations.

The amount and composition of our net revenues vary over time as these drivers are impacted by multiple interrelated factors affecting economic and market conditions, including volatility and liquidity in the market, changes in interest rates, currency exchange rates, credit spreads, equity prices and commodity prices, investor confidence, and other macroeconomic concerns and uncertainties.

In general, assuming all other market-making conditions remain constant, increases in client activity levels or bid/offer spreads tend to result in increases in net revenues, and decreases tend to have the opposite effect. However, changes in market-making conditions can materially impact client activity levels and bid/offer spreads, as well as the fair value of our inventory. For example, a decrease in liquidity in the market could have the impact of (i) increasing our bid/offer spread, (ii) decreasing investor confidence and thereby decreasing client activity levels, and (iii) widening of credit spreads on our inventory positions.

THE GOLDMAN SACHS GROUP, INC. AND SUBSIDIARIES
Management's Discussion and Analysis

The table below presents our Global Markets assets.

\$ in millions	As of	
	September 2022	December 2021
Cash and cash equivalents	\$ 152,199	\$ 131,390
Collateralized agreements	345,564	343,535
Customer and other receivables	149,387	142,547
Trading assets	339,324	337,040
Investments	98,106	55,285
Loans	65,748	60,916
Other assets	13,393	11,665
Total	\$ 1,163,721	\$ 1,082,378

The table below presents details about our Global Markets loans.

\$ in millions	As of	
	September 2022	December 2021
Corporate	\$ 23,173	\$ 18,578
Real estate	34,915	34,986
Other	8,353	7,838
Loans, gross	66,441	61,402
Allowance for loan losses	(693)	(486)
Total loans	\$ 65,748	\$ 60,916

The table below presents our average Global Markets gross loans by loan type.

\$ in millions	Average for the			
	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Corporate	\$ 22,187	\$ 16,739	\$ 20,728	\$ 14,974
Real estate	37,226	25,406	36,475	21,954
Other	8,245	5,375	8,041	4,422
Loans, gross	\$ 67,658	\$ 47,520	\$ 65,244	\$ 41,350

The table below presents our Global Markets operating results.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
FICC intermediation	\$ 2,800	\$ 1,995	\$ 9,677	\$ 7,343
FICC financing	725	513	2,178	1,378
FICC	3,525	2,508	11,855	8,721
Equities intermediation	1,549	1,920	5,444	6,271
Equities financing	1,127	1,183	3,241	3,100
Equities	2,676	3,103	8,685	9,371
Net revenues	6,201	5,611	20,540	18,092
Provision for credit losses	(43)	(24)	190	(30)
Operating expenses	3,213	2,794	10,340	10,352
Pre-tax earnings	3,031	2,841	10,010	7,770
Provision for taxes	557	597	1,692	1,524
Net earnings	2,474	2,244	8,318	6,246
Preferred stock dividends	66	54	216	205
Net earnings to common	\$ 2,408	\$ 2,190	\$ 8,102	\$ 6,041
Average common equity	\$ 57,078	\$ 46,959	\$ 54,842	\$ 44,067
Return on average common equity	16.9%	18.7%	19.7%	18.3%

The table below presents our Global Markets net revenues by line item in the consolidated statements of earnings.

\$ in millions	FICC	Equities	Global Markets
Three Months Ended September 2022			
Market making	\$ 3,237	\$ 1,405	\$ 4,642
Commissions and fees	—	918	918
Other principal transactions	68	20	88
Net interest income	220	333	553
Total	\$ 3,525	\$ 2,676	\$ 6,201
Three Months Ended September 2021			
Market making	\$ 1,716	\$ 2,213	\$ 3,929
Commissions and fees	—	842	842
Other principal transactions	122	50	172
Net interest income	670	(2)	668
Total	\$ 2,508	\$ 3,103	\$ 5,611
Nine Months Ended September 2022			
Market making	\$ 10,190	\$ 5,371	\$ 15,561
Commissions and fees	—	2,869	2,869
Other principal transactions	314	26	340
Net interest income	1,351	419	1,770
Total	\$ 11,855	\$ 8,685	\$ 20,540
Nine Months Ended September 2021			
Market making	\$ 6,474	\$ 6,622	\$ 13,096
Commissions and fees	—	2,670	2,670
Other principal transactions	306	49	355
Net interest income	1,941	30	1,971
Total	\$ 8,721	\$ 9,371	\$ 18,092

In the table above:

- The difference between commissions and fees and those in the consolidated statements of earnings represents commissions and fees included in our Consumer & Wealth Management segment.
- See “Net Revenues” for information about market making revenues, commissions and fees, other principal transactions revenues and net interest income. See Note 25 to the consolidated financial statements for net interest income by segment.
- The primary driver of net revenues for FICC intermediation for all periods was client activity.

Management's Discussion and Analysis

Operating Environment. During the third quarter of 2022, Global Markets continued to operate in an environment generally characterized by broad macroeconomic and geopolitical concerns and market volatility, which contributed to solid client activity and a decrease in global equity prices. For volatility, the average daily VIX for the third quarter of 2022 was 25, consistent with the average year-to-date level. In equities, the S&P 500 Index decreased by 5% and the MSCI World Index decreased by 7%, compared with the end of the second quarter of 2022. Additionally, global central banks continued to react to inflationary pressures by generally increasing policy interest rates.

In the future, if market and economic conditions deteriorate further, and activity levels or volatility decline, net revenues in Global Markets would likely be negatively impacted.

Three Months Ended September 2022 versus September 2021. Net revenues in Global Markets were \$6.20 billion for the third quarter of 2022, 11% higher than the third quarter of 2021.

Net revenues in FICC were \$3.53 billion, 41% higher than the third quarter of 2021, primarily reflecting significantly higher net revenues in FICC intermediation, driven by significantly higher net revenues in interest rate products and currencies, and higher net revenues in commodities and credit products, partially offset by significantly lower net revenues in mortgages. In addition, net revenues in FICC financing were significantly higher, primarily driven by securities sold under agreements to repurchase (repurchase agreements) and mortgage lending.

The increase in FICC intermediation net revenues reflected significantly higher client activity as we supported clients amid an evolving macroeconomic environment. The following provides information about our FICC intermediation net revenues by business, compared with results in the third quarter of 2021:

- Net revenues in interest rate products, currencies, commodities and credit products primarily reflected higher client activity.
- Net revenues in mortgages primarily reflected the impact of challenging market-making conditions on our inventory.

Net revenues in Equities were \$2.68 billion, 14% lower than a strong third quarter of 2021, primarily due to lower net revenues in Equities intermediation, reflecting significantly lower net revenues in cash products and lower net revenues in derivatives. Net revenues in Equities financing were slightly lower.

Provision for credit losses was a net benefit of \$43 million for the third quarter of 2022, compared with a net benefit of \$24 million for the third quarter of 2021.

Operating expenses were \$3.21 billion for the third quarter of 2022, 15% higher than the third quarter of 2021, primarily reflecting significantly higher compensation and benefits expenses and higher transaction based expenses. Pre-tax earnings were \$3.03 billion for the third quarter of 2022, 7% higher than the third quarter of 2021.

Nine Months Ended September 2022 versus September 2021. Net revenues in Global Markets were \$20.54 billion for the first nine months of 2022, 14% higher than the first nine months of 2021.

Net revenues in FICC were \$11.86 billion, 36% higher than the first nine months of 2021, primarily reflecting significantly higher net revenues in FICC intermediation, driven by significantly higher net revenues in currencies, interest rate products and commodities, partially offset by significantly lower net revenues in mortgages and credit products. Net revenues in FICC financing were also significantly higher, reflecting significantly higher net revenues from mortgage lending and repurchase agreements.

The increase in FICC intermediation net revenues reflected significantly higher client activity as we supported clients amid an evolving macroeconomic environment. The following provides information about our FICC intermediation net revenues by business, compared with results in the first nine months of 2021:

- Net revenues in currencies, interest rate products and commodities primarily reflected higher client activity.
- Net revenues in mortgages and credit products primarily reflected the impact of challenging market-making conditions on our inventory.

Net revenues in Equities were \$8.69 billion, 7% lower than the first nine months of 2021, due to lower net revenues in Equities intermediation, reflecting significantly lower net revenues in cash products and slightly lower net revenues in derivatives. Net revenues in Equities financing were slightly higher, primarily reflecting increased activity.

Provision for credit losses was \$190 million for the first nine months of 2022, compared with a net benefit of \$30 million for the first nine months of 2021. Provisions for the first nine months of 2022 primarily reflected the impact of broad concerns about the macroeconomic outlook.

Operating expenses were \$10.34 billion for the first nine months of 2022, essentially unchanged compared with the first nine months of 2021. Pre-tax earnings were \$10.01 billion for the first nine months of 2022, 29% higher than the first nine months of 2021.

Management's Discussion and Analysis

Asset Management

We manage client assets across a broad range of investment strategies and asset classes for a diverse set of institutional clients and a network of third-party distributors around the world, including equity, fixed income and alternative investments. We provide investment solutions, including those managed on a fiduciary basis by our portfolio managers, as well as those managed by third-party managers. We offer our investment solutions in a variety of structures, including separately managed accounts, mutual funds, private partnerships and other commingled vehicles. These solutions begin with identifying clients' objectives and continue through portfolio construction, ongoing asset allocation and risk management and investment realization.

In addition to managing client assets, we invest in alternative investments across a range of asset classes that seek to deliver long-term accretive risk-adjusted returns. Our investing activities, which are typically longer-term, include investments in corporate equity, credit, real estate and infrastructure assets.

Asset Management generates revenues from the following:

- **Management and other fees.** The majority of revenues in management and other fees consists of asset-based fees on client assets that we manage. For further information about assets under supervision (AUS), see "Assets Under Supervision" below. The fees that we charge vary by asset class, distribution channel and the types of services provided, and are affected by investment performance, as well as asset inflows and redemptions.
- **Incentive fees.** In certain circumstances, we also receive incentive fees based on a percentage of a fund's or a separately managed account's return, or when the return exceeds a specified benchmark or other performance targets. Such fees include overrides, which consist of the increased share of the income and gains derived primarily from our private equity and credit funds when the return on a fund's investments over the life of the fund exceeds certain threshold returns.
- **Equity investments.** Our alternative investing activities relate to public and private equity investments in corporate, real estate and infrastructure entities. We also make investments through consolidated investment entities (CIEs), substantially all of which are engaged in real estate investment activities.
- **Lending and debt investments.** We invest in corporate debt and provide financing for real estate and other assets. These activities include investments in mezzanine debt, senior debt and distressed debt securities.

The table below presents our Asset Management assets.

\$ in millions	As of	
	September 2022	December 2021
Cash and cash equivalents	\$ 17,154	\$ 16,636
Collateralized agreements	4,212	5,227
Customer and other receivables	1,205	946
Trading assets	5,554	5,000
Investments	27,732	32,318
Loans	12,103	13,698
Other assets	17,854	17,290
Total	\$ 85,814	\$ 91,115

The table below presents details about our Asset Management loans.

\$ in millions	As of	
	September 2022	December 2021
Corporate	\$ 6,728	\$ 6,928
Real estate	5,509	6,810
Other	608	692
Loans, gross	12,845	14,430
Allowance for loan losses	(742)	(732)
Total loans	\$ 12,103	\$ 13,698

The table below presents our average Asset Management gross loans by loan type.

\$ in millions	Average for the			
	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Corporate	\$ 6,845	\$ 7,363	\$ 6,833	\$ 7,544
Real estate	6,254	8,489	6,404	8,821
Other	676	694	682	675
Loans, gross	\$13,775	\$ 16,546	\$13,919	\$17,040

The table below presents our Asset Management operating results.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Management and other fees	\$ 1,027	\$ 724	\$ 2,807	\$ 2,144
Incentive fees	36	100	248	220
Equity investments	527	935	(61)	7,772
Lending and debt investments	231	520	457	1,889
Net revenues	1,821	2,279	3,451	12,025
Provision for credit losses	29	10	129	(2)
Operating expenses	1,565	823	4,121	4,656
Pre-tax earnings/(loss)	227	1,446	(799)	7,371
Provision/(benefit) for taxes	32	331	(135)	1,446
Net earnings/(loss)	195	1,115	(664)	5,925
Preferred stock dividends	14	19	53	72
Net earnings/(loss) to common	\$ 181	\$ 1,096	\$ (717)	\$ 5,853
Average common equity	\$24,587	\$ 25,788	\$24,358	\$25,294
Return on average common equity	2.9 %	17.0%	(3.9)%	30.9%

Management's Discussion and Analysis

The table below presents our Equity investments net revenues by equity type and asset class.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Equity Type				
Private equity	\$ 311	\$ 1,753	\$ 1,008	\$ 7,350
Public equity	216	(818)	(1,069)	422
Total	\$ 527	\$ 935	\$ (61)	\$ 7,772
Asset Class				
Real estate	\$ 167	\$ 677	\$ 1,106	\$ 1,649
Corporate	360	258	(1,167)	6,123
Total	\$ 527	\$ 935	\$ (61)	\$ 7,772

The table below presents details about our Lending and debt investments net revenues.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Fair value net gains/(losses)	\$ (36)	\$ 214	\$ (365)	\$ 951
Net interest income	267	306	822	938
Total	\$ 231	\$ 520	\$ 457	\$ 1,889

Operating Environment. During the third quarter of 2022, Asset Management operated in an environment generally characterized by continued broad macroeconomic and geopolitical concerns and market volatility, which contributed to a further decrease in global equity prices compared to the second quarter of 2022. Additionally, global central banks continued to react to inflationary pressures by generally increasing policy interest rates.

In the future, if market and economic conditions deteriorate further, it may lead to a continued decline in asset prices or widening of credit spreads, or investors transitioning to asset classes that typically generate lower fees or withdrawing their assets, and net revenues in Asset Management would likely continue to be negatively impacted.

Three Months Ended September 2022 versus September 2021. Net revenues in Asset Management were \$1.82 billion for the third quarter of 2022, 20% lower than the third quarter of 2021, primarily reflecting significantly lower net revenues in Equity investments and Lending and debt investments, partially offset by significantly higher net revenues in Management and other fees.

The decrease in Equity investments net revenues reflected significantly lower net gains from investments in private equities, partially offset by mark-to-market net gains from investments in public equities compared with significant net losses in the third quarter of 2021. The decrease in Lending and debt investments net revenues primarily reflected net mark-downs compared with net mark-ups in the prior year period. Incentive fees were lower, driven by harvesting in the prior year period. The increase in Management and other fees reflected the inclusion of NNIP in the current period and the impact of fee waivers on money market funds in the prior year period.

Provision for credit losses was \$29 million for the third quarter of 2022, compared with \$10 million for the third quarter of 2021.

Operating expenses were \$1.57 billion for the third quarter of 2022, 90% higher than the third quarter of 2021, reflecting significantly higher compensation and benefits expenses and the inclusion of operating expenses related to NNIP following its acquisition in April 2022. Pre-tax earnings were \$227 million for the third quarter of 2022, 84% lower than the third quarter of 2021.

Nine Months Ended September 2022 versus September 2021. Net revenues in Asset Management were \$3.45 billion for the first nine months of 2022, 71% lower than the first nine months of 2021, reflecting significantly lower net revenues in Equity investments and Lending and debt investments, partially offset by significantly higher Management and other fees.

The decrease in Equity investments net revenues reflected significantly lower net gains from investments in private equities and significant mark-to-market net losses from investments in public equities. The decrease in Lending and debt investments net revenues primarily reflected net mark-downs compared with net mark-ups in the prior year period. The increase in Management and other fees reflected the inclusion of NNIP and the impact of fee waivers on money market funds in the prior year period. Incentive fees were higher.

Provision for credit losses was \$129 million for the first nine months of 2022, compared with net benefit of \$2 million for the first nine months of 2021. Provisions for the first nine months of 2022 primarily reflected the impact of macroeconomic and geopolitical concerns, while the net benefit in the first nine months of 2021 included reserve reductions as the broad economic environment continued to improve following the initial impact of the COVID-19 pandemic.

Operating expenses were \$4.12 billion for the first nine months of 2022, 11% lower than the first nine months of 2021, reflecting significantly lower compensation and benefits expenses, partially offset by the inclusion of operating expenses related to NNIP following its acquisition in April 2022. Pre-tax loss was \$799 million for the first nine months of 2022, compared to pre-tax earnings of \$7.37 billion for the first nine months of 2021.

Management's Discussion and Analysis

Consumer & Wealth Management

Consumer & Wealth Management helps clients achieve their individual financial goals by providing a broad range of wealth advisory and banking services, including financial planning, investment management, deposit-taking and lending. Services are offered through our global network of advisors and via our digital platforms.

Wealth Management. Wealth management provides tailored wealth advisory services to clients across the wealth spectrum. We operate globally serving individuals, families, family offices, and foundations and endowments. Our relationships are established directly or introduced through corporations that sponsor financial wellness programs for their employees.

We offer personalized financial planning inclusive of income and liability management, compensation and benefits analysis, trust and estate structuring, tax optimization, philanthropic giving, and asset protection. We also provide customized investment advisory solutions, and offer structuring and execution capabilities in security and derivative products across all major global markets. We leverage a broad, open-architecture investment platform and our global execution capabilities to help clients achieve their investment goals. In addition, we offer clients a full range of private banking services, including a variety of deposit alternatives and loans that our clients use to finance investments in both financial and nonfinancial assets, bridge cash flow timing gaps or provide liquidity and flexibility for other needs.

Wealth management generates revenues from the following:

- **Management and other fees.** Includes fees related to managing assets, providing investing and wealth advisory solutions, providing financial planning and counseling services via Ayco Personal Financial Management, and executing brokerage transactions for wealth management clients.
- **Incentive fees.** In certain circumstances, we also receive incentive fees from wealth management clients based on a percentage of a fund's return, or when the return exceeds a specified benchmark or other performance targets. Such fees include overrides, which consist of the increased share of the income and gains derived primarily from our private equity and credit funds when the return on a fund's investments over the life of the fund exceeds certain threshold returns.
- **Private banking and lending.** Includes net interest income allocated to deposit-taking and net interest income earned on lending activities for wealth management clients.

Consumer Banking. Our Consumer banking business issues unsecured loans, through our digital platform, *Marcus by Goldman Sachs* (Marcus), and credit cards, to finance the purchases of goods or services. We also accept deposits (including savings and time deposits) through Marcus, in Goldman Sachs Bank USA (GS Bank USA) and GSIB. Additionally, we provide investing services through *Marcus Invest* to U.S. customers. The acquisition of GreenSky in March 2022 expanded our offering of point-of-sale financing.

Consumer banking revenues consist of net interest income earned on unsecured loans issued to consumers through Marcus and credit card lending activities, and net interest income attributed to consumer deposits.

The table below presents our Consumer & Wealth Management assets.

\$ in millions	As of	
	September 2022	December 2021
Cash and cash equivalents	\$ 48,440	\$ 48,573
Collateralized agreements	12,024	14,358
Customer and other receivables	12,279	11,932
Trading assets	15,826	13,538
Investments	45	63
Loans	66,501	54,393
Other assets	5,781	3,481
Total	\$ 160,896	\$ 146,338

The table below presents details about our Consumer & Wealth Management loans.

\$ in millions	As of	
	September 2022	December 2021
Wealth management	\$ 50,101	\$ 43,998
Installment	5,157	3,672
Credit cards	13,691	8,212
Loans, gross	68,949	55,882
Allowance for loan losses	(2,448)	(1,489)
Total loans	\$ 66,501	\$ 54,393

The table below presents our average Consumer & Wealth Management gross loans by loan type.

\$ in millions	Average for the			
	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Wealth management	\$ 49,221	\$ 41,020	\$ 46,895	\$ 37,650
Installment	4,828	3,341	4,334	3,470
Credit cards	12,785	5,670	11,066	4,907
Loans, gross	\$ 66,834	\$ 50,031	\$ 62,295	\$ 46,027

Management's Discussion and Analysis

The table below presents our Consumer & Wealth Management operating results.

<i>\$ in millions</i>	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
Management and other fees	\$ 1,217	\$ 1,223	\$ 3,696	\$ 3,409
Incentive fees	21	121	72	162
Private banking and lending	395	292	1,054	816
Wealth management	1,633	1,636	4,822	4,387
Consumer banking	744	382	1,835	1,116
Net revenues	2,377	2,018	6,657	5,503
Provision for credit losses	451	148	1,099	274
Operating expenses	1,888	1,631	5,221	4,499
Pre-tax earnings	38	239	337	730
Provision for taxes	8	51	57	143
Net earnings	30	188	280	587
Preferred stock dividends	12	8	36	29
Net earnings to common	\$ 18	\$ 180	\$ 244	\$ 558
Average common equity	\$15,925	\$10,740	\$14,866	\$10,475
Return on average common equity	0.5%	6.7%	2.2%	7.1%

Operating Environment. During the third quarter of 2022, Consumer & Wealth Management continued to operate in an environment generally characterized by broad macroeconomic and geopolitical concerns and market volatility, which contributed to a decrease in asset prices compared with the end of the second quarter of 2022. For consumer banking activities, in the U.S., the rate of unemployment remained low and consumer spending increased slightly compared with the second quarter of 2022. Additionally, global central banks continued to react to inflationary pressures by generally increasing policy interest rates.

In the future, if market and economic conditions deteriorate further, it may lead to a continued decline in asset prices, or investors transitioning to asset classes that typically generate lower fees or withdrawing their assets, or consumers withdrawing their deposits or a deterioration in consumer credit, and net revenues and provision for credit losses in Consumer & Wealth Management would likely be negatively impacted.

Three Months Ended September 2022 versus September 2021. Net revenues in Consumer & Wealth Management were \$2.38 billion for the third quarter of 2022, 18% higher than the third quarter of 2021.

Net revenues in Wealth management were \$1.63 billion, essentially unchanged compared with the third quarter of 2021, reflecting significantly lower Incentive fees, driven by harvesting in the prior year period, offset by significantly higher net revenues in Private banking and lending, due to the impact of higher loan and deposit balances. Management and other fees were essentially unchanged.

Net revenues in Consumer banking were \$744 million, nearly double the amount in the third quarter of 2021, primarily reflecting significantly higher credit card balances and higher deposit spreads.

Provision for credit losses was \$451 million for the third quarter of 2022, compared with \$148 million for the third quarter of 2021. Provisions in the third quarter of 2022 reflected consumer portfolio growth (primarily in credit cards) and net charge-offs, while the third quarter of 2021 primarily reflected growth in credit cards.

Operating expenses were \$1.89 billion for the third quarter of 2022, 16% higher than the third quarter of 2021, primarily reflecting higher spend on growth initiatives in Consumer banking, including the operating expenses related to GreenSky following its acquisition in March 2022. Pre-tax earnings were \$38 million for the third quarter of 2022, 84% lower than the third quarter of 2021.

Nine Months Ended September 2022 versus September 2021. Net revenues in Consumer & Wealth Management were \$6.66 billion for the first nine months of 2022, 21% higher than the first nine months of 2021.

Net revenues in Wealth management were \$4.82 billion, 10% higher than the first nine months of 2021, due to higher Management and other fees, primarily reflecting the impact of higher average assets under supervision, and significantly higher net revenues in Private banking and lending, reflecting higher loan and deposit balances. These increases were partially offset by lower Incentive fees, driven by harvesting in the prior year period.

Net revenues in Consumer banking were \$1.84 billion, 64% higher than the first nine months of 2021, primarily reflecting significantly higher credit card balances and higher deposit spreads.

Provision for credit losses was \$1.10 billion for the first nine months of 2022, compared with \$274 million for the first nine months of 2021. Provisions for the first nine months of 2022 primarily reflected consumer portfolio growth (primarily in credit cards) and net charge-offs, while the first nine months of 2021 included reserve reductions as the broad economic environment continued to improve following the initial impact of the COVID-19 pandemic.

Operating expenses were \$5.22 billion for the first nine months of 2022, 16% higher than the first nine months of 2021, primarily reflecting higher spend on growth initiatives in Consumer banking, including the operating expenses related to GreenSky following its acquisition in March 2022. Pre-tax earnings were \$337 million for the first nine months of 2022, 54% lower than the first nine months of 2021.

Management's Discussion and Analysis

Assets Under Supervision

AUS includes our institutional clients' assets and assets sourced through third-party distributors (both included in our Asset Management segment), as well as high-net-worth clients' assets (included in our Consumer & Wealth Management segment), where we earn a fee for managing assets on a discretionary basis. This includes net assets in our mutual funds, hedge funds, credit funds, private equity funds, real estate funds, and separately managed accounts for institutional and individual investors. AUS also includes client assets invested with third-party managers, private bank deposits and advisory relationships where we earn a fee for advisory and other services, but do not have investment discretion. AUS does not include the self-directed brokerage assets of our clients.

The table below presents information about our firmwide period-end AUS by segment, asset class, distribution channel, region and vehicle.

	As of September	
<i>\$ in billions</i>	2022	2021
Segment		
Asset Management	\$ 1,760	\$ 1,678
Consumer & Wealth Management	667	694
Total AUS	\$ 2,427	\$ 2,372
Asset Class		
Alternative investments	\$ 256	\$ 224
Equity	516	569
Fixed income	955	940
Total long-term AUS	1,727	1,733
Liquidity products	700	639
Total AUS	\$ 2,427	\$ 2,372
Distribution Channel		
Institutional	\$ 855	\$ 812
Wealth management	667	694
Third-party distributed	905	866
Total AUS	\$ 2,427	\$ 2,372
Region		
Americas	\$ 1,751	\$ 1,853
EMEA	497	339
Asia	179	180
Total AUS	\$ 2,427	\$ 2,372
Vehicle		
Separate accounts	\$ 1,296	\$ 1,300
Public funds	837	776
Private funds and other	294	296
Total AUS	\$ 2,427	\$ 2,372

In the table above:

- Liquidity products includes money market funds and private bank deposits.
- EMEA represents Europe, Middle East and Africa.

The table below presents changes in our AUS.

	Three Months Ended September		Nine Months Ended September	
<i>\$ in billions</i>	2022	2021	2022	2021
Asset Management				
Beginning balance	\$ 1,824	\$ 1,633	\$ 1,719	\$ 1,530
Net inflows/(outflows):				
Alternative investments	(2)	3	3	9
Equity	(4)	3	(3)	1
Fixed income	(1)	27	(5)	55
Total long-term AUS net inflows/(outflows)	(7)	33	(5)	65
Liquidity products	14	11	13	56
Total AUS net inflows/(outflows)	7	44	8	121
Acquisitions/(dispositions)	6	—	318	—
Net market appreciation/(depreciation)	(77)	1	(285)	27
Ending balance	\$ 1,760	\$ 1,678	\$ 1,760	\$ 1,678
Consumer & Wealth Management				
Beginning balance	\$ 671	\$ 672	\$ 751	\$ 615
Net inflows/(outflows):				
Alternative investments	9	6	13	13
Equity	2	9	16	28
Fixed income	5	1	4	2
Total long-term AUS net inflows/(outflows)	16	16	33	43
Liquidity products	4	6	(8)	—
Total AUS net inflows/(outflows)	20	22	25	43
Acquisitions/(dispositions)	(2)	—	(2)	—
Net market appreciation/(depreciation)	(22)	—	(107)	36
Ending balance	\$ 667	\$ 694	\$ 667	\$ 694
Firmwide				
Beginning balance	\$ 2,495	\$ 2,305	\$ 2,470	\$ 2,145
Net inflows/(outflows):				
Alternative investments	7	9	16	22
Equity	(2)	12	13	29
Fixed income	4	28	(1)	57
Total long-term AUS net inflows/(outflows)	9	49	28	108
Liquidity products	18	17	5	56
Total AUS net inflows/(outflows)	27	66	33	164
Acquisitions/(dispositions)	4	—	316	—
Net market appreciation/(depreciation)	(99)	1	(392)	63
Ending balance	\$ 2,427	\$ 2,372	\$ 2,427	\$ 2,372

In the table above, acquisitions/(dispositions) within Asset Management for the third quarter of 2022 included inflows from the acquisition of NextCapital Group, Inc. Acquisitions/(dispositions) within Asset Management for the first nine months of 2022 also included inflows from the acquisition of NNIP and from the acquisition of the assets of Bombardier Global Pension Asset Management Inc. For each, substantially all of the inflows were in fixed income and equity assets.

Management's Discussion and Analysis

The table below presents information about our average monthly firmwide AUS by segment and asset class.

\$ in billions	Average for the			
	Three Months		Nine Months	
	Ended September	Ended September	Ended September	Ended September
	2022	2021	2022	2021
Segment				
Asset Management	\$ 1,824	\$ 1,663	\$ 1,806	\$ 1,602
Consumer & Wealth Management	683	688	707	656
Total AUS	\$ 2,507	\$ 2,351	\$ 2,513	\$ 2,258
Asset Class				
Alternative investments	\$ 256	\$ 217	\$ 251	\$ 205
Equity	556	569	586	532
Fixed income	999	932	995	911
Total long-term AUS	1,811	1,718	1,832	1,648
Liquidity products	696	633	681	610
Total AUS	\$ 2,507	\$ 2,351	\$ 2,513	\$ 2,258

In addition to our AUS, we have discretion over alternative investments where we currently do not earn management fees (non-fee-earning alternative assets).

We earn management fees on client assets that we manage and also receive incentive fees based on a percentage of a fund's or a separately managed account's return, or when the return exceeds a specified benchmark or other performance targets. These incentive fees are recognized when it is probable that a significant reversal of such fees will not occur. Our estimated unrecognized incentive fees were \$3.57 billion as of September 2022 and \$3.39 billion as of December 2021. Such amounts are based on the completion of the funds' financial statements, which is generally one quarter in arrears. These fees will be recognized, assuming no decline in fair value, if and when it is probable that a significant reversal of such fees will not occur, which is generally when such fees are no longer subject to fluctuations in the market value of the assets.

The table below presents our firmwide management and other fees by segment.

\$ in millions	Three Months		Nine Months	
	Ended September		Ended September	
	2022	2021	2022	2021
Asset Management	\$ 1,027	\$ 724	\$ 2,807	\$ 2,144
Consumer & Wealth Management	1,217	1,223	3,696	3,409
Total	\$ 2,244	\$ 1,947	\$ 6,503	\$ 5,553

Our target is to achieve annual firmwide management and other fees of more than \$10 billion (including more than \$2 billion from alternatives) in 2024.

The table below presents our average effective management fee (which excludes non-asset-based fees) earned on our firmwide AUS by asset class.

Effective fees (bps)	Three Months		Nine Months	
	Ended September		Ended September	
	2022	2021	2022	2021
Alternative investments	64	64	64	63
Equity	58	59	58	60
Fixed income	18	17	17	17
Liquidity products	15	5	13	6
Total average effective fee	31	29	31	29

The table below presents details about our monthly average AUS for alternative investments and the average effective management fee we earned on such assets.

\$ in billions	Direct Strategies	Fund of Funds	Total
Three Months Ended September 2022			
Average AUS			
Corporate equity	\$ 27	\$ 61	\$ 88
Credit	40	2	42
Real estate	10	8	18
Hedge funds and other	44	22	66
Funds and discretionary accounts	\$ 121	\$ 93	\$ 214
Advisory accounts			42
Total average AUS for alternative investments			\$ 256
Effective Fees (bps)			
Corporate equity	139	62	86
Credit	78	55	77
Real estate	82	48	66
Hedge funds and other	63	47	58
Funds and discretionary accounts	86	57	74
Advisory accounts			16
Total average effective fee			64
Three Months Ended September 2021			
Average AUS			
Corporate equity	\$ 21	\$ 59	\$ 80
Credit	18	2	20
Real estate	8	8	16
Hedge funds and other	44	20	64
Funds and discretionary accounts	\$ 91	\$ 89	\$ 180
Advisory accounts			37
Total average AUS for alternative investments			\$ 217
Effective Fees (bps)			
Corporate equity	129	59	77
Credit	103	65	100
Real estate	93	54	74
Hedge funds and other	65	54	61
Funds and discretionary accounts	90	57	74
Advisory accounts			17
Total average effective fee			64
Nine Months Ended September 2022			
Average AUS			
Corporate equity	\$ 26	\$ 60	\$ 86
Credit	35	2	37
Real estate	10	8	18
Hedge funds and other	46	22	68
Funds and discretionary accounts	\$ 117	\$ 92	\$ 209
Advisory accounts			42
Total average AUS for alternative investments			\$ 251
Effective Fees (bps)			
Corporate equity	134	60	82
Credit	81	56	80
Real estate	89	50	71
Hedge funds and other	64	48	59
Funds and discretionary accounts	87	56	73
Advisory accounts			16
Total average effective fee			64
Nine Months Ended September 2021			
Average AUS			
Corporate equity	\$ 18	\$ 59	\$ 77
Credit	17	2	19
Real estate	8	7	15
Hedge funds and other	41	19	60
Funds and discretionary accounts	\$ 84	\$ 87	\$ 171
Advisory accounts			34
Total average AUS for alternative investments			\$ 205
Effective Fees (bps)			
Corporate equity	133	57	75
Credit	102	54	98
Real estate	91	56	74
Hedge funds and other	66	54	62
Funds and discretionary accounts	90	56	73
Advisory accounts			15
Total average effective fee			63

Management's Discussion and Analysis

In the table above, direct strategies primarily includes our private equity, growth equity, private credit, liquid alternatives and real estate strategies. Fund of funds primarily includes our Alternative Investments & Manager Selection (AIMS) business. AIMS invests in leading private equity, hedge fund, real estate and credit third-party managers as a limited partner, secondary-market investor, co-investor or management company partner.

The table below presents information about our period-end AUS for alternative investments, non-fee-earning alternative investments and total alternative investments.

<i>\$ in billions</i>	AUS	Non-fee-earning alternative assets	Total alternative assets
As of September 2022			
Corporate equity	\$ 92	\$ 75	\$ 167
Credit	41	62	103
Real estate	17	37	54
Hedge funds and other	65	2	67
Funds and discretionary accounts	215	176	391
Advisory accounts	41	—	41
Total alternative investments	\$ 256	\$ 176	\$ 432
As of September 2021			
Corporate equity	\$ 84	\$ 74	\$ 158
Credit	22	69	91
Real estate	15	44	59
Hedge funds and other	66	3	69
Funds and discretionary accounts	187	190	377
Advisory accounts	37	2	39
Total alternative investments	\$ 224	\$ 192	\$ 416

In the table above:

- Corporate equity primarily includes private equity.
- Total alternative investments included uncalled capital that is available for future investing of \$49 billion as of September 2022 and \$47 billion as of September 2021.
- Non-fee-earning alternative investments primarily includes investments that we hold on our balance sheet, our unfunded commitments, unfunded commitments of our clients (where we do not charge fees on commitments), credit facilities collateralized by fund assets and employee funds. Our calculation of non-fee-earning alternative investments may not be comparable to similar calculations used by other companies.
- Non-fee-earning alternative investments primarily includes our direct investing strategies, including private equity, growth equity, private credit and real estate strategies.

We have announced a strategic objective of growing our third-party alternatives business, and have established a target of achieving gross inflows of \$225 billion for alternative investments from 2020 through the end of 2024.

The table below presents information about third-party commitments raised in our alternatives business from 2020 through the third quarter of 2022.

<i>\$ in billions</i>	As of September 2022
Included in AUS	\$ 109
Included in non-fee-earning alternative assets	55
Third-party commitments raised	\$ 164

In the table above, commitments included in non-fee-earning alternative investments included approximately \$38 billion, which will begin to earn fees (and become AUS) if and when the commitments are drawn and assets are invested.

The table below presents information about alternative investments in our Asset Management segment that we hold on our balance sheet.

<i>\$ in billions</i>	Loans	Debt securities	Equity securities	CIE investments and other	Total
As of September 2022					
Corporate equity	\$ —	\$ —	\$ 12	\$ —	\$ 12
Credit	7	11	—	—	18
Real estate	5	1	4	13	23
Other	—	—	—	1	1
Total	\$ 12	\$ 12	\$ 16	\$ 14	\$ 54
As of September 2021					
Corporate equity	\$ —	\$ —	\$ 16	\$ —	\$ 16
Credit	8	11	—	—	19
Real estate	8	2	4	17	31
Other	—	—	—	1	1
Total	\$ 16	\$ 13	\$ 20	\$ 18	\$ 67

Management's Discussion and Analysis

Loans and Debt Securities. The table below presents the concentration of loans and debt securities within our alternative investments by accounting classification, region and industry.

<i>\$ in billions</i>	As of September	
	2022	2021
Loans	\$12	\$16
Debt securities	12	13
Total	\$24	\$29
Accounting Classification		
Debt securities at fair value	49%	45%
Loans at amortized cost	38%	38%
Loans at fair value	9%	12%
Loans held for sale	4%	5%
Total	100%	100%
Region		
Americas	47%	47%
EMEA	34%	34%
Asia	19%	19%
Total	100%	100%
Industry		
Consumers	4%	4%
Financial Institutions	8%	8%
Healthcare	11%	9%
Industrials	13%	15%
Natural Resources & Utilities	3%	3%
Real Estate	27%	36%
Technology, Media & Telecommunications	22%	14%
Other	12%	11%
Total	100%	100%

Equity Securities. The table below presents the concentration of equity securities within our alternative investments by region and industry.

<i>\$ in billions</i>	As of September	
	2022	2021
Equity securities	\$16	\$20
Region		
Americas	67%	57%
EMEA	16%	23%
Asia	17%	20%
Total	100%	100%
Industry		
Consumers	4%	5%
Financial Institutions	11%	14%
Healthcare	10%	10%
Industrials	7%	7%
Natural Resources & Utilities	11%	8%
Real Estate	28%	21%
Technology, Media & Telecommunications	26%	32%
Other	3%	3%
Total	100%	100%

In the table above:

- Equity securities included \$13 billion as of September 2022 and \$16 billion as of September 2021 of private equity positions, and \$3 billion as of September 2022 and \$4 billion as of September 2021 of public equity positions that converted from private equity upon the initial public offerings of the underlying companies.
- The concentrations for real estate equity securities as of September 2022 were 8% for multifamily (4% as of September 2021), 5% for office (4% as of September 2021), 8% for mixed use (6% as of September 2021) and 7% for other real estate equity securities (7% as of September 2021).

The table below presents the concentration of equity securities within our alternative investments by vintage.

	Vintage
As of September 2022	
2015 or earlier	30%
2016 - 2018	25%
2019 - thereafter	45%
Total	100%
As of September 2021	
2014 or earlier	25%
2015 - 2017	34%
2018 - thereafter	41%
Total	100%

As we continue to grow our third-party alternatives business, we remain focused on our strategic objective to reduce the capital intensity of the Asset Management segment by reducing our on-balance sheet equity investments.

The table below presents the rollforward of our equity securities within our alternative investments from the beginning of 2020 through the third quarter of 2022.

<i>\$ in billions</i>	Total Equity
Beginning balance	\$22
Additions	8
Dispositions	(21)
Mark-ups	7
Ending balance	\$16

Management's Discussion and Analysis

CIE Investments and Other. CIE investments and other included assets held by CIEs of \$13 billion as of September 2022 and \$17 billion as of September 2021, which were funded with liabilities of approximately \$7 billion as of September 2022 and \$9 billion as of September 2021. Substantially all such liabilities were nonrecourse, thereby reducing our equity at risk.

The table below presents the concentration of CIE assets, net of financings, within our alternative investments by region and asset class.

\$ in billions	As of September	
	2022	2021
CIE assets, net of financings	\$6	\$8
Region		
Americas	68%	63%
EMEA	22%	25%
Asia	10%	12%
Total	100%	100%
Asset Class		
Hospitality	4%	4%
Industrials	14%	11%
Multifamily	23%	24%
Office	22%	26%
Retail	3%	5%
Senior Housing	14%	14%
Student Housing	7%	6%
Other	13%	10%
Total	100%	100%

The table below presents the concentration of CIE assets, net of financings, within our alternative investments by vintage.

	Vintage
As of September 2022	
2015 or earlier	4%
2016 - 2018	46%
2019 - thereafter	50%
Total	100%
As of September 2021	
2014 or earlier	2%
2015 - 2017	27%
2018 - thereafter	71%
Total	100%

Geographic Data

See Note 25 to the consolidated financial statements for a summary of our total net revenues and pre-tax earnings by geographic region.

Balance Sheet and Funding Sources

Balance Sheet Management

One of our risk management disciplines is our ability to manage the size and composition of our balance sheet. While our asset base changes due to client activity, market fluctuations and business opportunities, the size and composition of our balance sheet also reflects factors, including (i) our overall risk tolerance, (ii) the amount of capital we hold and (iii) our funding profile, among other factors. See “Capital Management and Regulatory Capital — Capital Management” for information about our capital management process.

Although our balance sheet fluctuates on a day-to-day basis, our total assets at quarter-end and year-end dates are generally not materially different from those occurring within our reporting periods.

In order to ensure appropriate risk management, we seek to maintain a sufficiently liquid balance sheet and have processes in place to dynamically manage our assets and liabilities, which include (i) balance sheet planning, (ii) balance sheet limits, (iii) monitoring of key metrics and (iv) scenario analyses.

Balance Sheet Planning. We prepare a balance sheet plan that combines our projected total assets and composition of assets with our expected funding sources over a three-year time horizon. This plan is reviewed quarterly and may be adjusted in response to changing business needs or market conditions. The objectives of this planning process are:

- To develop our balance sheet projections, taking into account the general state of the financial markets and expected business activity levels, as well as regulatory requirements;
- To allow Treasury and our independent risk oversight and control functions to objectively evaluate balance sheet limit requests from our revenue-producing units in the context of our overall balance sheet constraints, including our liability profile and capital levels, and key metrics; and
- To inform the target amount, tenor and type of funding to raise, based on our projected assets and contractual maturities.

Treasury and our independent risk oversight and control functions, along with our revenue-producing units, review current and prior period information and expectations for the year to prepare our balance sheet plan. The specific information reviewed includes asset and liability size and composition, limit utilization, risk and performance measures, and capital usage.

Management's Discussion and Analysis

Our consolidated balance sheet plan, including our balance sheets by business, funding projections and projected key metrics, is reviewed and approved by the Firmwide Asset Liability Committee and the Risk Governance Committee. See "Risk Management — Overview and Structure of Risk Management" for an overview of our risk management structure.

Balance Sheet Limits. The Firmwide Asset Liability Committee and the Risk Governance Committee have the responsibility to review and approve balance sheet limits. These limits are set at levels which are close to actual operating levels, rather than at levels which reflect our maximum risk appetite, in order to ensure prompt escalation and discussion among our revenue-producing units, Treasury and our independent risk oversight and control functions on a routine basis. Requests for changes in limits are evaluated after giving consideration to their impact on our key metrics. Compliance with limits is monitored by our revenue-producing units and Treasury, as well as our independent risk oversight and control functions.

Monitoring of Key Metrics. We monitor key balance sheet metrics both by business and on a consolidated basis, including asset and liability size and composition, limit utilization and risk measures. We attribute assets to businesses and review and analyze movements resulting from new business activity, as well as market fluctuations.

Scenario Analyses. We conduct various scenario analyses, including as part of the CCAR and U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act Stress Tests (DFAST), as well as our resolution and recovery planning. See "Capital Management and Regulatory Capital — Capital Management" for further information about these scenario analyses. These scenarios cover short- and long-term time horizons using various macroeconomic and firm-specific assumptions, based on a range of economic scenarios. We use these analyses to assist us in developing our longer-term balance sheet management strategy, including the level and composition of assets, funding and capital. Additionally, these analyses help us develop approaches for maintaining appropriate funding, liquidity and capital across a variety of situations, including a severely stressed environment.

Balance Sheet Analysis and Metrics

As of September 2022, total assets in our consolidated balance sheets were \$1.56 trillion, an increase of \$92.01 billion from December 2021, primarily reflecting increases in investments of \$38.24 billion (primarily due to an increase in U.S. government obligations accounted for as held-to-maturity), cash and cash equivalents of \$23.22 billion (primarily reflecting our activity), and loans of \$18.11 billion (reflecting increases in corporate, consumer and wealth management loans).

As of September 2022, total liabilities in our consolidated balance sheets were \$1.44 trillion, an increase of \$82.64 billion from December 2021, reflecting increases in trading liabilities of \$50.29 billion (primarily due to an increase in equity securities, reflecting the impact of our and our clients' activities, and due to an increase in derivative instruments, reflecting the impact of currency, commodity prices and interest rate movements), deposits of \$30.51 billion (primarily due to increases in transaction banking, deposit sweep program balances, brokered certificates of deposit, and consumer deposits, partially offset by a decrease in other deposits), and customer and other payables of \$26.53 billion (primarily reflecting our clients' activities), partially offset by decreases in collateralized financings of \$11.83 billion (primarily reflecting the impact of our and our clients' activities) and unsecured borrowings of \$9.23 billion (primarily driven by maturities, partially offset by new issuances).

Our total repurchase agreements, accounted for as collateralized financings, were \$159.69 billion as of September 2022, which were essentially the same as the average daily amount over the third quarter of 2022. As of December 2021, total repurchase agreements were \$165.88 billion, which were 3% higher than the average daily amount over the fourth quarter of 2021.

The level of our repurchase agreements fluctuates between and within periods, primarily due to providing clients with access to highly liquid collateral, such as certain government and agency obligations, through collateralized financing activities.

Management's Discussion and Analysis

The table below presents information about our balance sheet and leverage ratios.

\$ in millions	As of	
	September 2022	December 2021
Total assets	\$ 1,555,994	\$ 1,463,988
Unsecured long-term borrowings	\$ 239,965	\$ 254,092
Total shareholders' equity	\$ 119,290	\$ 109,926
Leverage ratio	13.0x	13.3x
Debt-to-equity ratio	2.0x	2.3x

In the table above:

- The leverage ratio equals total assets divided by total shareholders' equity and measures the proportion of equity and debt we use to finance assets. This ratio is different from the leverage ratios included in Note 20 to the consolidated financial statements.
- The debt-to-equity ratio equals unsecured long-term borrowings divided by total shareholders' equity.

The table below presents information about our shareholders' equity and book value per common share, including the reconciliation of common shareholders' equity to tangible common shareholders' equity.

\$ in millions, except per share amounts	As of	
	September 2022	December 2021
Total shareholders' equity	\$ 119,290	\$ 109,926
Preferred stock	(10,703)	(10,703)
Common shareholders' equity	108,587	99,223
Goodwill	(6,288)	(4,285)
Identifiable intangible assets	(1,963)	(418)
Tangible common shareholders' equity	\$ 100,336	\$ 94,520
Book value per common share	\$ 308.22	\$ 284.39
Tangible book value per common share	\$ 284.80	\$ 270.91

In the table above:

- Tangible common shareholders' equity is calculated as total shareholders' equity less preferred stock, goodwill and identifiable intangible assets. We believe that tangible common shareholders' equity is meaningful because it is a measure that we and investors use to assess capital adequacy. Tangible common shareholders' equity is a non-GAAP measure and may not be comparable to similar non-GAAP measures used by other companies.

- Book value per common share and tangible book value per common share are based on common shares outstanding and restricted stock units granted to employees with no future service requirements and not subject to performance or market conditions (collectively, basic shares) of 352.3 million as of September 2022 and 348.9 million as of December 2021. We believe that tangible book value per common share (tangible common shareholders' equity divided by basic shares) is meaningful because it is a measure that we and investors use to assess capital adequacy. Tangible book value per common share is a non-GAAP measure and may not be comparable to similar non-GAAP measures used by other companies.

Funding Sources

Our primary sources of funding are deposits, collateralized financings, unsecured short- and long-term borrowings, and shareholders' equity. We seek to maintain broad and diversified funding sources globally across products, programs, markets, currencies and creditors to avoid funding concentrations.

The table below presents information about our funding sources.

\$ in millions	As of			
	September 2022		December 2021	
Deposits	\$ 394,733	39%	\$ 364,227	36%
Collateralized financings	219,107	21%	230,932	23%
Unsecured short-term borrowings	51,850	5%	46,955	5%
Unsecured long-term borrowings	239,965	23%	254,092	25%
Total shareholders' equity	119,290	12%	109,926	11%
Total	\$ 1,024,945	100%	\$ 1,006,132	100%

Our funding is primarily raised in U.S. dollar, Euro, British pound and Japanese yen. We generally distribute our funding products through our own sales force and third-party distributors to a large, diverse creditor base in a variety of markets in the Americas, Europe and Asia. We believe that our relationships with our creditors are critical to our liquidity. Our creditors include banks, governments, securities lenders, corporations, pension funds, insurance companies, mutual funds and individuals. We have imposed various internal guidelines to monitor creditor concentration across our funding programs.

Deposits. Our deposits provide us with a diversified source of funding and reduce our reliance on wholesale funding. We raise deposits, including savings, demand and time deposits, from private bank clients, consumers, transaction banking clients, other institutional clients, and through internal and third-party broker-dealers. Substantially all of our deposits are raised through GS Bank USA, GSIB and Goldman Sachs Bank Europe SE (GSBE). See Note 13 to the consolidated financial statements for further information about our deposits, including a maturity profile of our time deposits.

Management's Discussion and Analysis

Secured Funding. We fund a significant amount of inventory and a portion of investments on a secured basis. Secured funding includes collateralized financings in the consolidated balance sheets. See Note 11 to the consolidated financial statements for further information about our collateralized financings, including its maturity profile. We may also pledge our inventory and investments as collateral for securities borrowed under a securities lending agreement. We also use our own inventory and investments to cover transactions in which we or our clients have sold securities that have not yet been purchased. Secured funding is less sensitive to changes in our credit quality than unsecured funding, due to our posting of collateral to our lenders. Nonetheless, we analyze the refinancing risk of our secured funding activities, taking into account trade tenors, maturity profiles, counterparty concentrations, collateral eligibility and counterparty rollover probabilities. We seek to mitigate our refinancing risk by executing term trades with staggered maturities, diversifying counterparties, raising excess secured funding and pre-funding residual risk through our GCLA.

We seek to raise secured funding with a term appropriate for the liquidity of the assets that are being financed, and we seek longer maturities for secured funding collateralized by asset classes that may be harder to fund on a secured basis, especially during times of market stress. Our secured funding, excluding funding collateralized by liquid government and agency obligations, is primarily executed for tenors of one month or greater and is primarily executed through term repurchase agreements and securities loaned contracts.

Assets that may be harder to fund on a secured basis during times of market stress include certain financial instruments in the following categories: mortgage- and other asset-backed loans and securities, non-investment-grade corporate debt securities, equity securities and emerging market securities.

We also raise financing through other types of collateralized financings, such as secured loans and notes. GS Bank USA has access to funding from the Federal Home Loan Bank. Our outstanding borrowings against the Federal Home Loan Bank were \$1.50 billion as of September 2022 and \$100 million as of December 2021. Additionally, we have access to funding through the Federal Reserve discount window. However, we do not rely on this funding in our liquidity planning and stress testing.

Unsecured Short-Term Borrowings. A significant portion of our unsecured short-term borrowings was originally long-term debt that is scheduled to mature within one year of the reporting date. We use unsecured short-term borrowings, including U.S. and non-U.S. hybrid financial instruments and commercial paper, to finance liquid assets and for other cash management purposes. In accordance with regulatory requirements, Group Inc. does not issue debt with an original maturity of less than one year, other than to its subsidiaries. See Note 14 to the consolidated financial statements for further information about our unsecured short-term borrowings.

Unsecured Long-Term Borrowings. Unsecured long-term borrowings, including structured notes, are raised through syndicated U.S. registered offerings, U.S. registered and Rule 144A medium-term note programs, offshore medium-term note offerings and other debt offerings. We issue in different tenors, currencies and products to maximize the diversification of our investor base.

The table below presents our quarterly unsecured long-term borrowings maturity profile.

<i>\$ in millions</i>	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
As of September 2022					
2023	\$ —	\$ —	\$ —	\$ 14,609	\$ 14,609
2024	\$ 13,294	\$ 10,256	\$ 9,479	\$ 7,799	\$ 40,828
2025	\$ 11,300	\$ 10,306	\$ 6,503	\$ 6,094	\$ 34,203
2026	\$ 5,461	\$ 3,571	\$ 3,159	\$ 8,633	\$ 20,824
2027	\$ 8,665	\$ 3,179	\$ 6,427	\$ 9,666	\$ 27,937
2028 - thereafter					\$ 101,564
Total					\$ 239,965

The weighted average maturity of our unsecured long-term borrowings as of September 2022 was approximately seven years. To mitigate refinancing risk, we seek to limit the principal amount of debt maturing over the course of any monthly, quarterly or annual time horizon. We enter into interest rate swaps to convert a portion of our unsecured long-term borrowings into floating-rate obligations to manage our exposure to interest rates. See Note 14 to the consolidated financial statements for further information about our unsecured long-term borrowings.

Shareholders' Equity. Shareholders' equity is a stable and perpetual source of funding. See Note 19 to the consolidated financial statements for further information about our shareholders' equity.

Management's Discussion and Analysis

Capital Management and Regulatory Capital

Capital adequacy is of critical importance to us. We have in place a comprehensive capital management policy that provides a framework, defines objectives and establishes guidelines to assist us in maintaining the appropriate level and composition of capital in both business-as-usual and stressed conditions.

Capital Management

We determine the appropriate amount and composition of our capital by considering multiple factors, including our current and future regulatory capital requirements, the results of our capital planning and stress testing process, the results of resolution capital models and other factors, such as rating agency guidelines, subsidiary capital requirements, the business environment and conditions in the financial markets.

We manage our capital requirements and the levels of our capital usage principally by setting limits on the balance sheet and/or limits on risk, in each case at both the firmwide and business levels.

We principally manage the level and composition of our capital through issuances and repurchases of our common stock.

We may issue, redeem or repurchase our preferred stock and other subordinated debt or other forms of capital as business conditions warrant. Prior to such redemptions or repurchases, we must receive approval from the FRB. See Notes 14 and 19 to the consolidated financial statements for further information about our preferred stock and other subordinated debt.

Capital Planning and Stress Testing Process. As part of capital planning, we project sources and uses of capital given a range of business environments, including stressed conditions. Our stress testing process is designed to identify and measure material risks associated with our business activities, including market risk, credit risk, operational risk and liquidity risk, as well as our ability to generate revenues.

Our capital planning process incorporates an internal capital adequacy assessment with the objective of ensuring that we are appropriately capitalized relative to the risks in our businesses. We incorporate stress scenarios into our capital planning process with a goal of holding sufficient capital to ensure we remain adequately capitalized after experiencing a severe stress event. Our assessment of capital adequacy is viewed in tandem with our assessment of liquidity adequacy and is integrated into our overall risk management structure, governance and policy framework.

Our stress tests incorporate our internally designed stress scenarios, including our internally developed severely adverse scenario, and those required by the FRB, and are designed to capture our specific vulnerabilities and risks. We provide further information about our stress test processes and a summary of the results on our website as described in "Available Information."

As required by the FRB's CCAR rules, we submit an annual capital plan for review by the FRB. The purpose of the FRB's review is to ensure that we have a robust, forward-looking capital planning process that accounts for our unique risks and that permits continued operation during times of economic and financial stress.

The FRB evaluates us based, in part, on whether we have the capital necessary to continue operating under the baseline and severely adverse scenarios provided by the FRB and those developed internally. This evaluation also takes into account our process for identifying risk, our controls and governance for capital planning, and our guidelines for making capital planning decisions. In addition, the FRB evaluates our plan to make capital distributions (i.e., dividend payments and repurchases or redemptions of stock, subordinated debt or other capital securities) and issue capital, across the range of macroeconomic scenarios and firm-specific assumptions. The FRB determines the stress capital buffer (SCB) applicable to us based on its own annual stress test. The SCB under the Standardized approach is calculated as (i) the difference between our starting and minimum projected CET1 capital ratios under the supervisory severely adverse scenario and (ii) our planned common stock dividends for each of the fourth through seventh quarters of the planning horizon, expressed as a percentage of risk-weighted assets (RWAs).

Based on our 2022 CCAR submission, the FRB reduced our SCB from 6.4% to 6.3% for the period from October 1, 2022 through September 30, 2023. As a result, beginning on October 1, 2022, our Standardized CET1 capital ratio requirement is 13.3%. Additionally, effective January 1, 2023, our global systemically important bank (G-SIB) surcharge will increase from 2.5% to 3.0%, resulting in a Standardized CET1 capital ratio requirement of 13.8%. See "Share Repurchase Program" for further information about common stock repurchases and dividends and "Consolidated Regulatory Capital" for further information about the G-SIB surcharge. We published a summary of our annual DFAST results in June 2022. See "Available Information."

GS Bank USA is required to conduct stress tests on an annual basis and publish a summary of certain results. GS Bank USA published a summary of its annual DFAST results in June 2022. See "Available Information."

Management's Discussion and Analysis

GSI, GSIB and GSBE also have their own capital planning and stress testing processes, which incorporate internally designed stress tests developed in accordance with the guidelines of their respective regulators.

Contingency Capital Plan. As part of our comprehensive capital management policy, we maintain a contingency capital plan. Our contingency capital plan provides a framework for analyzing and responding to a perceived or actual capital deficiency, including, but not limited to, identification of drivers of a capital deficiency, as well as mitigants and potential actions. It outlines the appropriate communication procedures to follow during a crisis period, including internal dissemination of information, as well as timely communication with external stakeholders.

Capital Attribution. We assess each of our businesses' capital usage based on our internal assessment of risks, which incorporates an attribution of our relevant regulatory capital requirements. These regulatory capital requirements are allocated using our attributed equity framework, which takes into consideration our most binding capital constraints. Our most binding capital constraint is based on the results of the FRB's annual stress test, which includes the Standardized risk-based capital and leverage ratios.

We review and make any necessary adjustments to our attributed equity framework in January each year, to reflect, among other things, the results of our latest CCAR process, as well as projected changes in our balance sheet. On January 1, 2022, our allocation of attributed equity changed (relative to the allocation as of December 2021) as follows: attributed equity increased by approximately \$1.0 billion for Consumer & Wealth Management and approximately \$0.5 billion for Investment Banking, while attributed equity decreased by approximately \$0.8 billion for Global Markets and approximately \$0.7 billion for Asset Management. See "Segment Assets and Operating Results — Segment Operating Results" for information about our average quarterly attributed equity by segment.

Share Repurchase Program. We use our share repurchase program to help maintain the appropriate level of common equity. The repurchase program is effected primarily through regular open-market purchases (which may include repurchase plans designed to comply with Rule 10b5-1 and accelerated share repurchases), the amounts and timing of which are determined primarily by our current and projected capital position and our capital plan submitted to the FRB as part of CCAR. The amounts and timing of the repurchases may also be influenced by general market conditions and the prevailing price and trading volumes of our common stock.

In the third quarter of 2022, the Board of Directors of Group Inc. (Board) approved an increase in our common stock dividend from \$2.00 to \$2.50 per share. During the third quarter of 2022, we returned a total of \$1.89 billion to shareholders, including common stock repurchases of \$1.00 billion and common stock dividends of \$893 million. Consistent with our capital management philosophy, we will continue prioritizing deployment of capital for our clients where returns are attractive and return any excess capital to shareholders through dividends and share repurchases.

As of September 2022, the remaining share authorization under our existing repurchase program was 28.5 million shares. See "Unregistered Sales of Equity Securities and Use of Proceeds" in Part II, Item 2 of this Form 10-Q and Note 19 to the consolidated financial statements for further information about our share repurchase program, and see above for information about our capital planning and stress testing process.

In August 2022, the Inflation Reduction Act of 2022 introduced a one percent non-deductible excise tax on the fair market value of certain corporate share repurchases after December 31, 2022. The fair market value of share repurchases subject to the tax is reduced by the fair market value of any stock issued by the corporation during the calendar year, including stock issued to employees. We are analyzing the impact of the excise tax on our financial condition, results of operations and cash flows.

Resolution Capital Models. In connection with our resolution planning efforts, we have established a Resolution Capital Adequacy and Positioning framework, which is designed to ensure that our major subsidiaries (GS Bank USA, Goldman Sachs & Co. LLC (GS&Co.), GSI, GSIB, GSBE, Goldman Sachs Japan Co., Ltd. (GSJCL), Goldman Sachs Asset Management, L.P. and Goldman Sachs Asset Management International) have access to sufficient loss-absorbing capacity (in the form of equity, subordinated debt and unsecured senior debt) so that they are able to wind down following a Group Inc. bankruptcy filing in accordance with our preferred resolution strategy.

In addition, we have established a triggers and alerts framework, which is designed to provide the Board with information needed to make an informed decision on whether and when to commence bankruptcy proceedings for Group Inc.

Rating Agency Guidelines

The credit rating agencies assign credit ratings to the obligations of Group Inc., which directly issues or guarantees substantially all of our senior unsecured debt obligations. GS&Co. and GSI have been assigned long- and short-term issuer ratings by certain credit rating agencies. GS Bank USA, GSIB and GSBE have also been assigned long- and short-term issuer ratings, as well as ratings on their long- and short-term bank deposits. In addition, credit rating agencies have assigned ratings to debt obligations of certain other subsidiaries of Group Inc.

The level and composition of our capital are among the many factors considered in determining our credit ratings. Each agency has its own definition of eligible capital and methodology for evaluating capital adequacy, and assessments are generally based on a combination of factors rather than a single calculation. See "Risk Management — Liquidity Risk Management — Credit Ratings" for further information about credit ratings of Group Inc., GS Bank USA, GSIB, GSBE, GS&Co. and GSI.

Consolidated Regulatory Capital

We are subject to consolidated regulatory capital requirements which are calculated in accordance with the regulations of the FRB (Capital Framework). Under the Capital Framework, we are an "Advanced approaches" banking organization and have been designated as a G-SIB.

The capital requirements calculated under the Capital Framework include the capital conservation buffer requirements, which are comprised of a 2.5% buffer (under the Advanced Capital Rules), the SCB (under the Standardized Capital Rules), a countercyclical capital buffer (under both Capital Rules) and the G-SIB surcharge (under both Capital Rules). Our G-SIB surcharge is 2.5% for 2022 and 3.0% for 2023. Based on financial data for 2021 and the nine months ended September 2022, we are above the threshold for the 3.5% G-SIB surcharge. Based on the recent operating environment and our clients' needs, we are currently targeting to be at the 3.0% G-SIB level as of December 2022 (which would be effective for our January 2024 G-SIB surcharge). Our ability to achieve the 3.0% G-SIB level will depend on the market environment and needs of our clients in the fourth quarter of 2022. We will continue to evaluate this target through the end of 2022. The G-SIB surcharge and countercyclical capital buffer in the future may differ due to additional guidance from our regulators and/or positional changes, and our SCB is likely to change from year to year based on the results of the annual supervisory stress tests. Our target is to maintain capital ratios equal to the regulatory requirements plus a buffer of 50 to 100 basis points.

See Note 20 to the consolidated financial statements for further information about our risk-based capital ratios and leverage ratios, and the Capital Framework.

Total Loss-Absorbing Capacity (TLAC)

We are also subject to the FRB's TLAC and related requirements. Failure to comply with the TLAC and related requirements would result in restrictions being imposed by the FRB and could limit our ability to repurchase shares, pay dividends and make certain discretionary compensation payments.

The table below presents TLAC and external long-term debt requirements.

	Requirements
TLAC to RWAs	21.5%
TLAC to leverage exposure	9.5%
External long-term debt to RWAs	8.5%
External long-term debt to leverage exposure	4.5%

In the table above:

- The TLAC to RWAs requirement included (i) the 18% minimum, (ii) the 2.5% buffer, (iii) the countercyclical capital buffer, which the FRB has set to zero percent and (iv) the 1.0% G-SIB surcharge (Method 1).
- The TLAC to leverage exposure requirement includes (i) the 7.5% minimum and (ii) the 2.0% leverage exposure buffer.
- The external long-term debt to RWAs requirement includes (i) the 6% minimum and (ii) the 2.5% G-SIB surcharge (Method 2).
- The external long-term debt to total leverage exposure is the 4.5% minimum.

The table below presents information about our TLAC and external long-term debt ratios.

	For the Three Months Ended or as of	
	September 2022	December 2021
<i>\$ in millions</i>		
TLAC	\$ 299,366	\$ 297,765
External long-term debt	\$ 174,203	\$ 174,500
RWAs	\$ 688,566	\$ 676,863
Leverage exposure	\$ 1,955,300	\$ 1,910,521
TLAC to RWAs	43.5%	44.0%
TLAC to leverage exposure	15.3%	15.6%
External long-term debt to RWAs	25.3%	25.8%
External long-term debt to leverage exposure	8.9%	9.1%

Management's Discussion and Analysis

In the table above:

- TLAC includes common and preferred stock, and eligible long-term debt issued by Group Inc. Eligible long-term debt represents unsecured debt, which has a remaining maturity of at least one year and satisfies additional requirements.
- External long-term debt consists of eligible long-term debt subject to a haircut if it is due to be paid between one and two years.
- RWAs represent Standardized RWAs as of both September 2022 and December 2021. In accordance with the TLAC rules, the higher of Advanced or Standardized RWAs are used in the calculation of TLAC and external long-term debt ratios and applicable requirements.
- Leverage exposure consists of average adjusted total assets and certain off-balance sheet exposures.

See “Business — Regulation” in Part I, Item 1 of the 2021 Form 10-K for further information about TLAC.

Subsidiary Capital Requirements

Many of our subsidiaries, including our bank and broker-dealer subsidiaries, are subject to separate regulation and capital requirements of the jurisdictions in which they operate.

Bank Subsidiaries. GS Bank USA is our primary U.S. banking subsidiary and GSIB and GSBE are our primary non-U.S. banking subsidiaries. These entities are subject to regulatory capital requirements. See Note 20 to the consolidated financial statements for further information about the regulatory capital requirements of our bank subsidiaries.

U.S. Regulated Broker-Dealer Subsidiaries. GS&Co., our primary U.S. regulated broker-dealer subsidiary, is also a registered futures commission merchant and a registered swap dealer with the CFTC, and a registered security-based swap dealer with the SEC, and therefore is subject to regulatory capital requirements imposed by the SEC, the Financial Industry Regulatory Authority, Inc., the CFTC, the Chicago Mercantile Exchange and the National Futures Association. Rule 15c3-1 of the SEC and Rules 1.17 and Part 23 Subpart E of the CFTC specify uniform minimum net capital requirements, as defined, for their registrants, and also effectively require that a significant part of the registrants' assets be kept in relatively liquid form. GS&Co. has elected to calculate its minimum capital requirements in accordance with the “Alternative Net Capital Requirement” as permitted by Rule 15c3-1 of the SEC.

GS&Co. had regulatory net capital, as defined by Rule 15c3-1, of \$21.44 billion as of September 2022 and \$22.18 billion as of December 2021, which exceeded the amount required by \$16.61 billion as of September 2022 and \$17.74 billion as of December 2021. In addition to its alternative minimum net capital requirements, GS&Co. is also required to hold tentative net capital in excess of \$5 billion and net capital in excess of \$1 billion in accordance with Rule 15c3-1. GS&Co. is also required to notify the SEC in the event that its tentative net capital is less than \$6 billion. As of both September 2022 and December 2021, GS&Co. had tentative net capital and net capital in excess of both the minimum and the notification requirements.

Non-U.S. Regulated Broker-Dealer Subsidiaries. Our principal non-U.S. regulated broker-dealer subsidiaries include GSI and GSJCL.

GSI, our U.K. broker-dealer, is regulated by the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA). GSI is subject to the U.K. capital framework, which is largely based on the Basel Committee on Banking Supervision's (Basel Committee) capital framework for strengthening international capital standards (Basel III).

The table below presents GSI's risk-based capital requirements.

	As of	
	September 2022	December 2021
Risk-based capital requirements		
CET1 capital ratio	8.4%	8.1%
Tier 1 capital ratio	10.4%	9.9%
Total capital ratio	13.0%	12.4%

In the table above, the risk-based capital requirements incorporate capital guidance received from the PRA and could change in the future.

Management's Discussion and Analysis

The table below presents information about GSI's risk-based capital ratios.

<i>\$ in millions</i>	As of	
	September 2022	December 2021
Risk-based capital and risk-weighted assets		
CET1 capital	\$ 31,331	\$ 28,810
Tier 1 capital	\$ 39,631	\$ 37,110
Tier 2 capital	\$ 5,377	\$ 5,377
Total capital	\$ 45,008	\$ 42,487
RWAs	\$ 267,737	\$ 269,762
Risk-based capital ratios		
CET1 capital ratio	11.7%	10.7%
Tier 1 capital ratio	14.8%	13.8%
Total capital ratio	16.8%	15.7%

In the table above, the risk-based capital ratios as of September 2022 reflected profits after foreseeable charges that are still subject to verification by GSI's external auditors and approval by the PRA for inclusion in risk-based capital. These profits contributed approximately 27 basis points to the CET1 capital ratio as of September 2022.

GSI is also subject to the leverage ratio framework established by the PRA. This framework sets a minimum leverage ratio requirement at 3.25% that will apply to GSI from January 1, 2023. GSI had a leverage ratio of 5.4% as of September 2022 and 4.2% as of December 2021. The leverage ratio as of September 2022 reflected profits after foreseeable charges that are still subject to verification by GSI's external auditors and approval by the PRA for inclusion in risk-based capital. These profits contributed approximately 10 basis points to the leverage ratio as of September 2022.

GSI is a registered swap dealer with the CFTC and a registered security-based swap dealer with the SEC. As of both September 2022 and December 2021, GSI was subject to and in compliance with applicable capital requirements for swap dealers and security-based swap dealers.

GSI is also subject to a minimum requirement for own funds and eligible liabilities issued to affiliates. This requirement is subject to a transitional period which began to phase in from January 2019 and became fully effective beginning in January 2022. As of both September 2022 and December 2021, GSI was in compliance with this requirement.

GSJCL, our Japanese broker-dealer, is regulated by Japan's Financial Services Agency. GSJCL and certain other non-U.S. subsidiaries are also subject to capital requirements promulgated by authorities of the countries in which they operate. As of both September 2022 and December 2021, these subsidiaries were in compliance with their local capital requirements.

Regulatory and Other Matters**Regulatory Matters**

Our businesses are subject to extensive regulation and supervision worldwide. Regulations have been adopted or are being considered by regulators and policy makers worldwide. Given that many of the new and proposed rules are highly complex, the full impact of regulatory reform will not be known until the rules are implemented and market practices develop under the final regulations.

See "Business — Regulation" in Part I, Item 1 of the 2021 Form 10-K for further information about the laws, rules and regulations and proposed laws, rules and regulations that apply to us and our operations.

Other Matters

Replacement of Interbank Offered Rates (IBORs), including LIBOR. On January 1, 2022, the publication of all EUR, CHF, JPY and GBP LIBOR (non-USD LIBOR) settings along with certain USD LIBOR settings ceased. The publication of the most commonly used USD LIBOR settings will cease after June 2023. The FCA has allowed the publication and use of synthetic rates for certain GBP and JPY LIBOR settings in legacy GBP or JPY LIBOR-based derivative contracts through December 2022. The U.S. federal banking agencies' guidance strongly encourages banking organizations to cease using USD LIBOR.

The International Swaps and Derivatives Association (ISDA) 2020 IBOR Fallbacks Protocol (IBOR Protocol) has provided derivatives market participants with amended fallbacks for legacy and new derivative contracts to mitigate legal or economic uncertainty. Both counterparties have to adhere to the IBOR Protocol or engage in bilateral amendments for the terms to be effective for derivative contracts. ISDA has confirmed that the FCA's formal announcement to cease both non-USD and USD LIBOR settings fixed the spread adjustment for all LIBOR rates and as a result fallbacks applied automatically for non-USD LIBOR settings following December 31, 2021 and will apply automatically for USD LIBOR settings following June 30, 2023. The Adjustable Interest Rate (LIBOR) Act, that was enacted in March 2022, provides a statutory framework to replace USD LIBOR with a benchmark rate based on the Secured Overnight Financing Rate (SOFR) for contracts governed by U.S. law that have no fallbacks or fallbacks that would require the use of a poll or LIBOR-based rate. Under the LIBOR Act, the FRB must adopt rules to identify the applicable SOFR-based replacement rate. In July 2022, the FRB released proposed rules, which would identify different SOFR-based replacement rates for derivative contracts, for cash instruments such as floating-rate notes and preferred stock, for consumer contracts and for certain government-sponsored enterprise contracts. The FRB has not yet adopted these rules.

Management's Discussion and Analysis

We facilitated an orderly transition from non-USD LIBORs to alternative risk-free reference rates and synthetic rates for us and our clients, and continue to make progress on our transition program as it relates to USD LIBOR.

Our risk exposure to USD LIBOR is primarily in connection with our derivative contracts and, to a lesser extent, our unsecured debt, preferred stock and loan portfolio. As of September 2022, the notional amount of our USD LIBOR-based derivative contracts was approximately \$7 trillion, of which approximately \$5 trillion will mature after June 2023 based on their contractual terms. Substantially all of such derivative contracts are with counterparties under bilateral agreements subject to the IBOR Protocol, or with central clearing counterparties or exchanges which have incorporated fallbacks consistent with the IBOR Protocol in their rulebooks and have announced that they plan to convert USD LIBOR contracts to alternative risk-free reference rates. Our benchmark unsecured debt and preferred stock with USD LIBOR exposure was approximately \$29.0 billion as of September 2022, of which \$26.4 billion will contractually mature after June 2023 or is perpetual and has no stated maturity date. We continue to monitor industry and legislative developments as they relate to unsecured debt and preferred stock and will take actions designed to facilitate an orderly transition. In addition, we are also engaging with our clients in order to remediate our loan agreements through bilateral amendments.

We have also issued debt and deposits linked to SOFR and Sterling Overnight Index Average (SONIA) and executed SOFR- and SONIA-based derivative contracts to make markets and facilitate client activities. When appropriate, we continue to execute transactions in the market to reduce our USD LIBOR exposures arising from hedges to our fixed-rate debt issuances and replace them with alternative risk-free reference rate exposures. See “Regulatory and Other Matters — Other Matters” in Part II, Item 7 of the 2021 Form 10-K for further information about our transition program.

Off-Balance Sheet Arrangements

In the ordinary course of business, we enter into various types of off-balance sheet arrangements. Our involvement in these arrangements can take many different forms, including:

- Purchasing or retaining residual and other interests in special purpose entities, such as mortgage-backed and other asset-backed securitization vehicles;
- Holding senior and subordinated debt, interests in limited and general partnerships, and preferred and common stock in other nonconsolidated vehicles;
- Entering into interest rate, foreign currency, equity, commodity and credit derivatives, including total return swaps; and
- Providing guarantees, indemnifications, commitments, letters of credit and representations and warranties.

We enter into these arrangements for a variety of business purposes, including securitizations. The securitization vehicles that purchase mortgages, corporate bonds and other types of financial assets are critical to the functioning of several significant investor markets, including the mortgage-backed and other asset-backed securities markets, since they offer investors access to specific cash flows and risks created through the securitization process.

We also enter into these arrangements to underwrite client securitization transactions; provide secondary market liquidity; make investments in performing and nonperforming debt, distressed loans, power-related assets, equity securities, real estate and other assets; and provide investors with credit-linked and asset-repackaged notes.

The table below presents where information about our various off-balance sheet arrangements may be found in this Form 10-Q. In addition, see Note 3 to the consolidated financial statements for information about our consolidation policies.

Off-Balance Sheet Arrangement	Disclosure in Form 10-Q
Variable interests and other obligations, including contingent obligations, arising from variable interests in nonconsolidated variable interest entities (VIEs)	See Note 17 to the consolidated financial statements.
Guarantees, and lending and other commitments	See Note 18 to the consolidated financial statements.
Derivatives	See “Risk Management — Credit Risk Management — Credit Exposures — OTC Derivatives” and Notes 4, 5, 7 and 18 to the consolidated financial statements.

Management's Discussion and Analysis

Risk Management

Risks are inherent in our businesses and include liquidity, market, credit, operational, model, legal, compliance, conduct, regulatory and reputational risks. Our risks include the risks across our risk categories, regions or global businesses, as well as those which have uncertain outcomes and have the potential to materially impact our financial results, our liquidity and our reputation. For further information about our risk management processes, see "Overview and Structure of Risk Management," and for information about our areas of risk, see "Liquidity Risk Management," "Market Risk Management," "Credit Risk Management," "Operational Risk Management," "Model Risk Management" and "Other Risk Management," as well as "Risk Factors" in Part I, Item 1A of the 2021 Form 10-K.

Overview and Structure of Risk Management

Overview

We believe that effective risk management is critical to our success. Accordingly, we have established an enterprise risk management framework that employs a comprehensive, integrated approach to risk management, and is designed to enable comprehensive risk management processes through which we identify, assess, monitor and manage the risks we assume in conducting our activities. Our risk management structure is built around three core components: governance, processes and people.

Governance. Risk management governance starts with the Board, which both directly and through its committees, including its Risk Committee, oversees our risk management policies and practices implemented through the enterprise risk management framework. The Board is also responsible for the annual review and approval of our risk appetite statement. The risk appetite statement describes the levels and types of risk we are willing to accept or to avoid, in order to achieve our objectives included in our strategic business plan, while remaining in compliance with regulatory requirements. The Board reviews our strategic business plan and is ultimately responsible for overseeing and providing direction about our strategy and risk appetite.

The Board receives regular briefings on firmwide risks, including liquidity risk, market risk, credit risk, operational risk and model risk, from our independent risk oversight and control functions, including the chief risk officer, and on compliance risk and conduct risk from Compliance, on legal and regulatory enforcement matters from the chief legal officer, and on other matters impacting our reputation from the chair of our Firmwide Client and Business Standards Committee and our Firmwide Reputational Risk Committee. The chief risk officer reports to our chief executive officer and to the Risk Committee of the Board. As part of the review of the firmwide risk portfolio, the chief risk officer regularly advises the Risk Committee of the Board of relevant risk metrics and material exposures, including risk limits and thresholds established in our risk appetite statement.

The implementation of our risk governance structure and core risk management processes is overseen by Enterprise Risk, which reports to our chief risk officer, and is responsible for ensuring that our enterprise risk management framework provides the Board, our risk committees and senior management with a consistent and integrated approach to managing our various risks in a manner consistent with our risk appetite.

Our revenue-producing units, as well as Treasury, Engineering, Human Capital Management, Operations, and Corporate and Workplace Solutions, are considered our first line of defense. They are accountable for the outcomes of our risk-generating activities, as well as for assessing and managing those risks within our risk appetite.

Our independent risk oversight and control functions are considered our second line of defense and provide independent assessment, oversight and challenge of the risks taken by our first line of defense, as well as lead and participate in risk committees. Independent risk oversight and control functions include Compliance, Conflicts Resolution, Controllers, Legal, Risk and Tax.

Internal Audit is considered our third line of defense, and our director of Internal Audit reports to the Audit Committee of the Board and administratively to our chief executive officer. Internal Audit includes professionals with a broad range of audit and industry experience, including risk management expertise. Internal Audit is responsible for independently assessing and validating the effectiveness of key controls, including those within the risk management framework, and providing timely reporting to the Audit Committee of the Board, senior management and regulators.

Management's Discussion and Analysis

The three lines of defense structure promotes the accountability of first line risk takers, provides a framework for effective challenge by the second line and empowers independent review from the third line.

Processes. We maintain various processes that are critical components of our risk management framework, including (i) risk identification and assessment, (ii) risk appetite, limit and threshold setting, (iii) risk reporting and monitoring, and (iv) risk decision-making.

- **Risk Identification and Assessment.** We believe that the identification and assessment of our risks is a critical step in providing our Board and senior management transparency and insight into the range and materiality of our risks. We have a comprehensive data collection process, including firmwide policies and procedures that require all employees to report and escalate risk events. Our approach for risk identification and assessment is comprehensive across all risk types, is dynamic and forward-looking to reflect and adapt to our changing risk profile and business environment, leverages subject matter expertise, and allows for prioritization of our most critical risks.

To effectively assess our risks, we maintain a daily discipline of marking substantially all of our inventory to current market levels. We carry our inventory at fair value, with changes in valuation reflected immediately in our risk management systems and in net revenues. We do so because we believe this discipline is one of the most effective tools for assessing and managing risk and that it provides transparent and realistic insight into our inventory exposures.

An important part of our risk management process is firmwide stress testing. It allows us to quantify our exposure to tail risks, highlight potential loss concentrations, undertake risk/reward analysis, and assess and mitigate our risk positions. Firmwide stress tests are performed on a regular basis and are designed to ensure a comprehensive analysis of our vulnerabilities and idiosyncratic risks combining financial and nonfinancial risks, including, but not limited to, credit, market, liquidity and funding, operational and compliance, strategic, systemic and emerging risks into a single combined scenario. We also perform ad hoc stress tests in anticipation of market events or conditions. Stress tests are also used to assess capital adequacy as part of our capital planning and stress testing process. See “Capital Management and Regulatory Capital — Capital Management” for further information.

- **Risk Appetite, Limit and Threshold Setting.** We apply a rigorous framework of limits and thresholds to control and monitor risk across transactions, products, businesses and markets. The Board, directly or indirectly through its Risk Committee, approves limits and thresholds included in our risk appetite statement at firmwide, business and product levels. In addition, the Firmwide Enterprise Risk Committee is responsible for approving our risk limits framework, subject to the overall limits approved by the Risk Committee of the Board, and monitoring these limits.

The Risk Governance Committee is responsible for approving limits at firmwide, business and product levels. Certain limits may be set at levels that will require periodic adjustment, rather than at levels that reflect our maximum risk appetite. This fosters an ongoing dialogue about risk among our first and second lines of defense, committees and senior management, as well as rapid escalation of risk-related matters. Additionally, through delegated authority from the Risk Governance Committee, Market Risk sets limits at certain product and desk levels, and Credit Risk sets limits for individual counterparties, counterparties and their subsidiaries, industries and countries. Limits are reviewed regularly and amended on a permanent or temporary basis to reflect changing market conditions, business conditions or risk tolerance.

- **Risk Reporting and Monitoring.** Effective risk reporting and risk decision-making depends on our ability to get the right information to the right people at the right time. As such, we focus on the rigor and effectiveness of our risk systems, with the objective of ensuring that our risk management technology systems provide us with complete, accurate and timely information. Our risk reporting and monitoring processes are designed to take into account information about both existing and emerging risks, thereby enabling our risk committees and senior management to perform their responsibilities with the appropriate level of insight into risk exposures. Furthermore, our limit and threshold breach processes provide means for timely escalation. We evaluate changes in our risk profile and our businesses, including changes in business mix or jurisdictions in which we operate, by monitoring risk factors at a firmwide level.

- **Risk Decision-Making.** Our governance structure provides the protocol and responsibility for decision-making on risk management issues and ensures implementation of those decisions. We make extensive use of risk committees that meet regularly and serve as an important means to facilitate and foster ongoing discussions to manage and mitigate risks.

We maintain strong and proactive communication about risk and we have a culture of collaboration in decision-making among our first and second lines of defense, committees and senior management. While our first line of defense is responsible for management of their risk, we dedicate extensive resources to our second line of defense in order to ensure a strong oversight structure and an appropriate segregation of duties. We regularly reinforce our strong culture of escalation and accountability across all functions.

People. Even the best technology serves only as a tool for helping to make informed decisions in real time about the risks we are taking. Ultimately, effective risk management requires our people to interpret our risk data on an ongoing and timely basis and adjust risk positions accordingly. The experience of our professionals, and their understanding of the nuances and limitations of each risk measure, guides us in assessing exposures and maintaining them within prudent levels.

We reinforce a culture of effective risk management, consistent with our risk appetite, in our training and development programs, as well as in the way we evaluate performance, and recognize and reward our people. Our training and development programs, including certain sessions led by our most senior leaders, are focused on the importance of risk management, client relationships and reputational excellence. As part of our performance review process, we assess reputational excellence, including how an employee exercises good risk management and reputational judgment, and adheres to our code of conduct and compliance policies. Our review and reward processes are designed to communicate and reinforce to our professionals the link between behavior and how people are recognized, the need to focus on our clients and our reputation, and the need to always act in accordance with our highest standards.

Structure

Ultimate oversight of risk is the responsibility of our Board. The Board oversees risk both directly and through its committees, including its Risk Committee. We also have a series of committees with specific risk management mandates that have oversight or decision-making responsibilities for risk management activities. Committee membership generally consists of senior managers from both our first and second lines of defense. We have established procedures for these committees to ensure that appropriate information barriers are in place. Our primary risk committees, most of which also have additional sub-committees, councils or working groups, are described below. In addition to these committees, we have other risk committees that provide oversight for different businesses, activities, products, regions and entities. All of our committees have responsibility for considering the impact on our reputation of the transactions and activities that they oversee.

Membership of our risk committees is reviewed regularly and updated to reflect changes in the responsibilities of the committee members. Accordingly, the length of time that members serve on the respective committees varies as determined by the committee chairs and based on the responsibilities of the members.

The chart below presents an overview of our risk management governance structure.



Management Committee. The Management Committee oversees our global activities. It provides this oversight directly and through authority delegated to committees it has established. This committee consists of our most senior leaders, and is chaired by our chief executive officer. Most members of the Management Committee are also members of other committees. The following are the committees that are principally involved in firmwide risk management.

Management's Discussion and Analysis

Firmwide Enterprise Risk Committee. The Firmwide Enterprise Risk Committee is responsible for overseeing all of our financial and nonfinancial risks. As part of such oversight, the committee is responsible for the ongoing review, approval and monitoring of our enterprise risk management framework, as well as our risk limits framework. This committee, which reports to the Management Committee, is co-chaired by our president and chief operating officer and our chief risk officer, who are appointed as chairs by our chief executive officer, and the vice-chair is our chief financial officer, who is appointed as vice-chair by the chairs of the Firmwide Enterprise Risk Committee. The following are the primary committees or councils that report to the Firmwide Enterprise Risk Committee:

- **Firmwide Risk Council.** The Firmwide Risk Council is responsible for the ongoing monitoring of relevant financial risks and related risk limits at the firmwide, business and product levels. This council is co-chaired by our chief financial officer and our chief risk officer.
- **Firmwide New Activity Committee.** The Firmwide New Activity Committee is responsible for reviewing new activities and for establishing a process to identify and review previously approved activities that are significant and that have changed in complexity and/or structure or present different reputational and suitability concerns over time to consider whether these activities remain appropriate. This committee is co-chaired by our controller and chief accounting officer and our chief operating and strategy officer for Engineering, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Operational Risk and Resilience Committee.** The Firmwide Operational Risk and Resilience Committee is responsible for overseeing operational risk, and for ensuring our business and operational resilience. To assist the Firmwide Operational Risk and Resilience Committee in carrying out its mandate, other risk committees with dedicated oversight for technology-related risks, including cyber security matters, report into the Firmwide Operational Risk and Resilience Committee. This committee is co-chaired by our chief administrative officer and our head of Operational Risk, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.

- **Firmwide Conduct Committee.** The Firmwide Conduct Committee is responsible for the ongoing approval and monitoring of the frameworks and policies which govern our conduct risks. Conduct risk is the risk that our people fail to act in a manner consistent with our Business Principles and related core values, policies or codes, or applicable laws or regulations, thereby falling short in fulfilling their responsibilities to us, our clients, colleagues, other market participants or the broader community. This committee is chaired by our chief legal officer, who is appointed as chair by the chairs of the Firmwide Enterprise Risk Committee.

- **Risk Governance Committee.** The Risk Governance Committee (through delegated authority from the Firmwide Enterprise Risk Committee) is responsible for the ongoing approval and monitoring of risk frameworks, policies and parameters related to our core risk management processes, as well as limits, at firmwide, business and product levels. In addition, this committee reviews the results of stress tests and scenario analyses. To assist the Risk Governance Committee in carrying out its mandate, a number of other risk committees with dedicated oversight for stress testing, model risks and Volcker Rule compliance report into the Risk Governance Committee. This committee is chaired by our chief risk officer, who is appointed as chair by the chairs of the Firmwide Enterprise Risk Committee.

Firmwide Client and Business Standards Committee.

The Firmwide Client and Business Standards Committee is responsible for overseeing relationships with our clients, client service and experience, and related business standards, as well as client-related reputational matters. This committee is chaired by our president and chief operating officer, who is appointed as chair by our chief executive officer, and reports to the Management Committee. This committee periodically provides updates to, and receives guidance from, the Public Responsibilities Committee of the Board.

Management's Discussion and Analysis

The following committees report jointly to the Firmwide Enterprise Risk Committee and the Firmwide Client and Business Standards Committee:

- Firmwide Reputational Risk Committee.** The Firmwide Reputational Risk Committee is responsible for assessing reputational risks arising from transactions that have been identified as having potential heightened reputational risk pursuant to the criteria established by the Firmwide Reputational Risk Committee and as determined by committee leadership. This committee is chaired by our president and chief operating officer, who is appointed as chair by our chief executive officer, and the vice-chairs are our chief legal officer and the former chair of Conflicts Resolution (now a senior advisor to the firm), who are appointed as vice-chairs by the chair of the Firmwide Reputational Risk Committee. This committee periodically provides updates to, and receives guidance from, the Public Responsibilities Committee of the Board.
- Firmwide Suitability Committee.** The Firmwide Suitability Committee is responsible for setting standards and policies for product, transaction and client suitability and providing a forum for consistency across functions, regions and products on suitability assessments. This committee also reviews suitability matters escalated from other committees. This committee is co-chaired by our chief compliance officer, and a co-head of EMEA FICC sales, who are appointed as chairs by the chair of the Firmwide Client and Business Standards Committee.
- Firmwide Capital Committee.** The Firmwide Capital Committee provides approval and oversight of debt-related transactions, including principal commitments of our capital. This committee aims to ensure that business, reputational and suitability standards for underwritings and capital commitments are maintained on a global basis. This committee is co-chaired by our head of Credit Risk and a co-head of our Global Financing Group, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.

- Firmwide Commitments Committee.** The Firmwide Commitments Committee reviews our underwriting and distribution activities with respect to equity and equity-related product offerings, and sets and maintains policies and procedures designed to ensure that legal, reputational, regulatory and business standards are maintained on a global basis. In addition to reviewing specific transactions, this committee periodically conducts general strategic reviews of sectors and products and establishes policies in connection with transaction practices. This committee is co-chaired by our chief equity underwriting officer for EMEA, our chief equity underwriting officer for the Americas, a co-chairman of our Global Financial Institutions Group and a co-head of our Global Investment Grade Capital Markets and Risk Management Group in our Investment Banking Division, who are appointed as chairs by the chair of the Firmwide Client and Business Standards Committee.

Firmwide Asset Liability Committee. The Firmwide Asset Liability Committee reviews and approves the strategic direction for our financial resources, including capital, liquidity, funding and balance sheet. This committee has oversight responsibility for asset liability management, including interest rate and currency risk, funds transfer pricing, capital allocation and incentives, and credit ratings. This committee makes recommendations as to any adjustments to asset liability management and financial resource allocation in light of current events, risks, exposures, and regulatory requirements and approves related policies. This committee is co-chaired by our chief financial officer and our global treasurer, who are appointed as chairs by our chief executive officer, and reports to the Management Committee.

Liquidity Risk Management

Overview

Liquidity risk is the risk that we will be unable to fund ourselves or meet our liquidity needs in the event of firm-specific, broader industry or market liquidity stress events. We have in place a comprehensive and conservative set of liquidity and funding policies. Our principal objective is to be able to fund ourselves and to enable our core businesses to continue to serve clients and generate revenues, even under adverse circumstances.

Treasury, which reports to our chief financial officer, has primary responsibility for developing, managing and executing our liquidity and funding strategy within our risk appetite.

Management's Discussion and Analysis

Liquidity Risk, which is independent of our revenue-producing units and Treasury, and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our liquidity risk through firmwide oversight across our global businesses and the establishment of stress testing and limits frameworks.

Liquidity Risk Management Principles

We manage liquidity risk according to three principles: (i) hold sufficient excess liquidity in the form of GCLA to cover outflows during a stressed period, (ii) maintain appropriate Asset-Liability Management and (iii) maintain a viable Contingency Funding Plan.

GCLA. GCLA is liquidity that we maintain to meet a broad range of potential cash outflows and collateral needs in a stressed environment. A primary liquidity principle is to pre-fund our estimated potential cash and collateral needs during a liquidity crisis and hold this liquidity in the form of unencumbered, highly liquid securities and cash. We believe that the securities held in our GCLA would be readily convertible to cash in a matter of days, through liquidation, by entering into repurchase agreements or from maturities of resale agreements, and that this cash would allow us to meet immediate obligations without needing to sell other assets or depend on additional funding from credit-sensitive markets.

Our GCLA reflects the following principles:

- The first days or weeks of a liquidity crisis are the most critical to a company's survival;
- Focus must be maintained on all potential cash and collateral outflows, not just disruptions to financing flows. Our businesses are diverse, and our liquidity needs are determined by many factors, including market movements, collateral requirements and client commitments, all of which can change dramatically in a difficult funding environment;
- During a liquidity crisis, credit-sensitive funding, including unsecured debt, certain deposits and some types of secured financing agreements, may be unavailable, and the terms (e.g., interest rates, collateral provisions and tenor) or availability of other types of secured financing may change and certain deposits may be withdrawn; and
- As a result of our policy to pre-fund liquidity that we estimate may be needed in a crisis, we hold more unencumbered securities and have larger funding balances than our businesses would otherwise require. We believe that our liquidity is stronger with greater balances of highly liquid unencumbered securities, even though it increases our total assets and our funding costs.

We maintain our GCLA across Group Inc., Goldman Sachs Funding LLC (Funding IHC) and Group Inc.'s major broker-dealer and bank subsidiaries, asset types and clearing agents to provide us with sufficient operating liquidity to ensure timely settlement in all major markets, even in a difficult funding environment. In addition to the GCLA, we maintain cash balances and securities in several of our other entities, primarily for use in specific currencies, entities or jurisdictions where we do not have immediate access to parent company liquidity.

Asset-Liability Management. Our liquidity risk management policies are designed to ensure we have a sufficient amount of financing, even when funding markets experience persistent stress. We manage the maturities and diversity of our funding across markets, products and counterparties, and seek to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of our assets.

Our approach to asset-liability management includes:

- Conservatively managing the overall characteristics of our funding book, with a focus on maintaining long-term, diversified sources of funding in excess of our current requirements. See "Balance Sheet and Funding Sources — Funding Sources" for further information;
- Actively managing and monitoring our asset base, with particular focus on the liquidity, holding period and ability to fund assets on a secured basis. We assess our funding requirements and our ability to liquidate assets in a stressed environment while appropriately managing risk. This enables us to determine the most appropriate funding products and tenors. See "Balance Sheet and Funding Sources — Balance Sheet Management" for further information about our balance sheet management process and "— Funding Sources — Secured Funding" for further information about asset classes that may be harder to fund on a secured basis; and
- Raising secured and unsecured financing that has a long tenor relative to the liquidity profile of our assets. This reduces the risk that our liabilities will come due in advance of our ability to generate liquidity from the sale of our assets. Because we maintain a highly liquid balance sheet, the holding period of certain of our assets may be materially shorter than their contractual maturity dates.

Management's Discussion and Analysis

Our goal is to ensure that we maintain sufficient liquidity to fund our assets and meet our contractual and contingent obligations in normal times, as well as during periods of market stress. Through our dynamic balance sheet management process, we use actual and projected asset balances to determine secured and unsecured funding requirements. Funding plans are reviewed and approved by the Firmwide Asset Liability Committee. In addition, our independent risk oversight and control functions analyze, and the Firmwide Asset Liability Committee reviews, our consolidated total capital position (unsecured long-term borrowings plus total shareholders' equity) so that we maintain a level of long-term funding that is sufficient to meet our long-term financing requirements. In a liquidity crisis, we would first use our GCLA in order to avoid reliance on asset sales (other than our GCLA). However, we recognize that orderly asset sales may be prudent or necessary in a severe or persistent liquidity crisis.

Subsidiary Funding Policies

The majority of our unsecured funding is raised by Group Inc., which provides the necessary funds to Funding IHC and other subsidiaries, some of which are regulated, to meet their asset financing, liquidity and capital requirements. In addition, Group Inc. provides its regulated subsidiaries with the necessary capital to meet their regulatory requirements. The benefits of this approach to subsidiary funding are enhanced control and greater flexibility to meet the funding requirements of our subsidiaries. Funding is also raised at the subsidiary level through a variety of products, including deposits, secured funding and unsecured borrowings.

Our intercompany funding policies assume that a subsidiary's funds or securities are not freely available to its parent, Funding IHC or other subsidiaries unless (i) legally provided for and (ii) there are no additional regulatory, tax or other restrictions. In particular, many of our subsidiaries are subject to laws that authorize regulatory bodies to block or reduce the flow of funds from those subsidiaries to Group Inc. or Funding IHC. Regulatory action of that kind could impede access to funds that Group Inc. needs to make payments on its obligations. Accordingly, we assume that the capital provided to our regulated subsidiaries is not available to Group Inc. or other subsidiaries and any other financing provided to our regulated subsidiaries is not available to Group Inc. or Funding IHC until the maturity of such financing.

Group Inc. has provided substantial amounts of equity and subordinated indebtedness, directly or indirectly, to its regulated subsidiaries. For example, as of September 2022, Group Inc. had \$38.27 billion of equity and subordinated indebtedness invested in GS&Co., its principal U.S. registered broker-dealer; \$48.29 billion invested in GSI, a regulated U.K. broker-dealer; \$2.53 billion invested in GSJCL, a regulated Japanese broker-dealer; \$51.51 billion invested in GS Bank USA, a regulated New York State-chartered bank; and \$4.21 billion invested in GSIB, a regulated U.K. bank. Group Inc. also provides financing, directly or indirectly, in the form of: \$97.56 billion of unsubordinated loans (including secured loans of \$46.10 billion) and \$35.35 billion of collateral and cash deposits to these entities as of September 2022. In addition, as of September 2022, Group Inc. had significant amounts of capital invested in and loans to its other regulated subsidiaries.

Contingency Funding Plan. We maintain a contingency funding plan to provide a framework for analyzing and responding to a liquidity crisis situation or periods of market stress. Our contingency funding plan outlines a list of potential risk factors, key reports and metrics that are reviewed on an ongoing basis to assist in assessing the severity of, and managing through, a liquidity crisis and/or market dislocation. The contingency funding plan also describes in detail our potential responses if our assessments indicate that we have entered a liquidity crisis, which include pre-funding for what we estimate will be our potential cash and collateral needs, as well as utilizing secondary sources of liquidity. Mitigants and action items to address specific risks which may arise are also described and assigned to individuals responsible for execution.

The contingency funding plan identifies key groups of individuals and their responsibilities, which include fostering effective coordination, control and distribution of information, implementing liquidity maintenance activities and managing internal and external communication, all of which are critical in the management of a crisis or period of market stress.

Management's Discussion and Analysis

Stress Tests

In order to determine the appropriate size of our GCLA, we model liquidity outflows over a range of scenarios and time horizons. One of our primary internal liquidity risk models, referred to as the Modeled Liquidity Outflow, quantifies our liquidity risks over a 30-day stress scenario. We also consider other factors, including, but not limited to, an assessment of our potential intraday liquidity needs through an additional internal liquidity risk model, referred to as the Intraday Liquidity Model, the results of our long-term stress testing models, our resolution liquidity models and other applicable regulatory requirements and a qualitative assessment of our condition, as well as the financial markets. The results of the Modeled Liquidity Outflow, the Intraday Liquidity Model, the long-term stress testing models and the resolution liquidity models are reported to senior management on a regular basis. We also perform firmwide stress tests. See "Overview and Structure of Risk Management" for information about firmwide stress tests.

Modeled Liquidity Outflow. Our Modeled Liquidity Outflow is based on conducting multiple scenarios that include combinations of market-wide and firm-specific stress. These scenarios are characterized by the following qualitative elements:

- Severely challenged market environments, which include low consumer and corporate confidence, financial and political instability, and adverse changes in market values, including potential declines in equity markets and widening of credit spreads; and
- A firm-specific crisis potentially triggered by material losses, reputational damage, litigation and/or a ratings downgrade.

The following are key modeling elements of our Modeled Liquidity Outflow:

- Liquidity needs over a 30-day scenario;
- A two-notch downgrade of our long-term senior unsecured credit ratings;
- Changing conditions in funding markets, which limit our access to unsecured and secured funding;
- No support from additional government funding facilities. Although we have access to various central bank funding programs, we do not assume reliance on additional sources of funding in a liquidity crisis; and

- A combination of contractual outflows and contingent outflows arising from both our on- and off-balance sheet arrangements. Contractual outflows include, among other things, upcoming maturities of unsecured debt, term deposits and secured funding. Contingent outflows include, among other things, the withdrawal of customer credit balances in our prime brokerage business, increase in variation margin requirements due to adverse changes in the value of our exchange-traded and OTC-cleared derivatives, draws on unfunded commitments and withdrawals of deposits that have no contractual maturity. See notes to the consolidated financial statements for further information about contractual outflows, including Note 11 for collateralized financings, Note 13 for deposits, Note 14 for unsecured long-term borrowings and Note 15 for operating lease payments, and "Off-Balance Sheet Arrangements" for further information about our various types of off-balance sheet arrangements.

Intraday Liquidity Model. Our Intraday Liquidity Model measures our intraday liquidity needs using a scenario analysis characterized by the same qualitative elements as our Modeled Liquidity Outflow. The model assesses the risk of increased intraday liquidity requirements during a scenario where access to sources of intraday liquidity may become constrained.

Long-Term Stress Testing. We utilize longer-term stress tests to take a forward view on our liquidity position through prolonged stress periods in which we experience a severe liquidity stress and recover in an environment that continues to be challenging. We are focused on ensuring conservative asset-liability management to prepare for a prolonged period of potential stress, seeking to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of our assets.

Resolution Liquidity Models. In connection with our resolution planning efforts, we have established our Resolution Liquidity Adequacy and Positioning framework, which estimates liquidity needs of our major subsidiaries in a stressed environment. The liquidity needs are measured using our Modeled Liquidity Outflow assumptions and include certain additional inter-affiliate exposures. We have also established our Resolution Liquidity Execution Need framework, which measures the liquidity needs of our major subsidiaries to stabilize and wind down following a Group Inc. bankruptcy filing in accordance with our preferred resolution strategy.

In addition, we have established a triggers and alerts framework, which is designed to provide the Board with information needed to make an informed decision on whether and when to commence bankruptcy proceedings for Group Inc.

Management's Discussion and Analysis

Limits

We use liquidity risk limits at various levels and across liquidity risk types to manage the size of our liquidity exposures. Limits are measured relative to acceptable levels of risk given our liquidity risk tolerance. See "Overview and Structure of Risk Management" for information about the limit approval process.

Limits are monitored by Treasury and Liquidity Risk. Liquidity Risk is responsible for identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded.

GCLA and Unencumbered Metrics

GCLA. Based on the results of our internal liquidity risk models, described above, as well as our consideration of other factors, including, but not limited to, a qualitative assessment of our condition, as well as the financial markets, we believe our liquidity position as of both September 2022 and December 2021 was appropriate. We strictly limit our GCLA to a narrowly defined list of securities and cash because they are highly liquid, even in a difficult funding environment. We do not include other potential sources of excess liquidity in our GCLA, such as less liquid unencumbered securities or committed credit facilities.

The table below presents information about our GCLA.

\$ in millions	Average for the Three Months Ended	
	September 2022	June 2022
Denomination		
U.S. dollar	\$ 295,985	\$ 270,121
Non-U.S. dollar	120,937	121,146
Total	\$ 416,922	\$ 391,267
Asset Class		
Overnight cash deposits	\$ 257,162	\$ 226,414
U.S. government obligations	122,568	120,355
U.S. agency obligations	12,348	8,483
Non-U.S. government obligations	24,844	36,015
Total	\$ 416,922	\$ 391,267
Entity Type		
Group Inc. and Funding IHC	\$ 64,305	\$ 63,070
Major broker-dealer subsidiaries	120,346	114,507
Major bank subsidiaries	232,271	213,690
Total	\$ 416,922	\$ 391,267

In the table above:

- The U.S. dollar-denominated GCLA consists of (i) unencumbered U.S. government and agency obligations (including highly liquid U.S. agency mortgage-backed obligations), all of which are eligible as collateral in Federal Reserve open market operations and (ii) certain overnight U.S. dollar cash deposits.
- The non-U.S. dollar-denominated GCLA consists of non-U.S. government obligations (only unencumbered German, French, Japanese and U.K. government obligations) and certain overnight cash deposits in highly liquid currencies.

We maintain our GCLA to enable us to meet current and potential liquidity requirements of our parent company, Group Inc., and its subsidiaries. Our Modeled Liquidity Outflow and Intraday Liquidity Model incorporate a requirement for Group Inc., as well as a standalone requirement for each of our major broker-dealer and bank subsidiaries. Funding IHC is required to provide the necessary liquidity to Group Inc. during the ordinary course of business, and is also obligated to provide capital and liquidity support to major subsidiaries in the event of our material financial distress or failure. Liquidity held directly in each of our major broker-dealer and bank subsidiaries is intended for use only by that subsidiary to meet its liquidity requirements and is assumed not to be available to Group Inc. or Funding IHC unless (i) legally provided for and (ii) there are no additional regulatory, tax or other restrictions. In addition, the Modeled Liquidity Outflow and Intraday Liquidity Model also incorporate a broader assessment of standalone liquidity requirements for other subsidiaries and we hold a portion of our GCLA directly at Group Inc. or Funding IHC to support such requirements.

Other Unencumbered Assets. In addition to our GCLA, we have a significant amount of other unencumbered cash and financial instruments, including other government obligations, high-grade money market securities, corporate obligations, marginable equities, loans and cash deposits not included in our GCLA. The fair value of our unencumbered assets averaged \$269.71 billion for the three months ended September 2022 and \$279.07 billion for the three months ended June 2022. We do not consider these assets liquid enough to be eligible for our GCLA.

Liquidity Regulatory Framework

As a BHC, we are subject to a minimum Liquidity Coverage Ratio (LCR) under the LCR rule approved by the U.S. federal bank regulatory agencies. The LCR rule requires organizations to maintain an adequate ratio of eligible high-quality liquid assets (HQLA) to expected net cash outflows under an acute, short-term liquidity stress scenario. Eligible HQLA excludes HQLA held by subsidiaries that is in excess of their minimum requirement and is subject to transfer restrictions. We are required to maintain a minimum LCR of 100%. We expect that fluctuations in client activity, business mix and the market environment will impact our LCR.

The table below presents information about our average daily LCR.

\$ in millions	Average for the Three Months Ended	
	September 2022	June 2022
Total HQLA	\$407,969	\$380,531
Eligible HQLA	\$279,121	\$261,718
Net cash outflows	\$224,408	\$209,577
LCR	124%	125%

Management's Discussion and Analysis

As a BHC, we are subject to a net stable funding ratio (NSFR) requirement established by the U.S. federal bank regulatory agencies, which requires large U.S. banking organizations to ensure they have access to stable funding over a one-year time horizon. The rule also requires disclosure of the ratio on a semi-annual basis and a description of the banking organization's stable funding sources beginning in 2023. Our NSFR as of September 2022 exceeded the minimum requirement.

The following provides information about our subsidiary liquidity regulatory requirements:

- **GS Bank USA.** GS Bank USA is subject to a minimum LCR of 100% under the LCR rule approved by the U.S. federal bank regulatory agencies. As of September 2022, GS Bank USA's LCR exceeded the minimum requirement. The NSFR requirement described above also applies to GS Bank USA. As of September 2022, GS Bank USA's NSFR exceeded the minimum requirement.
- **GSI and GSIB.** GSI and GSIB are subject to a minimum LCR of 100% under the LCR rule approved by the U.K. regulatory authorities. GSI's and GSIB's average monthly LCR for the trailing twelve-month period ended September 2022 exceeded the minimum requirement. GSI and GSIB are subject to the applicable NSFR requirement in the U.K., which became effective in January 2022. As of September 2022, both GSI's and GSIB's NSFR exceeded the minimum requirement.
- **GSBE.** GSBE is subject to a minimum LCR of 100% under the LCR rule approved by the European Parliament and Council. GSBE's average monthly LCR for the trailing twelve-month period ended September 2022 exceeded the minimum requirement. GSBE is subject to the applicable NSFR requirement in the E.U. As of September 2022, GSBE's NSFR exceeded the minimum requirement.
- **Other Subsidiaries.** We monitor local regulatory liquidity requirements of our subsidiaries to ensure compliance. For many of our subsidiaries, these requirements either have changed or are likely to change in the future due to the implementation of the Basel Committee's framework for liquidity risk measurement, standards and monitoring, as well as other regulatory developments.

The implementation of these rules and any amendments adopted by the regulatory authorities could impact our liquidity and funding requirements and practices in the future.

Credit Ratings

We rely on the short- and long-term debt capital markets to fund a significant portion of our day-to-day operations and the cost and availability of debt financing is influenced by our credit ratings. Credit ratings are also important when we are competing in certain markets, such as OTC derivatives, and when we seek to engage in longer-term transactions. See "Risk Factors" in Part I, Item 1A of the 2021 Form 10-K for information about the risks associated with a reduction in our credit ratings.

The table below presents the unsecured credit ratings and outlook of Group Inc.

	As of September 2022				
	DBRS	Fitch	Moody's	R&I	S&P
Short-term debt	R-1 (middle)	F1	P-1	a-1	A-2
Long-term debt	A (high)	A	A2	A	BBB+
Subordinated debt	A	BBB+	Baa2	A-	BBB
Trust preferred	A	BBB-	Baa3	N/A	BB+
Preferred stock	BBB (high)	BBB-	Ba1	N/A	BB+
Ratings outlook	Stable	Stable	Stable	Stable	Stable

In the table above:

- The ratings and outlook are by DBRS, Inc. (DBRS), Fitch, Inc. (Fitch), Moody's Investors Service (Moody's), Rating and Investment Information, Inc. (R&I), and Standard & Poor's Ratings Services (S&P).
- The ratings for trust preferred relate to the guaranteed preferred beneficial interests issued by Goldman Sachs Capital I.
- The DBRS, Fitch, Moody's and S&P ratings for preferred stock include the APEX issued by Goldman Sachs Capital II and Goldman Sachs Capital III.

Management's Discussion and Analysis

The table below presents the unsecured credit ratings and outlook of GS Bank USA, GSIB, GSBE, GS&Co. and GSI.

	As of September 2022		
	Fitch	Moody's	S&P
GS Bank USA			
Short-term debt	F1	P-1	A-1
Long-term debt	A+	A1	A+
Short-term bank deposits	F1+	P-1	N/A
Long-term bank deposits	AA-	A1	N/A
Ratings outlook	Stable	Stable	Stable
GSIB			
Short-term debt	F1	P-1	A-1
Long-term debt	A+	A1	A+
Short-term bank deposits	F1	P-1	N/A
Long-term bank deposits	A+	A1	N/A
Ratings outlook	Stable	Stable	Stable
GSBE			
Short-term debt	F1	P-1	A-1
Long-term debt	A+	A1	A+
Short-term bank deposits	N/A	P-1	N/A
Long-term bank deposits	N/A	A1	N/A
Ratings outlook	Stable	Stable	Stable
GS&Co.			
Short-term debt	F1	N/A	A-1
Long-term debt	A+	N/A	A+
Ratings outlook	Stable	N/A	Stable
GSI			
Short-term debt	F1	P-1	A-1
Long-term debt	A+	A1	A+
Ratings outlook	Stable	Stable	Stable

We believe our credit ratings are primarily based on the credit rating agencies' assessment of:

- Our liquidity, market, credit and operational risk management practices;
- Our level and variability of earnings;
- Our capital base;
- Our franchise, reputation and management;
- Our corporate governance; and
- The external operating and economic environment, including, in some cases, the assumed level of government support or other systemic considerations, such as potential resolution.

Certain of our derivatives have been transacted under bilateral agreements with counterparties who may require us to post collateral or terminate the transactions based on changes in our credit ratings. We manage our GCLA to ensure we would, among other potential requirements, be able to make the additional collateral or termination payments that may be required in the event of a two-notch reduction in our long-term credit ratings, as well as collateral that has not been called by counterparties, but is available to them.

See Note 7 to the consolidated financial statements for further information about derivatives with credit-related contingent features and the additional collateral or termination payments related to our net derivative liabilities under bilateral agreements that could have been called by counterparties in the event of a one- or two-notch downgrade in our credit ratings.

Cash Flows

As a global financial institution, our cash flows are complex and bear little relation to our net earnings and net assets. Consequently, we believe that traditional cash flow analysis is less meaningful in evaluating our liquidity position than the liquidity and asset-liability management policies described above. Cash flow analysis may, however, be helpful in highlighting certain macro trends and strategic initiatives in our businesses.

Nine Months Ended September 2022. Our cash and cash equivalents increased by \$23.22 billion to \$284.25 billion at the end of the third quarter of 2022, due to net cash provided by financing and operating activities, partially offset by net cash used for investing activities. The net cash provided by financing activities primarily reflected cash inflows from deposits (reflecting increases in transaction banking, deposit sweep program balances, brokered certificates of deposit, and consumer deposits, partially offset by a decrease in other deposits) and net issuance of unsecured long-term borrowings. The net cash provided by operating activities primarily reflected cash inflows from trading liabilities and customer and other receivables and payables, net (reflecting both an increase in customer and other payables and in customer and other receivables), partially offset by cash outflows from trading assets. The net cash used for investing activities primarily reflected purchases of investments (primarily U.S. government obligations accounted for as held-to-maturity) and an increase in net lending activities (reflecting increases in corporate, consumer and wealth management loans).

Nine Months Ended September 2021. Our cash and cash equivalents increased by \$55.99 billion to \$211.83 billion at the end of the third quarter of 2021, due to net cash provided by financing activities, partially offset by net cash used for operating activities and investing activities. The net cash provided by financing activities primarily reflected an increase in net deposits (principally reflecting increases in institutional, transaction banking, private bank, consumer and deposit sweep program balances) and net issuance of unsecured long-term borrowings. The net cash used for operating activities primarily reflected an increase in collateralized transactions (an increase in collateralized agreements, partially offset by an increase in collateralized financings), partially offset by an increase in trading liabilities. The net cash used for investing activities primarily reflected purchases of investments and an increase in net lending activities, partially offset by sales and paydowns of investments.

Market Risk Management

Overview

Market risk is the risk of loss in the value of our inventory, investments, loans and other financial assets and liabilities accounted for at fair value due to changes in market conditions. We hold such positions primarily for market making for our clients and for our investing and financing activities, and therefore, these positions change based on client demands and our investment opportunities. Since these positions are accounted for at fair value, they fluctuate on a daily basis, with the related gains and losses included in the consolidated statements of earnings. We employ a variety of risk measures, each described in the respective sections below, to monitor market risk. Categories of market risk include the following:

- Interest rate risk: results from exposures to changes in the level, slope and curvature of yield curves, the volatilities of interest rates, prepayment speeds and credit spreads;
- Equity price risk: results from exposures to changes in prices and volatilities of individual equities, baskets of equities and equity indices;
- Currency rate risk: results from exposures to changes in spot prices, forward prices and volatilities of currency rates; and
- Commodity price risk: results from exposures to changes in spot prices, forward prices and volatilities of commodities, such as crude oil, petroleum products, natural gas, electricity, and precious and base metals.

Market Risk, which is independent of our revenue-producing units and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our market risk through firmwide oversight across our global businesses.

Managers in revenue-producing units and Market Risk discuss market information, positions and estimated loss scenarios on an ongoing basis. Managers in revenue-producing units are accountable for managing risk within prescribed limits. These managers have in-depth knowledge of their positions, markets and the instruments available to hedge their exposures.

Market Risk Management Process

Our process for managing market risk includes the critical components of our risk management framework described in the "Overview and Structure of Risk Management," as well as the following:

- Monitoring compliance with established market risk limits and reporting our exposures;
- Diversifying exposures;
- Controlling position sizes; and
- Evaluating mitigants, such as economic hedges in related securities or derivatives.

Our market risk management systems enable us to perform an independent calculation of Value-at-Risk (VaR) and stress measures, capture risk measures at individual position levels, attribute risk measures to individual risk factors of each position, report many different views of the risk measures (e.g., by desk, business, product type or entity) and produce ad hoc analyses in a timely manner.

Risk Measures

We produce risk measures and monitor them against established market risk limits. These measures reflect an extensive range of scenarios and the results are aggregated at product, business and firmwide levels.

We use a variety of risk measures to estimate the size of potential losses for both moderate and more extreme market moves over both short- and long-term time horizons. Our primary risk measures are VaR, which is used for shorter-term periods, and stress tests. Our risk reports detail key risks, drivers and changes for each desk and business, and are distributed daily to senior management of both our revenue-producing units and our independent risk oversight and control functions.

Value-at-Risk. VaR is the potential loss in value due to adverse market movements over a defined time horizon with a specified confidence level. For assets and liabilities included in VaR, see "Financial Statement Linkages to Market Risk Measures." We typically employ a one-day time horizon with a 95% confidence level. We use a single VaR model, which captures risks, including interest rates, equity prices, currency rates and commodity prices. As such, VaR facilitates comparison across portfolios of different risk characteristics. VaR also captures the diversification of aggregated risk at the firmwide level.

Management's Discussion and Analysis

We are aware of the inherent limitations to VaR and therefore use a variety of risk measures in our market risk management process. Inherent limitations to VaR include:

- VaR does not estimate potential losses over longer time horizons where moves may be extreme;
- VaR does not take account of the relative liquidity of different risk positions; and
- Previous moves in market risk factors may not produce accurate predictions of all future market moves.

To comprehensively capture our exposures and relevant risks in our VaR calculation, we use historical simulations with full valuation of market factors at the position level by simultaneously shocking the relevant market factors for that position. These market factors include spot prices, credit spreads, funding spreads, yield curves, volatility and correlation, and are updated periodically based on changes in the composition of positions, as well as variations in market conditions. We sample from five years of historical data to generate the scenarios for our VaR calculation. The historical data is weighted so that the relative importance of the data reduces over time. This gives greater importance to more recent observations and reflects current asset volatilities, which improves the accuracy of our estimates of potential loss. As a result, even if our positions included in VaR were unchanged, our VaR would increase with increasing market volatility and vice versa.

Given its reliance on historical data, VaR is most effective in estimating risk exposures in markets in which there are no sudden fundamental changes or shifts in market conditions.

Our VaR measure does not include:

- Positions that are best measured and monitored using sensitivity measures; and
- The impact of changes in counterparty and our own credit spreads on derivatives, as well as changes in our own credit spreads on financial liabilities for which the fair value option was elected.

We perform daily backtesting of our VaR model (i.e., comparing daily net revenues for positions included in VaR to the VaR measure calculated as of the prior business day) at the firmwide level and for each of our businesses and major regulated subsidiaries.

Stress Testing. Stress testing is a method of determining the effect of various hypothetical stress scenarios. We use stress testing to examine risks of specific portfolios, as well as the potential impact of our significant risk exposures. We use a variety of stress testing techniques to calculate the potential loss from a wide range of market moves on our portfolios, including firmwide stress tests, sensitivity analysis and scenario analysis. The results of our various stress tests are analyzed together for risk management purposes. See “Overview and Structure of Risk Management” for information about firmwide stress tests.

Sensitivity analysis is used to quantify the impact of a market move in a single risk factor across all positions (e.g., equity prices or credit spreads) using a variety of defined market shocks, ranging from those that could be expected over a one-day time horizon up to those that could take many months to occur. We also use sensitivity analysis to quantify the impact of the default of any single entity, which captures the risk of large or concentrated exposures.

Scenario analysis is used to quantify the impact of a specified event, including how the event impacts multiple risk factors simultaneously. For example, for sovereign stress testing we calculate potential direct exposure associated with our sovereign positions, as well as the corresponding debt, equity and currency exposures associated with our non-sovereign positions that may be impacted by the sovereign distress. When conducting scenario analysis, we often consider a number of possible outcomes for each scenario, ranging from moderate to severely adverse market impacts. In addition, these stress tests are constructed using both historical events and forward-looking hypothetical scenarios.

Unlike VaR measures, which have an implied probability because they are calculated at a specified confidence level, there may not be an implied probability that our stress testing scenarios will occur. Instead, stress testing is used to model both moderate and more extreme moves in underlying market factors. When estimating potential loss, we generally assume that our positions cannot be reduced or hedged (although experience demonstrates that we are generally able to do so).

Limits

We use market risk limits at various levels to manage the size of our market exposures. These limits are set based on VaR and on a range of stress tests relevant to our exposures. See “Overview and Structure of Risk Management” for information about the limit approval process.

Market Risk is responsible for monitoring these limits, and identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded (e.g., due to positional changes or changes in market conditions, such as increased volatilities or changes in correlations). Such instances are remediated by a reduction in the positions we hold and/or a temporary or permanent increase to the limit, if warranted.

Management's Discussion and Analysis

Metrics

We analyze VaR at the firmwide level and a variety of more detailed levels, including by risk category, business and region. Diversification effect in the tables below represents the difference between total VaR and the sum of the VaRs for the four risk categories. This effect arises because the four market risk categories are not perfectly correlated.

The table below presents our average daily VaR.

\$ in millions	Three Months Ended			Nine Months Ended September	
	September 2022	June 2022	September 2021	2022	2021
Categories					
Interest rates	\$ 112	\$ 104	\$ 58	\$ 97	\$ 60
Equity prices	34	36	40	34	46
Currency rates	36	23	12	28	12
Commodity prices	51	63	22	54	22
Diversification effect	(103)	(102)	(52)	(95)	(53)
Total	\$ 130	\$ 124	\$ 80	\$ 118	\$ 87

Our average daily VaR increased to \$130 million for the three months ended September 2022 from \$124 million for the three months ended June 2022, primarily due to increased exposures. The total increase was primarily driven by increases in the currency rates and interest rates categories, partially offset by a decrease in the commodity prices category.

Our average daily VaR increased to \$130 million for the three months ended September 2022 from \$80 million for the three months ended September 2021, due to increased exposures and higher levels of volatility. The total increase was primarily driven by increases in the interest rates, commodity prices and currency rates categories, partially offset by an increase in the diversification effect.

Our average daily VaR increased to \$118 million for the nine months ended September 2022 from \$87 million for the nine months ended September 2021, due to increased exposures and higher levels of volatility. The total increase was driven by increases in the interest rates, commodity prices and currency rates categories, partially offset by an increase in the diversification effect and a decrease in the equity prices category.

The table below presents our period-end VaR.

\$ in millions	As of		
	September 2022	June 2022	September 2021
Categories			
Interest rates	\$ 96	\$ 134	\$ 57
Equity prices	37	37	37
Currency rates	42	20	9
Commodity prices	35	59	31
Diversification effect	(99)	(100)	(47)
Total	\$ 111	\$ 150	\$ 87

Our period-end VaR decreased to \$111 million as of September 2022 from \$150 million as of June 2022, primarily due to reduced exposures. The total decrease was primarily driven by decreases in the interest rates and commodity prices categories, partially offset by an increase in the currency rates category.

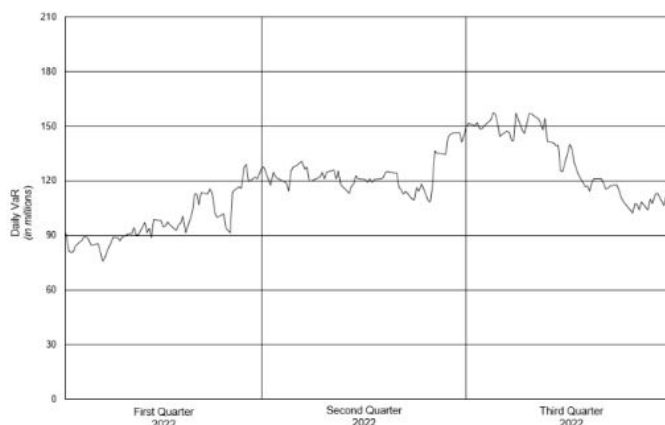
Our period-end VaR increased to \$111 million as of September 2022 from \$87 million as of September 2021, due to higher levels of volatility and increased exposures. The total increase was primarily driven by increases in the interest rates and currency rates categories, partially offset by an increase in the diversification effect.

During the nine months ended September 2022, the firmwide VaR risk limit was exceeded on six occasions (all of which occurred during March 2022) primarily due to higher levels of volatility generally resulting from broad macroeconomic and geopolitical concerns. These limit breaches were resolved by temporary increases in the firmwide VaR risk limit and subsequent risk reductions. During this period, the firmwide VaR risk limit was also permanently increased due to higher levels of volatility. During 2021, the firmwide VaR risk limit was not exceeded and there were no permanent or temporary changes to the firmwide VaR risk limit.

The table below presents our high and low VaR.

\$ in millions	Three Months Ended					
	September 2022		June 2022		September 2021	
	High	Low	High	Low	High	Low
Categories						
Interest rates	\$ 139	\$ 93	\$ 134	\$ 84	\$ 74	\$ 50
Equity prices	\$ 41	\$ 28	\$ 48	\$ 31	\$ 48	\$ 33
Currency rates	\$ 53	\$ 19	\$ 31	\$ 16	\$ 16	\$ 8
Commodity prices	\$ 67	\$ 35	\$ 74	\$ 51	\$ 33	\$ 15
Firmwide						
VaR	\$ 158	\$ 102	\$ 150	\$ 108	\$ 95	\$ 74

The chart below presents our daily VaR for the nine months ended September 2022.



Management's Discussion and Analysis

The table below presents, by number of business days, the frequency distribution of our daily net revenues for positions included in VaR.

\$ in millions	Three Months Ended September		Nine Months Ended September	
	2022	2021	2022	2021
>\$100	22	13	85	47
\$75 – \$100	7	11	20	39
\$50 – \$75	7	11	20	30
\$25 – \$50	9	10	20	26
\$0 – \$25	10	11	22	31
\$(25) – \$0	5	7	9	14
\$(50) – \$(25)	2	—	6	—
\$(75) – \$(50)	—	—	1	—
\$(100) – \$(75)	2	—	3	—
<\$(100)	—	1	2	1
Total	64	64	188	188

Daily net revenues for positions included in VaR are compared with VaR calculated as of the end of the prior business day. Net losses incurred on a single day for such positions did not exceed our 95% one-day VaR (i.e., a VaR exception) during the three months ended September 2022 and exceeded our 95% one-day VaR on two occasions during the nine months ended September 2022. There was one VaR exception during both the three and nine months ended September 2021.

During periods in which we have significantly more positive net revenue days than net revenue loss days, we expect to have fewer VaR exceptions because, under normal conditions, our business model generally produces positive net revenues. In periods in which our franchise revenues are adversely affected, we generally have more loss days, resulting in more VaR exceptions. The daily net revenues for positions included in VaR used to determine VaR exceptions reflect the impact of any intraday activity, including bid/offer net revenues, which are more likely than not to be positive by their nature.

Sensitivity Measures

Certain portfolios and individual positions are not included in VaR because VaR is not the most appropriate risk measure. Other sensitivity measures we use to analyze market risk are described below.

10% Sensitivity Measures. The table below presents our market risk by asset category for positions accounted for at fair value, that are not included in VaR.

\$ in millions	As of		
	September 2022	June 2022	September 2021
Equity	\$ 1,645	\$ 1,563	\$ 2,034
Debt	1,984	2,107	2,385
Total	\$ 3,629	\$ 3,670	\$ 4,419

In the table above:

- The market risk of these positions is determined by estimating the potential reduction in net revenues of a 10% decline in the value of these positions.
- Equity positions relate to private and restricted public equity securities, including interests in funds that invest in corporate equities and real estate and interests in hedge funds.
- Debt positions include interests in funds that invest in corporate mezzanine and senior debt instruments, loans backed by commercial and residential real estate, corporate bank loans and other corporate debt, including acquired portfolios of distressed loans.
- Funded equity and debt positions are included in our consolidated balance sheets in investments and loans. See Note 8 to the consolidated financial statements for further information about investments and Note 9 to the consolidated financial statements for further information about loans.
- These measures do not reflect the diversification effect across asset categories or across other market risk measures.

Credit and Funding Spread Sensitivity on Derivatives and Financial Liabilities. VaR excludes the impact of changes in counterparty credit spreads, our own credit spreads and unsecured funding spreads on derivatives, as well as changes in our own credit spreads (debt valuation adjustment) on financial liabilities for which the fair value option was elected. The estimated sensitivity to a one basis point increase in credit spreads (counterparty and our own) and unsecured funding spreads on derivatives (including hedges) was a loss of \$2 million as of both September 2022 and June 2022. In addition, the estimated sensitivity to a one basis point increase in our own credit spreads on financial liabilities for which the fair value option was elected was a gain of \$33 million as of September 2022 and \$35 million as of June 2022. However, the actual net impact of a change in our own credit spreads is also affected by the liquidity, duration and convexity (as the sensitivity is not linear to changes in yields) of those financial liabilities for which the fair value option was elected, as well as the relative performance of any hedges undertaken.

Interest Rate Sensitivity. Loans accounted for at amortized cost were \$161.62 billion as of September 2022 and \$159.40 billion as of June 2022, substantially all of which had floating interest rates. The estimated sensitivity to a 100 basis point increase in interest rates on such loans was \$1.32 billion as of September 2022 and \$1.33 billion as of June 2022 of additional interest income over a twelve-month period, which does not take into account the potential impact of an increase in costs to fund such loans. See Note 9 to the consolidated financial statements for further information about loans accounted for at amortized cost.

Management's Discussion and Analysis

Other Market Risk Considerations

We make investments in securities that are accounted for as available-for-sale, held-to-maturity or under the equity method which are included in investments in the consolidated balance sheets. See Note 8 to the consolidated financial statements for further information.

Direct investments in real estate are accounted for at cost less accumulated depreciation. See Note 12 to the consolidated financial statements for further information about other assets.

Financial Statement Linkages to Market Risk Measures

We employ a variety of risk measures, each described in the respective sections above, to monitor market risk across the consolidated balance sheets and consolidated statements of earnings. The related gains and losses on these positions are included in market making, other principal transactions, interest income and interest expense in the consolidated statements of earnings, and debt valuation adjustment in the consolidated statements of comprehensive income.

The table below presents certain assets and liabilities in our consolidated balance sheets and the market risk measures used to assess those assets and liabilities.

Assets or Liabilities	Market Risk Measures
Collateralized agreements, at fair value	VaR
Customer and other receivables, at fair value	10% Sensitivity Measures
Trading assets	VaR Credit Spread Sensitivity
Investments, at fair value	VaR 10% Sensitivity Measures
Loans	VaR 10% Sensitivity Measures Interest Rate Sensitivity
Deposits, at fair value	VaR Credit Spread Sensitivity
Collateralized financings, at fair value	VaR
Trading liabilities	VaR Credit Spread Sensitivity
Unsecured borrowings, at fair value	VaR Credit Spread Sensitivity

Credit Risk Management

Overview

Credit risk represents the potential for loss due to the default or deterioration in credit quality of a counterparty (e.g., an OTC derivatives counterparty or a borrower) or an issuer of securities or other instruments we hold. Our exposure to credit risk comes mostly from client transactions in OTC derivatives and loans and lending commitments. Credit risk also comes from cash placed with banks, securities financing transactions (i.e., resale and repurchase agreements and securities borrowing and lending activities) and customer and other receivables.

Credit Risk, which is independent of our revenue-producing units and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our credit risk through firmwide oversight across our global businesses. In addition, we hold other positions that give rise to credit risk (e.g., bonds and secondary bank loans). These credit risks are captured as a component of market risk measures, which are monitored and managed by Market Risk. We also enter into derivatives to manage market risk exposures. Such derivatives also give rise to credit risk, which is monitored and managed by Credit Risk.

Credit Risk Management Process

Our process for managing credit risk includes the critical components of our risk management framework described in the "Overview and Structure of Risk Management," as well as the following:

- Monitoring compliance with established credit risk limits and reporting our credit exposures and credit concentrations;
- Establishing or approving underwriting standards;
- Assessing the likelihood that a counterparty will default on its payment obligations;
- Measuring our current and potential credit exposure and losses resulting from a counterparty default;
- Using credit risk mitigants, including collateral and hedging; and
- Maximizing recovery through active workout and restructuring of claims.

We also perform credit analyses, which incorporate initial and ongoing evaluations of the capacity and willingness of a counterparty to meet its financial obligations. For substantially all of our credit exposures, the core of our process is an annual counterparty credit evaluation or more frequently if deemed necessary as a result of events or changes in circumstances. We determine an internal credit rating for the counterparty by considering the results of the credit evaluations and assumptions with respect to the nature of and outlook for the counterparty's industry and the economic environment. The internal credit rating does not take into consideration collateral received or other credit support arrangements. Senior personnel, with expertise in specific industries, inspect and approve credit reviews and internal credit ratings.

Our risk assessment process may also include, where applicable, reviewing certain key metrics, including, but not limited to, delinquency status, collateral values, FICO credit scores and other risk factors.

Management's Discussion and Analysis

Our credit risk management systems capture credit exposure to individual counterparties and on an aggregate basis to counterparties and their subsidiaries. These systems also provide management with comprehensive information about our aggregate credit risk by product, internal credit rating, industry, country and region.

Risk Measures

We measure our credit risk based on the potential loss in the event of non-payment by a counterparty using current and potential exposure. For derivatives and securities financing transactions, current exposure represents the amount presently owed to us after taking into account applicable netting and collateral arrangements, while potential exposure represents our estimate of the future exposure that could arise over the life of a transaction based on market movements within a specified confidence level. Potential exposure also takes into account netting and collateral arrangements. For loans and lending commitments, the primary measure is a function of the notional amount of the position.

Stress Tests

We conduct regular stress tests to calculate the credit exposures, including potential concentrations that would result from applying shocks to counterparty credit ratings or credit risk factors (e.g., currency rates, interest rates, equity prices). These shocks cover a wide range of moderate and more extreme market movements, including shocks to multiple risk factors, consistent with the occurrence of a severe market or economic event. In the case of sovereign default, we estimate the direct impact of the default on our sovereign credit exposures, changes to our credit exposures arising from potential market moves in response to the default, and the impact of credit market deterioration on corporate borrowers and counterparties that may result from the sovereign default. Unlike potential exposure, which is calculated within a specified confidence level, stress testing does not generally assume a probability of these events occurring. We also perform firmwide stress tests. See "Overview and Structure of Risk Management" for information about firmwide stress tests.

To supplement these regular stress tests, as described above, we also conduct tailored stress tests on an ad hoc basis in response to specific market events that we deem significant. We also utilize these stress tests to estimate the indirect impact of certain hypothetical events on our country exposures, such as the impact of credit market deterioration on corporate borrowers and counterparties along with the shocks to the risk factors described above. The parameters of these shocks vary based on the scenario reflected in each stress test. We review estimated losses produced by the stress tests in order to understand their magnitude, highlight potential loss concentrations, and assess and mitigate our exposures where necessary.

Limits

We use credit risk limits at various levels, as well as underwriting standards to manage the size and nature of our credit exposures. Limits for industries and countries are based on our risk appetite and are designed to allow for regular monitoring, review, escalation and management of credit risk concentrations. See "Overview and Structure of Risk Management" for information about the limit approval process.

Credit Risk is responsible for monitoring these limits, and identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded.

Risk Mitigants

To reduce our credit exposures on derivatives and securities financing transactions, we may enter into netting agreements with counterparties that permit us to offset receivables and payables with such counterparties. We may also reduce credit risk with counterparties by entering into agreements that enable us to obtain collateral from them on an upfront or contingent basis and/or to terminate transactions if the counterparty's credit rating falls below a specified level. We monitor the fair value of the collateral to ensure that our credit exposures are appropriately collateralized. We seek to minimize exposures where there is a significant positive correlation between the creditworthiness of our counterparties and the market value of collateral we receive.

For loans and lending commitments, depending on the credit quality of the borrower and other characteristics of the transaction, we employ a variety of potential risk mitigants. Risk mitigants include collateral provisions, guarantees, covenants, structural seniority of the bank loan claims and, for certain lending commitments, provisions in the legal documentation that allow us to adjust loan amounts, pricing, structure and other terms as market conditions change. The type and structure of risk mitigants employed can significantly influence the degree of credit risk involved in a loan or lending commitment.

When we do not have sufficient visibility into a counterparty's financial strength or when we believe a counterparty requires support from its parent, we may obtain third-party guarantees of the counterparty's obligations. We may also mitigate our credit risk using credit derivatives or participation agreements.

Management's Discussion and Analysis

Credit Exposures

As of September 2022, our aggregate credit exposure increased as compared with December 2021, primarily reflecting increases in cash deposits with central banks and OTC derivatives. The percentage of our credit exposures arising from non-investment-grade counterparties (based on our internally determined public rating agency equivalents) decreased compared with December 2021, primarily reflecting increases in investment-grade credit exposure related to cash deposits with central banks and OTC derivatives. Our credit exposures are described further below.

Cash and Cash Equivalents. Our credit exposure on cash and cash equivalents arises from our unrestricted cash, and includes both interest-bearing and non-interest-bearing deposits. To mitigate the risk of credit loss, we place substantially all of our deposits with highly rated banks and central banks.

The table below presents our credit exposure from unrestricted cash and cash equivalents, and the concentration by industry, region and internally determined public rating agency equivalents.

\$ in millions	As of	
	September 2022	December 2021
Cash and Cash Equivalents	\$261,324	\$236,168
Industry		
Financial Institutions	5%	5%
Sovereign	95%	95%
Total	100%	100%
Region		
Americas	64%	55%
EMEA	29%	36%
Asia	7%	9%
Total	100%	100%
Credit Quality (Credit Rating Equivalent)		
AAA	75%	64%
AA	16%	24%
A	8%	11%
BBB	1%	1%
Total	100%	100%

The table above excludes cash segregated for regulatory and other purposes of \$22.93 billion as of September 2022 and \$24.87 billion as of December 2021.

OTC Derivatives. Our credit exposure on OTC derivatives arises primarily from our market-making activities. As a market maker, we enter into derivative transactions to provide liquidity to clients and to facilitate the transfer and hedging of their risks. We also enter into derivatives to manage market risk exposures. We manage our credit exposure on OTC derivatives using the credit risk process, measures, limits and risk mitigants described above.

We generally enter into OTC derivatives transactions under bilateral collateral arrangements that require the daily exchange of collateral. As credit risk is an essential component of fair value, we include a credit valuation adjustment (CVA) in the fair value of derivatives to reflect counterparty credit risk, as described in Note 7 to the consolidated financial statements. CVA is a function of the present value of expected exposure, the probability of counterparty default and the assumed recovery upon default.

The table below presents our net credit exposure from OTC derivatives and the concentration by industry and region.

\$ in millions	As of	
	September 2022	December 2021
OTC derivative assets	\$73,826	\$58,637
Collateral (not netted under U.S. GAAP)	(19,502)	(17,245)
Net credit exposure	\$54,324	\$41,392
Industry		
Consumer & Retail	2%	2%
Diversified Industrials	8%	10%
Financial Institutions	16%	15%
Funds	23%	13%
Healthcare	1%	1%
Municipalities & Nonprofit	2%	5%
Natural Resources & Utilities	36%	33%
Sovereign	6%	8%
Technology, Media & Telecommunications	3%	8%
Other (including Special Purpose Vehicles)	3%	5%
Total	100%	100%
Region		
Americas	47%	53%
EMEA	42%	37%
Asia	11%	10%
Total	100%	100%

Our credit exposure (before any potential recoveries) to OTC derivative counterparties that defaulted during the nine months ended September 2022 remained low, representing less than 2% of our total credit exposure from OTC derivatives.

In the table above:

- OTC derivative assets, included in the consolidated balance sheets, are reported on a net-by-counterparty basis (i.e., the net receivable for a given counterparty) when a legal right of setoff exists under an enforceable netting agreement (counterparty netting) and are accounted for at fair value, net of cash collateral received under enforceable credit support agreements (cash collateral netting).
- Collateral represents cash collateral and the fair value of securities collateral, primarily U.S. and non-U.S. government and agency obligations, received under credit support agreements, that we consider when determining credit risk, but such collateral is not eligible for netting under U.S. GAAP.

Management's Discussion and Analysis

The table below presents the distribution of our net credit exposure from OTC derivatives by tenor.

<i>\$ in millions</i>	Investment-Grade	Non-Investment-Grade / Unrated	Total
As of September 2022			
Less than 1 year	\$ 48,533	\$ 11,713	\$ 60,246
1 – 5 years	35,570	12,233	47,803
Greater than 5 years	60,524	5,265	65,789
Total	144,627	29,211	173,838
Netting	(107,255)	(12,259)	(119,514)
Net credit exposure	\$ 37,372	\$ 16,952	\$ 54,324
As of December 2021			
Less than 1 year	\$ 27,668	\$ 11,203	\$ 38,871
1 – 5 years	21,746	9,515	31,261
Greater than 5 years	64,670	6,590	71,260
Total	114,084	27,308	141,392
Netting	(89,244)	(10,756)	(100,000)
Net credit exposure	\$ 24,840	\$ 16,552	\$ 41,392

In the table above:

- Tenor is based on remaining contractual maturity.
- Netting includes counterparty netting across tenor categories and collateral that we consider when determining credit risk (including collateral that is not eligible for netting under U.S. GAAP). Counterparty netting within the same tenor category is included within such tenor category.

The tables below present the distribution of our net credit exposure from OTC derivatives by tenor and internally determined public rating agency equivalents.

\$ in millions	Investment-Grade					Total
	AAA	AA	A	BBB		
As of September 2022						
Less than 1 year	\$ 1,167	\$ 8,183	\$ 20,816	\$ 18,367	\$ 48,533	
1 – 5 years	1,843	4,760	14,225	14,742	35,570	
Greater than 5 years	5,525	16,031	22,444	16,524	60,524	
Total	8,535	28,974	57,485	49,633	144,627	
Netting	(4,918)	(22,822)	(46,068)	(33,447)	(107,255)	
Net credit exposure	\$ 3,617	\$ 6,152	\$ 11,417	\$ 16,186	\$ 37,372	
As of December 2021						
Less than 1 year	\$ 1,017	\$ 4,926	\$ 12,481	\$ 9,244	\$ 27,668	
1 – 5 years	1,150	3,071	8,298	9,227	21,746	
Greater than 5 years	13,777	5,421	23,867	21,605	64,670	
Total	15,944	13,418	44,646	40,076	114,084	
Netting	(13,535)	(9,501)	(36,005)	(30,203)	(89,244)	
Net credit exposure	\$ 2,409	\$ 3,917	\$ 8,641	\$ 9,873	\$ 24,840	

	Non-Investment-Grade / Unrated		
<i>\$ in millions</i>	BB or lower	Unrated	Total
<u>As of September 2022</u>			
Less than 1 year	\$ 11,152	\$ 561	\$ 11,713
1 – 5 years	11,204	1,029	12,233
Greater than 5 years	5,156	109	5,265
Total	27,512	1,699	29,211
Netting	(12,155)	(104)	(12,259)
Net credit exposure	\$ 15,357	\$ 1,595	\$ 16,952

As of December 2021				
Less than 1 year	\$ 10,446	\$ 757	\$ 11,203	
1 – 5 years	9,210	305	9,515	
Greater than 5 years	6,320	270	6,590	
Total	25,976	1,332	27,308	
Netting	(10,683)	(73)	(10,756)	
Net credit exposure	\$ 15,293	\$ 1,259	\$ 16,552	

Lending Activities. We manage our lending activities using the credit risk process, measures, limits and risk mitigants described above. Other lending positions, including secondary trading positions, are risk-managed as a component of market risk.

The table below presents our loans and lending commitments.

<i>\$ in millions</i>	Loans	Lending Commitments	Total
As of September 2022			
Corporate	\$ 63,181	\$ 145,607	\$ 208,788
Wealth management	50,101	4,638	54,739
Commercial real estate	26,082	3,231	29,313
Residential real estate	14,342	2,828	17,170
Consumer:			
Installment	5,157	957	6,114
Credit cards	13,691	60,655	74,346
Other	8,961	5,021	13,982
Total	\$ 181,515	\$ 222,937	\$ 404,452
Allowance for loan losses	\$ (4,846)	\$ (739)	\$ (5,585)
As of December 2021			
Corporate	\$ 55,927	\$ 155,930	\$ 211,857
Wealth management	43,998	4,094	48,092
Commercial real estate	25,883	5,813	31,696
Residential real estate	15,913	3,396	19,309
Consumer:			
Installment	3,672	9	3,681
Credit cards	8,212	35,932	44,144
Other	8,530	6,378	14,908
Total	\$ 162,135	\$ 211,552	\$ 373,687
Allowance for loan losses	\$ (3,573)	\$ (776)	\$ (4,349)

See Note 9 to the consolidated financial statements for information about net charge-offs on wholesale and consumer loans, as well as past due and nonaccrual loans accounted for at amortized cost.

Corporate. Corporate loans and lending commitments include term loans, revolving lines of credit, letter of credit facilities and bridge loans, and are principally used for operating and general corporate purposes, or in connection with acquisitions. Corporate loans may be secured or unsecured, depending on the loan purpose, the risk profile of the borrower and other factors.

Management's Discussion and Analysis

The table below presents our credit exposure from corporate loans and lending commitments, and the concentration by industry, region, internally determined public rating agency equivalents and other credit metrics.

<i>\$ in millions</i>	Loans	Lending Commitments	Total
As of September 2022			
Corporate	\$63,181	\$145,607	\$208,788
Industry			
Consumer & Retail	7%	13%	11%
Diversified Industrials	12%	17%	16%
Financial Institutions	8%	8%	8%
Funds	23%	5%	10%
Healthcare	6%	9%	8%
Natural Resources & Utilities	7%	20%	16%
Real Estate	8%	5%	6%
Technology, Media & Telecommunications	17%	20%	19%
Other (including Special Purpose Vehicles)	12%	3%	6%
Total	100%	100%	100%
Region			
Americas	64%	75%	72%
EMEA	29%	23%	25%
Asia	7%	2%	3%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
AAA	—	1%	1%
AA	1%	5%	4%
A	6%	18%	14%
BBB	26%	39%	35%
BB or lower	67%	36%	45%
Other metrics/unrated	—	1%	1%
Total	100%	100%	100%
As of December 2021			
Corporate	\$55,927	\$155,930	\$211,857
Industry			
Consumer & Retail	8%	13%	12%
Diversified Industrials	13%	16%	15%
Financial Institutions	8%	7%	7%
Funds	21%	4%	8%
Healthcare	7%	9%	9%
Natural Resources & Utilities	9%	17%	14%
Real Estate	8%	5%	6%
Technology, Media & Telecommunications	18%	24%	23%
Other (including Special Purpose Vehicles)	8%	5%	6%
Total	100%	100%	100%
Region			
Americas	54%	76%	70%
EMEA	38%	21%	26%
Asia	8%	3%	4%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
AAA	—	1%	1%
AA	1%	5%	3%
A	5%	16%	13%
BBB	22%	38%	34%
BB or lower	72%	40%	49%
Total	100%	100%	100%

In the table above, credit exposure excludes \$4.88 billion as of September 2022 and \$4.14 billion as of December 2021 relating to issued letters of credit which are classified as guarantees in our consolidated financial statements. See Note 18 to the consolidated financial statements for further information about guarantees.

Wealth Management. Wealth management loans and lending commitments are extended to private bank clients, including wealth management and other clients. These loans are used to finance investments in both financial and nonfinancial assets, bridge cash flow timing gaps or provide liquidity for other needs. Substantially all of such loans are secured by securities, residential real estate, commercial real estate or other assets.

The table below presents our credit exposure from wealth management loans and lending commitments, and the concentration by region, internally determined public rating agency equivalents and other credit metrics.

<i>\$ in millions</i>	Loans	Lending Commitments	Total
As of September 2022			
Wealth Management	\$50,101	\$4,638	\$54,739
Region			
Americas	89%	96%	90%
EMEA	10%	4%	9%
Asia	1%	—	1%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	73%	75%	73%
Non-investment-grade	12%	12%	12%
Other metrics/unrated	15%	13%	15%
Total	100%	100%	100%
As of December 2021			
Wealth Management	\$43,998	\$4,094	\$48,092
Region			
Americas	87%	98%	88%
EMEA	10%	2%	9%
Asia	3%	—	3%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	72%	67%	71%
Non-investment-grade	13%	19%	14%
Other metrics/unrated	15%	14%	15%
Total	100%	100%	100%

In the table above, other metrics/unrated loans primarily include loans backed by residential real estate. Our risk assessment process for such loans includes reviewing certain key metrics, such as loan-to-value ratio and delinquency status.

Management's Discussion and Analysis

Commercial Real Estate. Commercial real estate loans and lending commitments include originated loans and lending commitments (other than those extended to private bank clients) that are directly or indirectly secured by hotels, retail stores, multifamily housing complexes and commercial and industrial properties. Commercial real estate loans and lending commitments also includes loans and lending commitments extended to clients who warehouse assets that are directly or indirectly backed by commercial real estate. In addition, commercial real estate includes loans purchased by us.

The table below presents our credit exposure from commercial real estate loans and lending commitments, and the concentration by region, internally determined public rating agency equivalents and other credit metrics.

<i>\$ in millions</i>	Loans	Lending Commitments	Total
As of September 2022			
Commercial Real Estate	\$26,082	\$3,231	\$29,313
Region			
Americas	79%	63%	77%
EMEA	16%	24%	17%
Asia	5%	13%	6%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	10%	7%	9%
Non-investment-grade	89%	93%	90%
Other metrics/unrated	1%	—	1%
Total	100%	100%	100%
As of December 2021			
Commercial Real Estate	\$25,883	\$5,813	\$31,696
Region			
Americas	80%	75%	79%
EMEA	15%	11%	14%
Asia	5%	14%	7%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	15%	10%	14%
Non-investment-grade	83%	90%	85%
Other metrics/unrated	2%	—	1%
Total	100%	100%	100%

In the table above, credit exposure includes loans and lending commitments of \$10.91 billion as of September 2022 and \$11.65 billion as of December 2021 which are extended to clients who warehouse assets that are directly or indirectly backed by commercial real estate.

In addition, we also have credit exposure to commercial real estate loans held for securitization of \$202 million as of September 2022 and \$922 million as of December 2021. Such loans are included in trading assets in our consolidated balance sheets.

Residential Real Estate. Residential real estate loans and lending commitments are extended to clients (other than those extended to private bank clients) who warehouse assets that are directly or indirectly secured by residential real estate and also includes loans purchased by us.

The table below presents our credit exposure from residential real estate loans and lending commitments, and the concentration by region, internally determined public rating agency equivalents and other credit metrics.

<i>\$ in millions</i>	Loans	Lending Commitments	Total
As of September 2022			
Residential Real Estate	\$14,342	\$2,828	\$17,170
Region			
Americas	95%	98%	95%
EMEA	3%	2%	3%
Asia	2%	—	2%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	7%	1%	6%
Non-investment-grade	86%	98%	88%
Other metrics/unrated	7%	1%	6%
Total	100%	100%	100%
As of December 2021			
Residential Real Estate	\$15,913	\$3,396	\$19,309
Region			
Americas	95%	79%	92%
EMEA	2%	19%	5%
Asia	3%	2%	3%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	7%	24%	10%
Non-investment-grade	87%	74%	84%
Other metrics/unrated	6%	2%	6%
Total	100%	100%	100%

In the table above:

- Credit exposure includes loans and lending commitments of \$15.61 billion as of September 2022 and \$16.89 billion as of December 2021 which are extended to clients who warehouse assets that are directly or indirectly secured by residential real estate.
- Other metrics/unrated primarily includes loans purchased by us. Our risk assessment process for such loans includes reviewing certain key metrics, such as loan-to-value ratio, delinquency status, collateral values, expected cash flows and other risk factors.

In addition, we also have credit exposure to residential real estate loans held for securitization of \$8.25 billion as of September 2022 and \$11.57 billion as of December 2021. Such loans are included in trading assets in our consolidated balance sheets.

Management's Discussion and Analysis

Installment and Credit Card Lending. We originate unsecured installment loans and credit card loans (pursuant to revolving lines of credit) to consumers in the Americas. The credit card lines are cancellable by us and therefore do not result in credit exposure.

The table below presents our credit exposure from originated installment and credit card funded loans, and the concentration by the ten most concentrated U.S. states.

\$ in millions	As of	
	September	December
	2022	2021
Installment	\$5,157	\$3,672
California	11%	11%
Texas	9%	9%
Florida	7%	7%
New York	7%	7%
Illinois	4%	4%
New Jersey	4%	4%
Pennsylvania	4%	4%
Georgia	3%	3%
Ohio	3%	3%
Virginia	3%	3%
Other	45%	45%
Total	100%	100%
Credit Cards	\$13,691	\$8,212
California	16%	18%
Texas	9%	9%
New York	8%	8%
Florida	8%	8%
New Jersey	4%	4%
Illinois	4%	4%
Pennsylvania	3%	3%
Georgia	3%	3%
Ohio	3%	3%
Virginia	2%	2%
Other	40%	38%
Total	100%	100%

In addition, we had credit exposure of \$957 million as of September 2022 and \$9 million as of December 2021 related to our commitments to provide unsecured installment loans to consumers.

See Note 9 to the consolidated financial statements for further information about the credit quality indicators of installment and credit card loans.

Other. Other loans and lending commitments are extended to clients who warehouse assets that are directly or indirectly secured by consumer loans, including auto loans and private student loans, and other assets. Other loans also includes unsecured consumer and credit card loans purchased by us.

The table below presents our credit exposure from other loans and lending commitments, and the concentration by region, internally determined public rating agency equivalents and other credit metrics.

	Lending		
<i>\$ in millions</i>	Loans	Commitments	Total
<u>As of September 2022</u>			
Other	\$8,961	\$5,021	\$13,982
Region			
Americas	89%	100%	92%
EMEA	10%	—	7%
Asia	1%	—	1%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	47%	88%	61%
Non-investment-grade	42%	11%	31%
Other metrics/unrated	11%	1%	8%
Total	100%	100%	100%
<u>As of December 2021</u>			
Other	\$8,530	\$6,378	\$14,908
Region			
Americas	84%	98%	90%
EMEA	15%	—	9%
Asia	1%	2%	1%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	34%	90%	58%
Non-investment-grade	37%	9%	25%
Other metrics/unrated	29%	1%	17%
Total	100%	100%	100%

In the table above:

- Credit exposure includes loans and lending commitments extended to clients who warehouse assets of \$11.81 billion as of September 2022 and \$11.09 billion as of December 2021.
- Other metrics/unrated primarily includes consumer and credit card loans purchased by us. Our risk assessment process for such loans includes reviewing certain key metrics, such as expected cash flows, delinquency status and other risk factors.

In addition, we also have credit exposure to other loans held for securitization of \$1.73 billion as of September 2022 and \$467 million as of December 2021. Such loans are included in trading assets in our consolidated balance sheets.

Credit Hedges. To mitigate the credit risk associated with our lending activities, we obtain credit protection on certain loans and lending commitments through credit default swaps, both single-name and index-based contracts, and through the issuance of credit-linked notes.

Management's Discussion and Analysis

Securities Financing Transactions. We enter into securities financing transactions in order to, among other things, facilitate client activities, invest excess cash, acquire securities to cover short positions and finance certain activities. We bear credit risk related to resale agreements and securities borrowed only to the extent that cash advanced or the value of securities pledged or delivered to the counterparty exceeds the value of the collateral received. We also have credit exposure on repurchase agreements and securities loaned to the extent that the value of securities pledged or delivered to the counterparty for these transactions exceeds the amount of cash or collateral received. Securities collateral for these transactions primarily includes U.S. and non-U.S. government and agency obligations.

The table below presents our credit exposure from securities financing transactions and the concentration by industry, region and internally determined public rating agency equivalents.

\$ in millions	As of	
	September 2022	December 2021
Securities Financing Transactions	\$35,138	\$34,505
Industry		
Financial Institutions	39%	34%
Funds	30%	23%
Municipalities & Nonprofit	5%	5%
Sovereign	25%	35%
Other (including Special Purpose Vehicles)	1%	3%
Total	100%	100%
Region		
Americas	37%	36%
EMEA	42%	44%
Asia	21%	20%
Total	100%	100%
Credit Quality (Credit Rating Equivalent)		
AAA	13%	19%
AA	32%	28%
A	35%	33%
BBB	9%	9%
BB or lower	11%	11%
Total	100%	100%

The table above reflects both netting agreements and collateral that we consider when determining credit risk.

Other Credit Exposures. We are exposed to credit risk from our receivables from brokers, dealers and clearing organizations and customers and counterparties. Receivables from brokers, dealers and clearing organizations primarily consist of initial margin placed with clearing organizations and receivables related to sales of securities which have traded, but not yet settled. These receivables generally have minimal credit risk due to the low probability of clearing organization default and the short-term nature of receivables related to securities settlements. Receivables from customers and counterparties generally consist of collateralized receivables related to customer securities transactions and generally have minimal credit risk due to both the value of the collateral received and the short-term nature of these receivables.

The table below presents our other credit exposures and the concentration by industry, region and internally determined public rating agency equivalents.

\$ in millions	As of	
	September 2022	December 2021
Other Credit Exposures	\$60,733	\$61,187
Industry		
Financial Institutions	69%	86%
Funds	19%	9%
Other (including Special Purpose Vehicles)	12%	5%
Total	100%	100%
Region		
Americas	37%	50%
EMEA	54%	43%
Asia	9%	7%
Total	100%	100%
Credit Quality (Credit Rating Equivalent)		
AAA	4%	4%
AA	37%	47%
A	36%	29%
BBB	8%	6%
BB or lower	13%	13%
Unrated	2%	1%
Total	100%	100%

The table above reflects collateral that we consider when determining credit risk.

Selected Exposures

We have credit and market exposures, as described below, that have had heightened focus given recent events and broad market concerns. Credit exposure represents the potential for loss due to the default or deterioration in credit quality of a counterparty or borrower. Market exposure represents the potential for loss in value of our long and short positions due to changes in market prices.

Management's Discussion and Analysis

Country Exposures. The Russian invasion of Ukraine continues to negatively affect the global economy and has resulted in significant disruptions in financial markets and increased macroeconomic uncertainty. Governments around the world have responded to Russia's invasion by imposing economic sanctions and export controls on specific industry sectors, companies and individuals in Russia. Retaliatory restrictions against investors, non-Russian owned businesses and other sovereign states have been implemented by Russia. Businesses in the U.S. and globally continue to experience shortages in materials and increased costs for transportation, energy and raw materials due, in part, to the negative effects of the war on the global economy. The escalation or continuation of the war between Russia and Ukraine presents heightened risks relating to cyber attacks, the frequency and volume of failures to settle securities transactions, supply chain disruptions, and inflation, as well as the potential for increased volatility in commodity, currency and other financial markets. Complying with economic sanctions and restrictions imposed by governments has resulted in increased operational risk. The extent and duration of the war, sanctions and resulting market disruptions, as well as the potential adverse consequences for our business, liquidity and results of operations, are difficult to predict.

Our senior management, risk committees and the Board receive regular briefings from our independent risk oversight and control functions, including our chief risk officer, on Russian and Ukrainian exposures, as well as other relevant risk metrics. We continue to focus on closing our positions and reducing our exposure to Russia and Ukraine, and wind down our operations in Russia. The overall direct financial impact to our net revenues for the nine months ended September 2022 from Russian and Ukrainian counterparties, borrowers, issuers and related instruments was not material. We have established a firmwide working group to identify and assess the operational risk associated with complying with economic sanctions and restrictions as a result of this invasion. In addition, to mitigate the risk of increased cyber attacks, we liaise with government agencies in order to update our monitoring processes with the latest information.

Our total credit exposure to Russia as of September 2022 was \$205 million, substantially all of which was to non-sovereign counterparties. Such exposure consisted of \$13 million related to OTC derivatives and \$192 million related to deposits and other receivables. In addition, our total market exposure relating to Russian issuers as of September 2022 was not material.

Our total credit exposure to Ukrainian counterparties or borrowers and our total market exposure relating to Ukrainian issuers was not material as of September 2022.

High external funding needs and inconsistent monetary policy have led to significant depreciation of the Turkish Lira, prompting concerns about foreign exchange reserves and economic instability. As of September 2022, our total credit exposure to Turkey was \$2.23 billion, substantially all of which was to non-sovereign counterparties or borrowers. Such exposure consisted of \$948 million related to OTC derivatives, \$157 million related to loans and lending commitments and \$1.13 billion related to secured receivables. After taking into consideration the benefit of Turkish corporate and sovereign collateral, and other risk mitigants provided by Turkish counterparties, our net credit exposure was \$940 million. In addition, our total market exposure relating to Turkish issuers as of September 2022 was \$(83) million, primarily to sovereign issuers. Such exposure consisted of \$80 million related to debt, \$(245) million related to credit derivatives and \$82 million related to equities.

In addition, economic and/or political uncertainties in Argentina, Lebanon, Venezuela, Ethiopia and Sri Lanka have led to concerns about their financial stability. Our credit exposure to counterparties or borrowers and our market exposure to issuers relating to each of these countries was not material as of September 2022.

Management's Discussion and Analysis

We have a comprehensive framework to monitor, measure and assess our country exposures and to determine our risk appetite. We determine the country of risk by the location of the counterparty, issuer's assets, where they generate revenue, the country in which they are headquartered, the jurisdiction where a claim against them could be enforced, and/or the government whose policies affect their ability to repay their obligations. We monitor our credit exposure to a specific country both at the individual counterparty level, as well as at the aggregate country level. See "Stress Tests" for information about stress tests that are designed to estimate the direct and indirect impact of events involving the above countries.

Operational Risk Management

Overview

Operational risk is the risk of an adverse outcome resulting from inadequate or failed internal processes, people, systems or from external events. Our exposure to operational risk arises from routine processing errors, as well as extraordinary incidents, such as major systems failures or legal and regulatory matters.

Potential types of loss events related to internal and external operational risk include:

- Execution, delivery and process management;
- Business disruption and system failures;
- Employment practices and workplace safety;
- Clients, products and business practices;
- Damage to physical assets;
- Internal fraud; and
- External fraud.

Operational Risk, which is independent of our revenue-producing units and reports to our chief risk officer, has primary responsibility for developing and implementing a formalized framework for assessing, monitoring and managing operational risk with the goal of maintaining our exposure to operational risk at levels that are within our risk appetite.

Operational Risk Management Process

Our process for managing operational risk includes the critical components of our risk management framework described in the "Overview and Structure of Risk Management," including a comprehensive data collection process, as well as firmwide policies and procedures, for operational risk events.

We combine top-down and bottom-up approaches to manage and measure operational risk. From a top-down perspective, our senior management assesses firmwide and business-level operational risk profiles. From a bottom-up perspective, our first and second lines of defense are responsible for risk identification and risk management on a day-to-day basis, including escalating operational risks and risk events to senior management.

We maintain a comprehensive control framework designed to provide a well-controlled environment to minimize operational risks. The Firmwide Operational Risk and Resilience Committee is responsible for overseeing operational risk, and for ensuring our business and operational resilience.

Our operational risk management framework is designed to comply with the operational risk measurement rules under the Capital Framework and has evolved based on the changing needs of our businesses and regulatory guidance.

We have established policies that require all employees to report and escalate operational risk events. When operational risk events are identified, our policies require that the events be documented and analyzed to determine whether changes are required in our systems and/or processes to further mitigate the risk of future events.

We use operational risk management applications to capture, analyze, aggregate and report operational risk event data and key metrics. One of our key risk identification and assessment tools is an operational risk and control self-assessment process, which is performed by our managers. This process consists of the identification and rating of operational risks, on a forward-looking basis, and the related controls. The results from this process are analyzed to evaluate operational risk exposures and identify businesses, activities or products with heightened levels of operational risk.

Management's Discussion and Analysis

Risk Measurement

We measure our operational risk exposure using both statistical modeling and scenario analyses, which involve qualitative and quantitative assessments of internal and external operational risk event data and internal control factors for each of our businesses. Operational risk measurement also incorporates an assessment of business environment factors, including:

- Evaluations of the complexity of our business activities;
- The degree of automation in our processes;
- New activity information;
- The legal and regulatory environment; and
- Changes in the markets for our products and services, including the diversity and sophistication of our customers and counterparties.

The results from these scenario analyses are used to monitor changes in operational risk and to determine business lines that may have heightened exposure to operational risk. These analyses are used in the determination of the appropriate level of operational risk capital to hold. We also perform firmwide stress tests. See “Overview and Structure of Risk Management” for information about firmwide stress tests.

Types of Operational Risks

Increased reliance on technology and third-party relationships has resulted in increased operational risks, such as information and cyber security risk, third-party risk and business resilience risk. We manage those risks as follows:

Information and Cyber Security Risk. Information and cyber security risk is the risk of compromising the confidentiality, integrity or availability of our data and systems, leading to an adverse impact to us, our reputation, our clients and/or the broader financial system. We seek to minimize the occurrence and impact of unauthorized access, disruption or use of information and/or information systems. We deploy and operate preventive and detective controls and processes to mitigate emerging and evolving information security and cyber security threats, including monitoring our network for known vulnerabilities and signs of unauthorized attempts to access our data and systems. There is increased information risk through diversification of our data across external service providers, including use of a variety of cloud-provided or -hosted services and applications. See “Risk Factors” in Part I, Item 1A of the 2021 Form 10-K for further information about information and cyber security risk.

Third-Party Risk. Third-party risk, including vendor risk, is the risk of an adverse impact due to reliance on third parties performing services or activities on our behalf. These risks may include legal, regulatory, information security, reputational, operational or any other risks inherent in engaging a third party. We identify, manage and report key third-party risks and conduct due diligence across multiple risk domains, including information security and cyber security, resilience and additional third-party dependencies. The Third-Party Risk Program monitors, reviews and reassesses third-party risks on an ongoing basis. See “Risk Factors” in Part I, Item 1A of the 2021 Form 10-K for further information about third-party risk.

Business Resilience Risk. Business resilience risk is the risk of disruption to our critical processes. We monitor threats and assess risks and seek to ensure our state of readiness in the event of a significant operational disruption to the normal operations of our critical functions or their dependencies, such as critical facilities, systems, third parties, data and/or personnel. We approach business continuity planning (BCP) through the lens of business and operational resilience. The resilience framework defines the fundamental principles for BCP and crisis management to ensure that critical functions can continue to operate in the event of a disruption. The business continuity program is comprehensive, consistent firmwide and up-to-date, incorporating new information, techniques and technologies as and when they become available, and our resilience recovery plans incorporate and test specific and measurable recovery time objectives in accordance with local market best practices and regulatory requirements, and under specific scenarios. See “Business — Business Continuity and Information Security” in Part I, Item 1 of the 2021 Form 10-K for further information about business continuity.

Model Risk Management

Overview

Model risk is the potential for adverse consequences from decisions made based on model outputs that may be incorrect or used inappropriately. We rely on quantitative models across our business activities primarily to value certain financial assets and liabilities, to monitor and manage our risk, and to measure and monitor our regulatory capital.

Model Risk, which is independent of our revenue-producing units, model developers, model owners and model users, and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our model risk through firmwide oversight across our global businesses, and provides periodic updates to senior management, risk committees and the Risk Committee of the Board.

Management's Discussion and Analysis

Our model risk management framework is managed through a governance structure and risk management controls, which encompass standards designed to ensure we maintain a comprehensive model inventory, including risk assessment and classification, sound model development practices, independent review and model-specific usage controls. The Firmwide Model Risk Control Committee oversees our model risk management framework.

Model Review and Validation Process

Model Risk consists of quantitative professionals who perform an independent review, validation and approval of our models. This review includes an analysis of the model documentation, independent testing, an assessment of the appropriateness of the methodology used, and verification of compliance with model development and implementation standards.

We regularly refine and enhance our models to reflect changes in market or economic conditions and our business mix. All models are reviewed on an annual basis, and new models or significant changes to existing models and their assumptions are approved prior to implementation.

The model validation process incorporates a review of models and trade and risk parameters across a broad range of scenarios (including extreme conditions) in order to critically evaluate and verify:

- The model's conceptual soundness, including the reasonableness of model assumptions, and suitability for intended use;
- The testing strategy utilized by the model developers to ensure that the models function as intended;
- The suitability of the calculation techniques incorporated in the model;
- The model's accuracy in reflecting the characteristics of the related product and its significant risks;
- The model's consistency with models for similar products; and
- The model's sensitivity to input parameters and assumptions.

See "Critical Accounting Policies — Fair Value — Review of Valuation Models," "Liquidity Risk Management," "Market Risk Management," "Credit Risk Management" and "Operational Risk Management" for further information about our use of models within these areas.

Other Risk Management

In addition to the areas of risks discussed above, we also manage other risks, including capital, climate, compliance and conflicts. These areas of risks are discussed below.

Capital Risk Management

Capital risk is the risk that our capital is insufficient to support our business activities under normal and stressed market conditions or we face capital reductions or RWA increases, including from new or revised rules or changes in interpretations of existing rules, and are therefore unable to meet our internal capital targets or external regulatory capital requirements. Capital adequacy is of critical importance to us. Accordingly, we have in place a comprehensive capital management policy that provides a framework, defines objectives and establishes guidelines to maintain an appropriate level and composition of capital in both business-as-usual and stressed conditions. Our capital management framework is designed to provide us with the information needed to identify and comprehensively manage risk, and develop and apply projected stress scenarios that capture idiosyncratic vulnerabilities with a goal of holding sufficient capital to remain adequately capitalized even after experiencing a severe stress event. See "Capital Management and Regulatory Capital" for further information about our capital management process.

We have established a comprehensive governance structure to manage and oversee our day-to-day capital management activities and to ensure compliance with capital rules and related policies. Our capital management activities are overseen by the Board and its committees. The Board is responsible for approving our annual capital plan and the Risk Committee of the Board approves our capital management policy, which details the risk committees and members of senior management who are responsible for the ongoing monitoring of our capital adequacy and evaluation of current and future regulatory capital requirements, the review of the results of our capital planning and stress tests processes, and the results of our capital models. In addition, our risk committees and senior management are responsible for the review of our contingency capital plan, key capital adequacy metrics, including regulatory capital ratios, and capital plan metrics, such as the payout ratio, as well as monitoring capital targets and potential breaches of capital requirements.

Our process for managing capital risk also includes independent review functions in Risk that, among other things, assess regulatory capital policies and related interpretations, escalate certain interpretations to senior management and/or the appropriate risk committee, and perform calculation testing to corroborate alignment with applicable capital rules.

Management's Discussion and Analysis

Climate Risk Management

We categorize climate risk into physical risk and transition risk. Physical risk is the risk that asset values may decline or operations may be disrupted as a result of changes in the climate, while transition risk is the risk that asset values may decline because of changes in climate policies or changes in the underlying economy due to decarbonization.

As a global financial institution, climate-related risks manifest in different ways across our businesses and we have continued to make significant enhancements to our climate risk management framework, including steps to further integrate climate into our broader risk management processes. We have integrated oversight of climate-related risks into our risk management governance structure, from senior management to our Board and its committees, including the Risk and Public Responsibilities Committees. The Risk Committee of the Board oversees firmwide financial and nonfinancial risks, which include climate risk, and, as part of its oversight, receives updates on our risk management approach to climate risk, including our approaches towards scenario analysis and integration into existing risk management processes. The Public Responsibilities Committee of the Board assists the Board in its oversight of our firmwide sustainability strategy and sustainability issues affecting us, including with respect to climate change. As part of its oversight, the Public Responsibilities Committee receives periodic updates on our sustainability strategy, and also periodically reviews our governance and related policies and processes for sustainability and climate change-related risks. Senior management within Risk is responsible for the development of our climate risk program.

We have begun incorporating climate risk into our credit evaluation and underwriting processes for select industries. Climate risk factors are now evaluated as part of transaction due diligence for select loan commitments.

See “Business — Sustainability” in Part I, Item 1 and “Risk Factors” in Part I, Item 1A of the 2021 Form 10-K for information about our sustainability initiatives, including in relation to climate transition.

Compliance Risk Management

Compliance risk is the risk of legal or regulatory sanctions, material financial loss or damage to our reputation arising from our failure to comply with the requirements of applicable laws, rules and regulations, and our internal policies and procedures. Compliance risk is inherent in all activities through which we conduct our businesses. Our Compliance Risk Management Program, administered by Compliance, assesses our compliance, regulatory and reputational risk; monitors for compliance with new or amended laws, rules and regulations; designs and implements controls, policies, procedures and training; conducts independent testing; investigates, surveils and monitors for compliance risks and breaches; and leads our responses to regulatory examinations, audits and inquiries. We monitor and review business practices to assess whether they meet or exceed minimum regulatory and legal standards in all markets and jurisdictions in which we conduct business.

Conflicts Management

Conflicts of interest and our approach to dealing with them are fundamental to our client relationships, our reputation and our long-term success. The term “conflict of interest” does not have a universally accepted meaning, and conflicts can arise in many forms within a business or between businesses. The responsibility for identifying potential conflicts, as well as complying with our policies and procedures, is shared by all of our employees.

We have a multilayered approach to resolving conflicts and addressing reputational risk. Our senior management oversees policies related to conflicts resolution and, in conjunction with Conflicts Resolution, Legal and Compliance, the Firmwide Client and Business Standards Committee, and other internal committees, formulates policies, standards and principles, and assists in making judgments regarding the appropriate resolution of particular conflicts. Resolving potential conflicts necessarily depends on the facts and circumstances of a particular situation and the application of experienced and informed judgment.

As a general matter, Conflicts Resolution reviews financing and advisory assignments in Investment Banking and certain of our investing, lending and other activities. In addition, we have various transaction oversight committees, such as the Firmwide Capital, Commitments and Suitability Committees and other committees that also review new underwritings, loans, investments and structured products. These groups and committees work with internal and external counsel and Compliance to evaluate and address any actual or potential conflicts. The head of Conflicts Resolution reports to our chief legal officer, who reports to our chief executive officer.

Management's Discussion and Analysis

We regularly assess our policies and procedures that address conflicts of interest in an effort to conduct our business in accordance with the highest ethical standards and in compliance with all applicable laws, rules and regulations.

For further information about our risk management processes, see “Overview and Structure of Risk Management” and “Risk Factors” in Part I, Item 1A of the 2021 Form 10-K.

Available Information

Our internet address is www.goldmansachs.com and the investor relations section of our website is located at www.goldmansachs.com/investor-relations, where we make available, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as well as proxy statements, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Also posted on our website, and available in print upon request of any shareholder to our Investor Relations Department (Investor Relations), are our certificate of incorporation and by-laws, charters for our Audit, Risk, Compensation, Corporate Governance and Nominating, and Public Responsibilities Committees, our Policy Regarding Director Independence Determinations, our Policy on Reporting of Concerns Regarding Accounting and Other Matters, our Corporate Governance Guidelines, our Code of Business Conduct and Ethics governing our directors, officers and employees, and our Sustainability Report. Within the time period required by the SEC, we will post on our website any amendment to the Code of Business Conduct and Ethics and any waiver applicable to any executive officer, director or senior financial officer.

Our website also includes information about (i) purchases and sales of our equity securities by our executive officers and directors; (ii) disclosure relating to certain non-GAAP financial measures (as defined in the SEC's Regulation G) that we may make public orally, telephonically, by webcast, by broadcast or by other means; (iii) DFAST results; (iv) the public portion of our resolution plan submission; (v) our Pillar 3 disclosure; and (vi) our average daily LCR.

Investor Relations can be contacted at The Goldman Sachs Group, Inc., 200 West Street, 29th Floor, New York, New York 10282, Attn: Investor Relations, telephone: 212-902-0300, e-mail: gs-investor-relations@gs.com. We use the following, as well as other social media channels, to disclose public information to investors, the media and others:

- Our website (www.goldmansachs.com);
- Our Twitter account (twitter.com/GoldmanSachs); and
- Our Instagram account ([instagram.com/GoldmanSachs](https://www.instagram.com/GoldmanSachs)).

Our officers may use similar social media channels to disclose public information. It is possible that certain information we or our officers post on our website and on social media could be deemed material, and we encourage investors, the media and others interested in Goldman Sachs to review the business and financial information we or our officers post on our website and on the social media channels identified above. The information on our website and those social media channels is not incorporated by reference into this Form 10-Q.

Forward-Looking Statements

We have included in this Form 10-Q, and our management may make, statements that may constitute “forward-looking statements” within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements are not historical facts or statements of current conditions, but instead represent only our beliefs regarding future events, many of which, by their nature, are inherently uncertain and outside our control.

By identifying these statements for you in this manner, we are alerting you to the possibility that our actual results, financial condition, liquidity and capital actions may differ, possibly materially, from the anticipated results, financial condition and liquidity in these forward-looking statements. Important factors that could cause our results, financial condition, liquidity and capital actions to differ from those in these statements include, among others, those described below and in “Risk Factors” in Part I, Item 1A of the 2021 Form 10-K.

Management's Discussion and Analysis

These statements may relate to, among other things, (i) our future plans and results, including our target ROE, ROTE, efficiency ratio, CET1 capital ratio and firmwide AUS inflows, and how they can be achieved, (ii) trends in or growth opportunities for our businesses, including the timing, costs, profitability, benefits and other aspects of business and strategic initiatives and their impact on our efficiency ratio, (iii) our level of future compensation expense, including as a percentage of both operating expenses and revenues net of provision for credit losses, (iv) our investment banking transaction backlog and future results, (v) our expected interest income and interest expense, (vi) our expense savings and strategic locations initiatives, (vii) expenses we may incur, including future litigation expense and expenses from investing in our consumer and transaction banking businesses, (viii) the projected growth of our deposits and other funding, asset liability management and funding strategies and related interest expense savings, (ix) our business initiatives, including transaction banking and new consumer financial products, (x) our planned 2022 benchmark debt issuances, (xi) the amount, composition and location of GCLA we expect to hold, (xii) our credit exposures, (xiii) our expected provisions for credit losses, (xiv) the adequacy of our allowance for credit losses, (xv) the projected growth of our consumer lending and credit card businesses, (xvi) the objectives and effectiveness of our BCP strategy, information security program, risk management and liquidity policies, (xvii) our resolution plan and strategy and their implications for stakeholders, (xviii) the design and effectiveness of our resolution capital and liquidity models and triggers and alerts framework, (xix) the results of stress tests, the effect of changes to regulations, and our future status, activities or reporting under banking and financial regulation, (xx) our expected tax rate, (xxi) the future state of our liquidity and regulatory capital ratios, and our prospective capital distributions (including dividends and repurchases), (xxii) our expected SCB and G-SIB surcharge, (xxiii) legal proceedings, governmental investigations or other contingencies, (xxiv) the asset recovery guarantee and our remediation activities related to our 1Malaysia Development Berhad (1MDB) settlements, (xxv) the replacement of IBORs and our transition to alternative risk-free reference rates, (xxvi) the impact of the COVID-19 pandemic on our business, results, financial position and liquidity, (xxvii) the effectiveness of our management of our human capital, including our diversity goals, (xxviii) our sustainability and carbon neutrality targets and goals, (xxix) our plans for our people to return to our offices, (xxx) future inflation, (xxxi) our completed, announced and prospective acquisitions, (xxxii) the impact of Russia's invasion of Ukraine and related sanctions and other developments on our business, results and financial position and (xxxiii) the realignment of our segments and the timing of the completion of the realignment.

Statements about our target ROE, ROTE, efficiency ratio and expense savings, and how they can be achieved, are based on our current expectations regarding our business prospects and are subject to the risk that we may be unable to achieve our targets due to, among other things, changes in our business mix, lower profitability of new business initiatives, increases in technology and other costs to launch and bring new business initiatives to scale, and increases in liquidity requirements.

Statements about our target ROE, ROTE and CET1 capital ratio, and how they can be achieved, are based on our current expectations regarding the capital requirements applicable to us and are subject to the risk that our actual capital requirements may be higher than currently anticipated because of, among other factors, changes in the regulatory capital requirements applicable to us resulting from changes in regulations or the interpretation or application of existing regulations or changes in the nature and composition of our activities. Statements about our firmwide AUS inflows targets are based on our current expectations regarding our fundraising prospects and are subject to the risk that actual inflows may be lower than expected due to, among other factors, competition from other asset managers, changes in investment preferences and changes in economic or market conditions.

Statements about the timing, costs, profitability, benefits and other aspects of business and expense savings initiatives, the level and composition of more durable revenues and increases in market share are based on our current expectations regarding our ability to implement these initiatives and actual results may differ, possibly materially, from current expectations due to, among other things, a delay in the timing of these initiatives, increased competition and an inability to reduce expenses and grow businesses with durable revenues.

Statements about the level of future compensation expense, including as a percentage of both operating expenses and revenues net of provision for credit losses, and our efficiency ratio as our platform business initiatives reach scale are subject to the risks that the compensation and other costs to operate our businesses, including platform initiatives, may be greater than currently expected.

Management's Discussion and Analysis

Statements about our investment banking transaction backlog and future results are subject to the risk that such transactions may be modified or may not be completed at all and related net revenues may not be realized or may be materially less than expected. Important factors that could have such a result include, for underwriting transactions, a decline or weakness in general economic conditions, an outbreak or worsening of hostilities, including the escalation or continuation of the war between Russia and Ukraine, continuing volatility in the securities markets or an adverse development with respect to the issuer of the securities and, for financial advisory transactions, a decline in the securities markets, an inability to obtain adequate financing, an adverse development with respect to a party to the transaction or a failure to obtain a required regulatory approval. For information about other important factors that could adversely affect our investment banking transactions, see "Risk Factors" in Part I, Item 1A of the 2021 Form 10-K.

Statements about the projected growth of our deposits and other funding, asset liability management and funding strategies and related interest expense savings, and our consumer lending and credit card businesses, are subject to the risk that actual growth and savings may differ, possibly materially, from that currently anticipated due to, among other things, changes in interest rates and competition from other similar products.

Statements about planned 2022 benchmark debt issuances and the amount, composition and location of GCLA we expect to hold are subject to the risk that actual issuances and GCLA levels may differ, possibly materially, from that currently expected due to changes in market conditions, business opportunities or our funding and projected liquidity needs.

Statements about our expected provisions for credit losses are subject to the risk that actual credit losses may differ and our expectations may change, possibly materially, from that currently anticipated due to, among other things, changes to the composition of our loan portfolio and changes in the economic environment in future periods and our forecasts of future economic conditions, as well as changes in our models, policies and other management judgments.

Statements about our future effective income tax rate are subject to the risk that it may differ from the anticipated rate indicated in such statements, possibly materially, due to, among other things, changes in the tax rates applicable to us, changes in our earnings mix, our profitability and entities in which we generate profits, the assumptions we have made in forecasting our expected tax rate, the interpretation or application of existing tax statutes and regulations, as well as any corporate tax legislation that may be enacted or any guidance that may be issued by the U.S. Internal Revenue Service, including with respect to the CAMT.

Statements about the future state of our liquidity and regulatory capital ratios (including our SCB and G-SIB surcharge), and our prospective capital distributions (including dividends and repurchases), are subject to the risk that our actual liquidity, regulatory capital ratios and capital distributions may differ, possibly materially, from what is currently expected due to, among other things, the need to use capital to support clients, increased regulatory requirements resulting from changes in regulations or the interpretation or application of existing regulations, results of applicable supervisory stress tests, changes to the composition of our balance sheet and the impact of taxes on share repurchases.

Statements about the risk exposure related to the asset recovery guarantee provided to the Government of Malaysia are subject to the risk that the actual value of, or credit received for, assets and proceeds from assets seized and returned to the Government of Malaysia may be less than currently anticipated. Statements about the progress or the status of remediation activities relating to 1MDB are based on our expectations regarding our current remediation plans. Accordingly, our ability to complete the remediation activities may change, possibly materially, from what is currently expected.

Statements about our objectives in management of our human capital, including our diversity goals, are based on our current expectations and are subject to the risk that we may not achieve these objectives and goals due to, among other things, competition in recruiting and attracting diverse candidates and unsuccessful efforts in retaining diverse employees.

Statements about our sustainability and carbon neutrality targets and goals are based on our current expectations and are subject to the risk that we may not achieve these targets and goals due to, among other things, global socio-demographic and economic trends, energy prices, lack of technological innovations, climate-related conditions and weather events, legislative and regulatory changes, and other unforeseen events or conditions.

Statements about our plans for our people to return to our offices are based on our current expectations and that return may be delayed due to, among other factors, future events that are unpredictable, including the course of the COVID-19 pandemic, responses of governmental authorities, the emergence of new variants of COVID-19 and the effectiveness of vaccines over the long term and against new variants.

Statements about future inflation are subject to the risk that actual inflation may differ, possibly materially, due to, among other things, changes in economic growth, unemployment or consumer demand.

Statements about the impact of Russia's invasion of Ukraine and related sanctions and other developments on our business, results and financial position are subject to the risks that hostilities may escalate and expand, that sanctions may increase and that the actual impact may differ, possibly materially, from what is currently expected.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Quantitative and qualitative disclosures about market risk are set forth in “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Risk Management” in Part I, Item 2 of this Form 10-Q.

Item 4. Controls and Procedures

As of the end of the period covered by this report, an evaluation was carried out by our management, with the participation of our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act). Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that these disclosure controls and procedures were effective as of the end of the period covered by this report. In addition, no change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) occurred during the quarter ended September 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

We are involved in a number of judicial, regulatory and arbitration proceedings concerning matters arising in connection with the conduct of our businesses. Many of these proceedings are in early stages, and many of these cases seek an indeterminate amount of damages. We have estimated the upper end of the range of reasonably possible aggregate loss for matters where we have been able to estimate a range and we believe, based on currently available information, that the results of matters where we have not been able to estimate a range of reasonably possible loss, in the aggregate, will not have a material adverse effect on our financial condition, but may be material to our operating results in a given period. Given the range of litigation and investigations presently under way, our litigation expenses may remain high. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Use of Estimates” in Part I, Item 2 of this Form 10-Q. See Notes 18 and 27 to the consolidated financial statements in Part I, Item 1 of this Form 10-Q for information about our reasonably possible aggregate loss estimate and judicial, regulatory and legal proceedings.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

The table below presents purchases made by or on behalf of Group Inc. or any “affiliated purchaser” (as defined in Rule 10b-18(a)(3) under the Exchange Act) of our common stock during the three months ended September 2022.

	Total Shares Purchased	Average Price Paid Per Share	Total Shares Purchased as Part of a Publicly Announced Program	Maximum Shares That May Yet Be Purchased Under the Program
July	1,391,775	\$323.33	1,391,775	30,078,676
August	1,617,453	\$340.05	1,617,404	28,461,272
September	—	—	—	28,461,272
Total	3,009,228		3,009,179	

In the table above, total shares purchased during August 2022 included 49 shares remitted to satisfy statutory withholding taxes on the delivery of equity-based awards.

Since March 2000, our Board has approved a repurchase program authorizing repurchases of up to 605 million shares of our common stock. The repurchase program is effected primarily through regular open-market purchases (which may include repurchase plans designed to comply with Rule 10b5-1 and accelerated share repurchases), the amounts and timing of which are determined primarily by our current and projected capital position, but which may also be influenced by general market conditions and the prevailing price and trading volumes of our common stock. The repurchase program has no set expiration or termination date.

Item 6. Exhibits

Exhibits

- 15.1 [Letter re: Unaudited Interim Financial Information.](#)
- 31.1 [Rule 13a-14\(a\) Certifications.](#)
- 32.1 [Section 1350 Certifications \(This information is furnished and not filed for purposes of Sections 11 and 12 of the Securities Act of 1933 and Section 18 of the Securities Exchange Act of 1934\).](#)
- 101 Pursuant to Rules 405 and 406 of Regulation S-T, the following information is formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) the Consolidated Statements of Earnings for the three and nine months ended September 30, 2022 and September 30, 2021, (ii) the Consolidated Statements of Comprehensive Income for the three and nine months ended September 30, 2022 and September 30, 2021, (iii) the Consolidated Balance Sheets as of September 30, 2022 and December 31, 2021, (iv) the Consolidated Statements of Changes in Shareholders' Equity for the three and nine months ended September 30, 2022 and September 30, 2021, (v) the Consolidated Statements of Cash Flows for the nine months ended September 30, 2022 and September 30, 2021, (vi) the notes to the Consolidated Financial Statements and (vii) the cover page.
- 104 Cover Page Interactive Data File (formatted in iXBRL in Exhibit 101).

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

THE GOLDMAN SACHS GROUP, INC.

By: /s/ Denis P. Coleman III
Name: Denis P. Coleman III
Title: Chief Financial Officer
(Principal Financial Officer)
Date: November 2, 2022

By: /s/ Sheara J. Fredman
Name: Sheara J. Fredman
Title: Chief Accounting Officer
(Principal Accounting Officer)
Date: November 2, 2022

November 2, 2022

Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549

Re: The Goldman Sachs Group, Inc.
Registration Statements on Form S-8
(No. 333-80839)
(No. 333-42068)
(No. 333-106430)
(No. 333-120802)
(No. 333-235973)
(No. 333-261673)

Registration Statement on Form S-3
(No. 333-253421)

Commissioners:

We are aware that our report dated November 2, 2022 on our review of the consolidated balance sheet of The Goldman Sachs Group, Inc. and its subsidiaries (the Company) as of September 30, 2022, and the related consolidated statements of earnings, comprehensive income and changes in shareholders' equity for the three and nine months ended September 30, 2022 and 2021, and the consolidated statements of cash flows for the nine months ended September 30, 2022 and 2021 included in the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2022 is incorporated by reference in the registration statements referred to above. Pursuant to Rule 436(c) under the Securities Act of 1933 (the Act), such report should not be considered a part of such registration statements, and is not a report within the meaning of Sections 7 and 11 of the Act.

Very truly yours,

/s/ PricewaterhouseCoopers LLP

CERTIFICATIONS

I, David Solomon, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 of The Goldman Sachs Group, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 2, 2022

/s/ David Solomon

Name: David Solomon

Title: Chief Executive Officer

CERTIFICATIONS

I, Denis P. Coleman III, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 of The Goldman Sachs Group, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 2, 2022

/s/ Denis P. Coleman III
Name: Denis P. Coleman III
Title: Chief Financial Officer

Certification

Pursuant to 18 U.S.C. § 1350, the undersigned officer of The Goldman Sachs Group, Inc. (the Company) hereby certifies that the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 (the Report) fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 2, 2022

/s/ David Solomon

Name: David Solomon
Title: Chief Executive Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. § 1350 and is not being filed as part of the Report or as a separate disclosure document.

Certification

Pursuant to 18 U.S.C. § 1350, the undersigned officer of The Goldman Sachs Group, Inc. (the Company) hereby certifies that the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 (the Report) fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 2, 2022

/s/ Denis P. Coleman III

Name: Denis P. Coleman III

Title: Chief Financial Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. § 1350 and is not being filed as part of the Report or as a separate disclosure document.