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 June 30, 2023

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	13-4019460
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
200 West Street, New York, NY	10282
(Address of principal executive offices)	(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
Depositary Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series A	GS PrA	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series C	GS PrC	NYSE
Depositary Shares, Each Representing 1/1,000th Interest in a Share of Floating Rate Non-Cumulative Preferred Stock, Series D	GS PrD	NYSE
Depositary 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
Depositary 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 July 21, 2023, there were 329,671,083 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)

in millions, except per share amounts	Three Months Ended June 2023	Three Months Ended June 2022	Six Months Ended June 2023	Six Months Ended June 2022
Revenues				
Investment banking	**$ 1,432**	$ 1,799	**$ 3,010**	$ 3,943
Investment management	**2,356**	2,394	**4,645**	4,464
Commissions and fees	**893**	1,071	**1,981**	2,074
Market making	**4,351**	4,913	**9,784**	10,942
Other principal transactions	**179**	(47)	**234**	(187)
Total non-interest revenues	**9,211**	10,130	**19,654**	21,236
Interest income	**16,836**	4,851	**31,774**	8,063
Interest expense	**15,152**	3,117	**28,309**	4,502
Net interest income	**1,684**	1,734	**3,465**	3,561
Total net revenues	**10,895**	11,864	**23,119**	24,797
Provision for credit losses	**615**	667	**444**	1,228
Operating expenses				
Compensation and benefits	**3,619**	3,695	**7,709**	7,778
Transaction based	**1,385**	1,317	**2,790**	2,561
Market development	**146**	235	**318**	397
Communications and technology	**482**	444	**948**	868
Depreciation and amortization	**1,594**	570	**2,564**	1,062
Occupancy	**253**	259	**518**	510
Professional fees	**392**	490	**775**	927
Other expenses	**673**	643	**1,324**	1,266
Total operating expenses	**8,544**	7,653	**16,946**	15,369
Pre-tax earnings	**1,736**	3,544	**5,729**	8,200
Provision for taxes	**520**	617	**1,279**	1,334
Net earnings	**1,216**	2,927	**4,450**	6,866
Preferred stock dividends	**145**	141	**292**	249
Net earnings applicable to common shareholders	**$ 1,071**	$ 2,786	**$ 4,158**	$ 6,617
Earnings per common share				
Basic	**$ 3.09**	$ 7.81	**$ 12.00**	$ 18.67
Diluted	**$ 3.08**	$ 7.73	**$ 11.91**	$ 18.47
Average common shares				
Basic	**342.3**	355.0	**344.4**	353.1
Diluted	**347.2**	360.5	**349.2**	358.2

Consolidated Statements of Comprehensive Income (Unaudited)

$ in millions	Three Months Ended June 2023	Three Months Ended June 2022	Six Months Ended June 2023	Six Months Ended June 2022
Net earnings	**$ 1,216**	$ 2,927	**$ 4,450**	$ 6,866
Other comprehensive income/(loss) adjustments, net of tax:				
Currency translation	**(12)**	(16)	**(43)**	(31)
Debt valuation adjustment	**(610)**	1,188	**(611)**	1,928
Pension and postretirement liabilities	**10**	(1)	**24**	12
Available-for-sale securities	**(24)**	(441)	**403**	(1,795)
Other comprehensive income/(loss)	**(636)**	730	**(227)**	114
Comprehensive income	**$ 580**	$ 3,657	**$ 4,223**	$ 6,980

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

Consolidated Balance Sheets (Unaudited)

	As of	
$ in millions	**June 2023**	December 2022
Assets		
Cash and cash equivalents	**$ 270,931**	$ 241,825
Collateralized agreements:		
Securities purchased under agreements to resell (includes **$199,607** and $225,117 at fair value)	**199,864**	225,117
Securities borrowed (includes **$37,398** and $38,578 at fair value)	**188,439**	189,041
Customer and other receivables (includes **$23** and $25 at fair value)	**157,277**	135,448
Trading assets (at fair value and includes **$90,993** and $40,143 pledged as collateral)	**400,329**	301,245
Investments (includes **$77,755** and $78,201 at fair value, and **$8,968** and $9,818 pledged as collateral)	**137,571**	130,629
Loans (net of allowance of **$5,232** and $5,543, and includes **$6,936** and $7,655 at fair value)	**178,133**	179,286
Other assets (includes **$228** and $145 at fair value)	**38,842**	39,208
Total assets	**$ 1,571,386**	$ 1,441,799
Liabilities and shareholders' equity		
Deposits (includes **$17,707** and $15,746 at fair value)	**$ 398,853**	$ 386,665
Collateralized financings:		
Securities sold under agreements to repurchase (at fair value)	**222,983**	110,349
Securities loaned (includes **$8,351** and $4,372 at fair value)	**48,003**	30,727
Other secured financings (includes **$12,395** and $12,756 at fair value)	**13,443**	13,946
Customer and other payables	**257,843**	262,045
Trading liabilities (at fair value)	**194,328**	191,324
Unsecured short-term borrowings (includes **$46,822** and $39,731 at fair value)	**70,056**	60,961
Unsecured long-term borrowings (includes **$74,312** and $73,147 at fair value)	**230,813**	247,138
Other liabilities (includes **$615** and $159 at fair value)	**18,571**	21,455
Total liabilities	**1,454,893**	1,324,610
Commitments, contingencies and guarantees		
Shareholders' equity		
Preferred stock; aggregate liquidation preference of **$10,703** and $10,703	**10,703**	10,703
Common stock; **922,861,104** and 917,815,030 shares issued, and **330,811,807** and 334,918,639 shares outstanding	**9**	9
Share-based awards	**4,931**	5,696
Nonvoting common stock; no shares issued and outstanding	**–**	–
Additional paid-in capital	**60,206**	59,050
Retained earnings	**141,798**	139,372
Accumulated other comprehensive loss	**(3,237)**	(3,010)
Stock held in treasury, at cost; **592,049,299** and 582,896,393 shares	**(97,917)**	(94,631)
Total shareholders' equity	**116,493**	117,189
Total liabilities and shareholders' equity	**$ 1,571,386**	$ 1,441,799

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

Consolidated Statements of Changes in Shareholders' Equity (Unaudited)

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Preferred stock				
Beginning balance	**$ 10,703**	$ 10,703	**$ 10,703**	$ 10,703
Issued	**–**	–	**–**	–
Ending balance	**10,703**	10,703	**10,703**	10,703
Common stock				
Beginning balance	**9**	9	**9**	9
Issued	**–**	–	**–**	–
Ending balance	**9**	9	**9**	9
Share-based awards				
Beginning balance	**4,823**	4,965	**5,696**	4,211
Issuance and amortization of share-based awards	**236**	390	**1,759**	3,500
Delivery of common stock underlying share-based awards	**(109)**	(78)	**(2,486)**	(2,419)
Forfeiture of share-based awards	**(19)**	(32)	**(38)**	(47)
Ending balance	**4,931**	5,245	**4,931**	5,245
Additional paid-in capital				
Beginning balance	**60,143**	58,938	**59,050**	56,396
Delivery of common stock underlying share-based awards	**125**	92	**2,497**	2,433
Cancellation of share-based awards in satisfaction of withholding tax requirements	**(60)**	(37)	**(1,339)**	(1,564)
Issuance of common stock in connection with acquisition	**–**	–	**–**	1,730
Other	**(2)**	–	**(2)**	(2)
Ending balance	**60,206**	58,993	**60,206**	58,993
Retained earnings				
Beginning balance	**141,591**	134,931	**139,372**	131,811
Net earnings	**1,216**	2,927	**4,450**	6,866
Dividends and dividend equivalents declared on common stock and share-based awards	**(864)**	(719)	**(1,732)**	(1,430)
Dividends declared on preferred stock	**(145)**	(141)	**(292)**	(249)
Ending balance	**141,798**	136,998	**141,798**	136,998
Accumulated other comprehensive income/(loss)				
Beginning balance	**(2,601)**	(2,684)	**(3,010)**	(2,068)
Other comprehensive income/(loss)	**(636)**	730	**(227)**	114
Ending balance	**(3,237)**	(1,954)	**(3,237)**	(1,954)
Stock held in treasury, at cost				
Beginning balance	**(97,159)**	(91,623)	**(94,631)**	(91,136)
Repurchased	**(750)**	(500)	**(3,296)**	(1,000)
Reissued	**–**	1	**28**	19
Other	**(8)**	(1)	**(18)**	(6)
Ending balance	**(97,917)**	(92,123)	**(97,917)**	(92,123)
Total shareholders' equity	**$ 116,493**	$ 117,871	**$ 116,493**	$ 117,871

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

Consolidated Statements of Cash Flows (Unaudited)

	Six Months Ended June	
$ in millions	**2023**	2022
Cash flows from operating activities		
Net earnings	**$ 4,450**	$ 6,866
Adjustments to reconcile net earnings to net cash provided by operating activities		
Depreciation and amortization	**2,564**	1,062
Share-based compensation	**1,780**	3,511
Provision for credit losses	**444**	1,228
Changes in operating assets and liabilities:		
Customer and other receivables and payables, net	**(26,016)**	25,150
Collateralized transactions (excluding other secured financings), net	**155,765**	(64,450)
Trading assets	**(94,533)**	(18,694)
Trading liabilities	**1,988**	72,486
Loans held for sale, net	**368**	3,044
Other, net	**(5,505)**	(4,343)
Net cash provided by operating activities	**41,305**	25,860
Cash flows from investing activities		
Purchase of property, leasehold improvements and equipment	**(1,263)**	(2,004)
Proceeds from sales of property, leasehold improvements and equipment	**662**	939
Net cash used for business acquisitions	**(8)**	(1,830)
Purchase of investments	**(17,036)**	(36,502)
Proceeds from sales and paydowns of investments	**10,814**	4,964
Loans (excluding loans held for sale), net	**894**	(21,076)
Net cash used for investing activities	**(5,937)**	(55,509)
Cash flows from financing activities		
Unsecured short-term borrowings, net	**884**	8,436
Other secured financings (short-term), net	**(119)**	92
Proceeds from issuance of other secured financings (long-term)	**1,177**	867
Repayment of other secured financings (long-term), including the current portion	**(1,632)**	(1,931)
Proceeds from issuance of unsecured long-term borrowings	**17,943**	53,603
Repayment of unsecured long-term borrowings, including the current portion	**(30,594)**	(23,781)
Derivative contracts with a financing element, net	**1,016**	1,336
Deposits, net	**10,974**	32,806
Common stock repurchased	**(3,296)**	(1,000)
Settlement of share-based awards in satisfaction of withholding tax requirements	**(1,339)**	(1,568)
Dividends and dividend equivalents paid on common stock, preferred stock and share-based awards	**(2,025)**	(1,672)
Other financing, net	**353**	369
Net cash provided by/(used for) financing activities	**(6,658)**	67,557
Effect of exchange rate changes on cash and cash equivalents	**396**	(10,338)
Net increase in cash and cash equivalents	**29,106**	27,570
Cash and cash equivalents, beginning balance	**241,825**	261,036
Cash and cash equivalents, ending balance	**$ 270,931**	$ 288,606
Supplemental disclosures:		
Cash payments for interest, net of capitalized interest	**$ 27,577**	$ 3,738
Cash payments for income taxes, net	**$ 1,516**	$ 1,600

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

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

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 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 manages and reports its activities in the following three business segments:

Global Banking & Markets

The firm provides a broad range of 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 facilitates client transactions and makes markets in fixed income, equity, currency and commodity products. In addition, the firm makes markets in and clears institutional client transactions on major stock, options and futures exchanges worldwide and provides prime financing, portfolio financing and other types of equity financing, including securities lending, margin lending, swaps and securities-based loans. The firm also provides lending to corporate clients, including through relationship lending and acquisition financing, and secured lending, through structured credit and asset-backed lending. In addition, the firm provides commodity financing to clients through structured transactions and also provides financing through securities purchased under agreements to resell (resale agreements). The firm also makes equity and debt investments related to Global Banking & Markets activities.

Asset & Wealth Management

The firm manages assets and offers investment products across all major asset classes to a diverse set of clients, both institutional and individuals, including through a network of third-party distributors around the world. The firm also provides investing and wealth advisory solutions, including financial planning and counseling, and executing brokerage transactions for wealth management clients. The firm issues loans to wealth management clients, accepts deposits through its consumer banking digital platform, *Marcus by Goldman Sachs* (Marcus), and through its private bank, and provides investing services through *Marcus Invest* to U.S. customers. The firm has also issued unsecured loans to consumers through Marcus. During the first half of 2023, the firm completed the sale of substantially all of this portfolio. The firm makes equity investments, which include 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 debt instruments and engages in lending activities to middle-market clients, and provides financing for real estate and other assets.

Platform Solutions

The firm issues credit cards through partnership arrangements and provides point-of-sale financing through GreenSky, Inc. (GreenSky) to consumers. In April 2023, the firm announced that it is initiating a process to explore the potential sale of GreenSky. The firm also accepts deposits from Apple Card customers. In addition, the firm provides transaction banking and other services, including cash management services, such as deposit-taking and payment solutions for corporate and institutional clients.

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, 2022. References to "the 2022 Form 10-K" are to the firm's Annual Report on Form 10-K for the year ended December 31, 2022. 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 June 2023, March 2023 and June 2022 refer to the firm's periods ended, or the dates, as the context requires, June 30, 2023, March 31, 2023 and June 30, 2022, respectively. All references to December 2022 refer to the date December 31, 2022. 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.

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
Fair Value Hierarchy	Note 5
Trading Assets and Liabilities	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.

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 (including approximately 85% of investment banking revenues, approximately 95% of investment management revenues and all commissions and fees) for each of the three and six months ended June 2023 and June 2022. 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.

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 substantially all 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 June 2023, substantially all future net revenues associated with such remaining performance obligations will be recognized through 2031. Annual revenues associated with such performance obligations average less than $300 million through 2031.

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.

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 $8.65 billion as of June 2023 and $7.87 billion as of December 2022. Cash and cash equivalents also included interest-bearing deposits with banks of $262.28 billion as of June 2023 and $233.96 billion as of December 2022.

The firm segregates cash for regulatory and other purposes related to client activity. Cash and cash equivalents segregated for regulatory and other purposes were $14.84 billion as of June 2023 and $16.94 billion as of December 2022. 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 $78.30 billion as of June 2023 and $67.88 billion as of December 2022, and receivables from brokers, dealers and clearing organizations of $78.98 billion as of June 2023 and $67.57 billion as of December 2022. Such receivables primarily consist of collateral posted in connection with certain derivative transactions, customer margin loans and receivables resulting from unsettled 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 and 5. Had these receivables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both June 2023 and December 2022. 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 $3.43 billion as of June 2023 and $3.01 billion as of December 2022. As of both June 2023 and December 2022, contract assets were not material.

Customer and Other Payables

Customer and other payables included payables to customers and counterparties of $240.68 billion as of June 2023 and $238.12 billion as of December 2022, and payables to brokers, dealers and clearing organizations of $17.16 billion as of June 2023 and $23.93 billion as of December 2022. 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 and 5. Had these payables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both June 2023 and December 2022. 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 settlement date 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.

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 limited cases, as outlined in the applicable award agreements, the firm may cash settle share-based compensation awards accounted for as equity instruments. For these awards, 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 effects related to the settlement of share-based awards and payments of dividend equivalents are 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, as amended in 2022, 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 became effective in January 2023 under a prospective approach. Adoption of this ASU did not 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 SAB 121 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.

Accounting for Investments in Tax Credit Structures Using the Proportional Amortization Method (ASC 323). In March 2023, the FASB issued ASU No. 2023-02, "Investments — Equity Method and Joint Ventures (Topic 323) — Accounting for Investments in Tax Credit Structures Using the Proportional Amortization Method." This ASU expands the proportional amortization method election currently associated with low-income housing tax credits to other qualifying tax credits and requires incremental disclosures for programs in which the proportional amortization method is elected. This ASU is effective in January 2024 under a modified retrospective approach. Early adoption is permitted. Adoption of this ASU is not expected to have a material impact on the firm's consolidated financial statements.

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

	As of		
$ in millions	**June 2023**	March 2023	December 2022
Total level 1 financial assets	**$ 270,334**	$ 287,682	$ 194,698
Total level 2 financial assets	**478,619**	473,062	485,134
Total level 3 financial assets	**25,945**	25,797	26,048
Investments in funds at NAV	**3,063**	3,020	2,941
Counterparty and cash collateral netting	**(55,685)**	(54,394)	(57,855)
Total financial assets at fair value	**$ 722,276**	$ 735,167	$ 650,966
Total assets	**$ 1,571,386**	$ 1,538,349	$ 1,441,799
Total level 3 financial assets divided by:			
Total assets	**1.7%**	1.7%	1.8%
Total financial assets at fair value	**3.6%**	3.5%	4.0%
Total level 1 financial liabilities	**$ 125,540**	$ 123,781	$ 119,578
Total level 2 financial liabilities	**469,090**	443,461	353,060
Total level 3 financial liabilities	**26,159**	23,825	22,830
Counterparty and cash collateral netting	**(43,276)**	(39,646)	(47,884)
Total financial liabilities at fair value	**$ 577,513**	$ 551,421	$ 447,584
Total liabilities	**$ 1,454,893**	$ 1,420,840	$ 1,324,610
Total level 3 financial liabilities divided by:			
Total liabilities	**1.8%**	1.7%	1.7%
Total financial liabilities at fair value	**4.5%**	4.3%	5.1%

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.

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

	As of		
$ in millions	**June 2023**	March 2023	December 2022
Trading assets:			
Trading cash instruments	**$ 1,664**	$ 1,558	$ 1,734
Derivatives	**4,776**	5,115	5,461
Investments	**18,128**	17,233	16,942
Loans	**1,251**	1,787	1,837
Other assets	**126**	104	74
Total	**$ 25,945**	$ 25,797	$ 26,048

Level 3 financial assets as of June 2023 were essentially unchanged compared with both March 2023 and December 2022. See Note 5 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).

The valuation techniques and nature of significant inputs used to determine the fair value of the firm's financial instruments are described below. See Note 5 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 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.

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.

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.

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 5 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.

Valuation Techniques and Significant Inputs for Other Financial Assets and Liabilities 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 repurchase agreements and substantially all resale 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 assets and 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 assets and liabilities 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 Assets and Liabilities. The significant inputs to the valuation of other assets and liabilities are the amount and timing of expected future cash flows, interest rates, market yields, 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.

Note 5.

Fair Value Hierarchy

Financial assets and liabilities at fair value includes trading cash instruments, derivatives, and certain investments, loans and other financial assets and liabilities at fair value.

Trading Cash Instruments

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

$ in millions	Level 1	Level 2	Level 3	Total
As of June 2023				
Assets				
Government and agency obligations:				
U.S.	**$ 61,624**	**$ 51,782**	**$ –**	**$ 113,406**
Non-U.S.	**56,100**	**22,910**	**48**	**79,058**
Loans and securities backed by:				
Commercial real estate	**–**	**1,482**	**140**	**1,622**
Residential real estate	**–**	**8,096**	**81**	**8,177**
Corporate debt instruments	**365**	**34,325**	**1,145**	**35,835**
State and municipal obligations	**–**	**399**	**22**	**421**
Other debt obligations	**190**	**3,663**	**125**	**3,978**
Equity securities	**101,028**	**1,775**	**100**	**102,903**
Commodities	**–**	**4,557**	**3**	**4,560**
Total	**$ 219,307**	**$ 128,989**	**$ 1,664**	**$ 349,960**
Liabilities				
Government and agency obligations:				
U.S.	**$ (34,464)**	**$ (166)**	**$ –**	**$ (34,630)**
Non-U.S.	**(43,727)**	**(3,140)**	**–**	**(46,867)**
Loans and securities backed by:				
Commercial real estate	**–**	**(25)**	**(1)**	**(26)**
Residential real estate	**–**	**(8)**	**–**	**(8)**
Corporate debt instruments	**(57)**	**(14,346)**	**(82)**	**(14,485)**
Other debt obligations	**–**	**(10)**	**–**	**(10)**
Equity securities	**(47,274)**	**(14)**	**(12)**	**(47,300)**
Commodities	**–**	**(65)**	**–**	**(65)**
Total	**$(125,522)**	**$ (17,774)**	**$ (95)**	**$(143,391)**
As of December 2022				
Assets				
Government and agency obligations:				
U.S.	$ 75,598	$ 31,783	$ –	$ 107,381
Non-U.S.	22,794	15,238	67	38,099
Loans and securities backed by:				
Commercial real estate	–	1,135	66	1,201
Residential real estate	–	9,706	88	9,794
Corporate debt instruments	249	27,555	1,238	29,042
State and municipal obligations	–	707	20	727
Other debt obligations	27	2,349	153	2,529
Equity securities	44,909	2,141	100	47,150
Commodities	–	5,907	2	5,909
Total	$ 143,577	$ 96,521	$ 1,734	$ 241,832
Liabilities				
Government and agency obligations:				
U.S.	$ (23,339)	$ (36)	$ –	$ (23,375)
Non-U.S.	(28,537)	(2,172)	–	(30,709)
Loans and securities backed by:				
Commercial real estate	–	(30)	–	(30)
Residential real estate	–	(16)	–	(16)
Corporate debt instruments	(64)	(14,217)	(61)	(14,342)
Other debt obligations	–	(35)	(2)	(37)
Equity securities	(67,591)	(488)	(1)	(68,080)
Total	$(119,531)	$ (16,994)	$ (64)	$(136,589)

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.

In the table above:

- Assets are shown as positive amounts and 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, valuation techniques and significant inputs used to determine the fair value of trading cash instruments.

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 instrument assets.

	As of June 2023		As of December 2022	
$ in millions	**Amount or Range**	**Weighted Average**	Amount or Range	Weighted Average
Loans and securities backed by real estate				
Level 3 assets	**$ 221**		$ 154	
Yield	**4.1% to 58.0%**	**16.0%**	3.0% to 36.0%	14.2%
Recovery rate	**43.0% to 89.7%**	**68.0%**	35.8% to 76.1%	54.7%
Cumulative loss rate	**N/A**	**N/A**	3.7% to 29.9%	10.4%
Duration (years)	**0.6 to 12.4**	**3.3**	0.9 to 12.3	4.6
Corporate debt instruments				
Level 3 assets	**$ 1,145**		$ 1,238	
Yield	**3.2% to 37.5%**	**10.7%**	1.1% to 34.3%	6.9%
Recovery rate	**7.3% to 78.0%**	**48.3%**	11.5% to 77.0%	48.0%
Duration (years)	**1.2 to 18.5**	**4.0**	0.3 to 20.3	4.5
Other				
Level 3 assets	**$ 298**		$ 342	
Yield	**3.8% to 42.1%**	**10.6%**	2.8% to 47.8%	10.0%
Multiples	**3.6x to 4.9x**	**4.7x**	3.3x to 4.5x	4.3x
Duration (years)	**0.9 to 9.9**	**3.9**	1.2 to 14.4	6.1

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 June 2023 and December 2022. 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.
- Cumulative loss rate was not significant to the valuation of level 3 loans and securities backed by real estate as of June 2023.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Assets				
Beginning balance	**$ 1,558**	$ 1,921	**$ 1,734**	$ 1,889
Net realized gains/(losses)	**91**	27	**106**	44
Net unrealized gains/(losses)	**(15)**	(76)	**(5)**	(1,422)
Purchases	**262**	374	**446**	1,225
Sales	**(217)**	(270)	**(378)**	(554)
Settlements	**(88)**	(124)	**(243)**	(262)
Transfers into level 3	**343**	434	**288**	1,400
Transfers out of level 3	**(270)**	(206)	**(284)**	(240)
Ending balance	**$ 1,664**	$ 2,080	**$ 1,664**	$ 2,080
Liabilities				
Beginning balance	**$ (45)**	$ (92)	**$ (64)**	$ (104)
Net realized gains/(losses)	**(1)**	(13)	**—**	(12)
Net unrealized gains/(losses)	**(2)**	(24)	**(19)**	(39)
Purchases	**28**	72	**63**	152
Sales	**(68)**	(88)	**(81)**	(138)
Settlements	**1**	2	**11**	3
Transfers into level 3	**(20)**	(50)	**(14)**	(56)
Transfers out of level 3	**12**	11	**9**	12
Ending balance	**$ (95)**	$ (182)	**$ (95)**	$ (182)

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.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Loans and securities backed by real estate				
Beginning balance	**$ 178**	$ 154	**$ 154**	$ 289
Net realized gains/(losses)	**2**	3	**6**	7
Net unrealized gains/(losses)	**(4)**	(5)	**(3)**	(6)
Purchases	**6**	8	**82**	53
Sales	**(22)**	(19)	**(32)**	(105)
Settlements	**(6)**	(12)	**(17)**	(21)
Transfers into level 3	**119**	77	**63**	26
Transfers out of level 3	**(52)**	(22)	**(32)**	(59)
Ending balance	**$ 221**	$ 184	**$ 221**	$ 184
Corporate debt instruments				
Beginning balance	**$ 1,010**	$ 1,435	**$ 1,238**	$ 1,318
Net realized gains/(losses)	**10**	24	**17**	49
Net unrealized gains/(losses)	**(15)**	(90)	**(9)**	(72)
Purchases	**216**	197	**293**	382
Sales	**(78)**	(105)	**(205)**	(316)
Settlements	**(43)**	(106)	**(172)**	(221)
Transfers into level 3	**195**	249	**190**	453
Transfers out of level 3	**(150)**	(164)	**(207)**	(153)
Ending balance	**$ 1,145**	$ 1,440	**$ 1,145**	$ 1,440
Other				
Beginning balance	**$ 370**	$ 332	**$ 342**	$ 282
Net realized gains/(losses)	**79**	–	**83**	(12)
Net unrealized gains/(losses)	**4**	19	**7**	(1,344)
Purchases	**40**	169	**71**	790
Sales	**(117)**	(146)	**(141)**	(133)
Settlements	**(39)**	(6)	**(54)**	(20)
Transfers into level 3	**29**	108	**35**	921
Transfers out of level 3	**(68)**	(20)	**(45)**	(28)
Ending balance	**$ 298**	$ 456	**$ 298**	$ 456

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 for the Three Months Ended June 2023. The net realized and unrealized gains on level 3 trading cash instrument assets of $76 million (reflecting $91 million of net realized gains and $15 million of net unrealized losses) for the three months ended June 2023 included gains of $56 million reported in market making and $20 million reported in interest income.

The drivers of net unrealized losses on level 3 trading cash instrument assets for the three months ended June 2023 were not material.

Transfers into level 3 trading cash instrument assets during the three months ended June 2023 primarily reflected transfers of certain corporate debt instruments and certain loans and securities backed by real estate 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 trading cash instrument assets during the three months ended June 2023 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).

Level 3 Rollforward Commentary for the Six Months Ended June 2023. The net realized and unrealized gains on level 3 trading cash instrument assets of $101 million (reflecting $106 million of net realized gains and $5 million of net unrealized losses) for the six months ended June 2023 included gains of $67 million reported in market making and $34 million reported in interest income.

The drivers of net unrealized losses on level 3 trading cash instrument assets for the six months ended June 2023 were not material.

Transfers into level 3 trading cash instrument assets during the six months ended June 2023 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 six months ended June 2023 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).

Level 3 Rollforward Commentary for the Three Months Ended June 2022. The net realized and unrealized losses on level 3 trading cash instrument assets of $49 million (reflecting $27 million of net realized gains and $76 million of net unrealized losses) for the three months ended June 2022 included gains/(losses) of $(74) million reported in market making and $25 million reported in interest income.

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

Transfers into level 3 trading cash instrument assets during the three months ended June 2022 primarily reflected transfers of certain corporate debt instruments and other debt obligations (included in other cash instruments) 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 trading cash instrument assets during the three months ended June 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).

Level 3 Rollforward Commentary for the Six Months Ended June 2022. The net realized and unrealized losses on level 3 trading cash instrument assets of $1.38 billion (reflecting $44 million of net realized gains and $1.42 billion of net unrealized losses) for the six months ended June 2022 included gains/(losses) of $(1.42) billion reported in market making and $46 million reported in interest income.

The net unrealized losses on level 3 trading cash instrument assets for the six months ended June 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 six months ended June 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 six months ended June 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).

Derivatives

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

$ in millions	Level 1	Level 2	Level 3	Total
As of June 2023				
Assets				
Interest rates	**$ 8**	**$ 257,924**	**$ 478**	**$ 258,410**
Credit	**–**	**11,464**	**2,948**	**14,412**
Currencies	**–**	**96,866**	**275**	**97,141**
Commodities	**–**	**21,204**	**1,366**	**22,570**
Equities	**5**	**54,181**	**649**	**54,835**
Gross fair value	**13**	**441,639**	**5,716**	**447,368**
Counterparty netting in levels	**–**	**(340,374)**	**(940)**	**(341,314)**
Subtotal	**$ 13**	**$ 101,265**	**$ 4,776**	**$ 106,054**
Cross-level counterparty netting				**(1,120)**
Cash collateral netting				**(54,565)**
Net fair value				**$ 50,369**
Liabilities				
Interest rates	**$ (9)**	**$(235,807)**	**$ (1,067)**	**$(236,883)**
Credit	**–**	**(10,852)**	**(1,237)**	**(12,089)**
Currencies	**–**	**(98,519)**	**(146)**	**(98,665)**
Commodities	**–**	**(20,970)**	**(700)**	**(21,670)**
Equities	**(9)**	**(64,254)**	**(1,957)**	**(66,220)**
Gross fair value	**(18)**	**(430,402)**	**(5,107)**	**(435,527)**
Counterparty netting in levels	**–**	**340,374**	**940**	**341,314**
Subtotal	**$ (18)**	**$ (90,028)**	**$ (4,167)**	**$ (94,213)**
Cross-level counterparty netting				**1,120**
Cash collateral netting				**42,156**
Net fair value				**$ (50,937)**
As of December 2022				
Assets				
Interest rates	$ 69	$ 269,590	$ 700	$ 270,359
Credit	–	9,690	2,577	12,267
Currencies	–	103,450	494	103,944
Commodities	–	38,331	1,609	39,940
Equities	113	49,481	967	50,561
Gross fair value	182	470,542	6,347	477,071
Counterparty netting in levels	–	(358,917)	(886)	(359,803)
Subtotal	$ 182	$ 111,625	$ 5,461	$ 117,268
Cross-level counterparty netting				(1,079)
Cash collateral netting				(56,776)
Net fair value				$ 59,413
Liabilities				
Interest rates	$ (32)	$(247,871)	$ (1,159)	$(249,062)
Credit	–	(10,163)	(1,117)	(11,280)
Currencies	–	(111,840)	(332)	(112,172)
Commodities	–	(32,435)	(690)	(33,125)
Equities	(15)	(55,240)	(1,528)	(56,783)
Gross fair value	(47)	(457,549)	(4,826)	(462,422)
Counterparty netting in levels	–	358,917	886	359,803
Subtotal	$ (47)	$ (98,632)	$ (3,940)	$(102,619)
Cross-level counterparty netting				1,079
Cash collateral netting				46,805
Net fair value				$ (54,735)

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.
- Assets are shown as positive amounts and liabilities are shown as negative amounts.

See Note 4 for an overview of the firm's fair value measurement policies, 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.

	As of June 2023		As of December 2022	
$ in millions, except inputs	**Amount or Range**	**Average/ Median**	Amount or Range	Average/ Median
Interest rates, net	**$ (589)**		$ (459)	
Correlation	**(10)% to 81%**	**61%/78%**	(10)% to 81%	61%/60%
Volatility (bps)	**31 to 101**	**58/52**	31 to 101	60/57
Credit, net	**$ 1,711**		$ 1,460	
Credit spreads (bps)	**8 to 1,864**	**166/111**	5 to 935	149/116
Upfront credit points	**(4) to 100**	**22/8**	(1) to 100	29/18
Recovery rates	**20% to 70%**	**42%/40%**	20% to 50%	40%/40%
Currencies, net	**$ 129**		$ 162	
Correlation	**20% to 71%**	**40%/43%**	20% to 71%	40%/23%
Volatility	**16% to 16%**	**16%/16%**	20% to 21%	20%/20%
Commodities, net	**$ 666**		$ 919	
Volatility	**31% to 92%**	**44%/40%**	20% to 118%	50%/46%
Natural gas spread	**$(1.63) to $1.00**	**$(0.22)/ $(0.27)**	$(3.21) to $5.85	$(0.20)/ $(0.27)
Oil spread	**$(0.82) to $26.70**	**$17.63/ $18.20**	$12.68 to $48.92	$20.42/ $20.36
Electricity price	**$2.70 to $635.17**	**$47.78/ $34.21**	$3.00 to $329.28	$47.19/ $39.69
Equities, net	**$ (1,308)**		$ (561)	
Correlation	**(70)% to 100%**	**68%/76%**	(75)% to 100%	66%/75%
Volatility	**3% to 131%**	**12%/7%**	2% to 74%	13%/7%

In the table above:

- Assets are shown as positive amounts and 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.
- 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.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Total level 3 derivatives, net				
Beginning balance	**$ 1,573**	$ 915	**$ 1,521**	$ 440
Net realized gains/(losses)	**(6)**	97	**156**	329
Net unrealized gains/(losses)	**(436)**	2,084	**(926)**	3,225
Purchases	**145**	128	**334**	187
Sales	**(460)**	(704)	**(779)**	(1,345)
Settlements	**(187)**	791	**(25)**	583
Transfers into level 3	**(379)**	149	**(83)**	76
Transfers out of level 3	**359**	(286)	**411**	(321)
Ending balance	**$ 609**	$ 3,174	**$ 609**	$ 3,174

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Interest rates, net				
Beginning balance	**$ (376)**	$ 323	**$ (459)**	$ 183
Net realized gains/(losses)	**(10)**	1	**(25)**	(41)
Net unrealized gains/(losses)	**(418)**	286	**(264)**	909
Purchases	**6**	44	**15**	64
Sales	**(74)**	(37)	**(202)**	(69)
Settlements	**(39)**	301	**120**	160
Transfers into level 3	**66**	21	**(50)**	4
Transfers out of level 3	**256**	96	**276**	(175)
Ending balance	**$ (589)**	$ 1,035	**$ (589)**	$ 1,035
Credit, net				
Beginning balance	**$ 1,523**	$ 1,834	**$ 1,460**	$ 1,854
Net realized gains/(losses)	**–**	(41)	**(26)**	(28)
Net unrealized gains/(losses)	**238**	384	**222**	188
Purchases	**46**	5	**94**	20
Sales	**(19)**	(48)	**(21)**	(53)
Settlements	**(114)**	19	**(185)**	180
Transfers into level 3	**(44)**	36	**30**	27
Transfers out of level 3	**81**	(25)	**137**	(24)
Ending balance	**$ 1,711**	$ 2,164	**$ 1,711**	$ 2,164
Currencies, net				
Beginning balance	**$ 182**	$ (135)	**$ 162**	$ (147)
Net realized gains/(losses)	**28**	39	**53**	46
Net unrealized gains/(losses)	**(91)**	(21)	**(118)**	11
Purchases	**7**	–	**7**	1
Sales	**(9)**	(6)	**(10)**	(8)
Settlements	**23**	5	**20**	13
Transfers into level 3	**(1)**	(121)	**1**	(129)
Transfers out of level 3	**(10)**	–	**14**	(26)
Ending balance	**$ 129**	$ (239)	**$ 129**	$ (239)
Commodities, net				
Beginning balance	**$ 888**	$ 828	**$ 919**	$ 438
Net realized gains/(losses)	**(61)**	(26)	**(2)**	49
Net unrealized gains/(losses)	**(95)**	806	**(319)**	1,195
Purchases	**8**	13	**9**	27
Sales	**(52)**	(11)	**(104)**	(131)
Settlements	**77**	33	**145**	(44)
Transfers into level 3	**(89)**	218	**26**	174
Transfers out of level 3	**(10)**	(426)	**(8)**	(273)
Ending balance	**$ 666**	$ 1,435	**$ 666**	$ 1,435
Equities, net				
Beginning balance	**$ (644)**	$ (1,935)	**$ (561)**	$ (1,888)
Net realized gains/(losses)	**37**	124	**156**	303
Net unrealized gains/(losses)	**(70)**	629	**(447)**	922
Purchases	**78**	66	**209**	75
Sales	**(306)**	(602)	**(442)**	(1,084)
Settlements	**(134)**	433	**(125)**	274
Transfers into level 3	**(311)**	(5)	**(90)**	–
Transfers out of level 3	**42**	69	**(8)**	177
Ending balance	**$ (1,308)**	$ (1,221)	**$ (1,308)**	$ (1,221)

Level 3 Rollforward Commentary for the Three Months Ended June 2023. The net realized and unrealized losses on level 3 derivatives of $442 million (reflecting $6 million of net realized losses and $436 million of net unrealized losses) for the three months ended June 2023 included losses of $432 million reported in market making and losses of $10 million reported in other principal transactions.

The net unrealized losses on level 3 derivatives for the three months ended June 2023 were primarily attributable to losses on certain interest rate derivatives and currency derivatives (in each case. primarily reflecting the impact of an increase in interest rates), and losses on certain commodity derivatives (primarily reflecting the impact of changes in commodity prices), partially offset by gains on certain credit derivatives (primarily reflecting the impact of changes in foreign exchange rates).

Transfers into level 3 derivatives during the three months ended June 2023 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 June 2023 primarily reflected transfers of certain interest rate derivative liabilities to level 2 (principally due to certain unobservable volatility inputs no longer being significant to the valuation of these derivatives).

Level 3 Rollforward Commentary for the Six Months Ended June 2023. The net realized and unrealized losses on level 3 derivatives of $770 million (reflecting $156 million of net realized gains and $926 million of net unrealized losses) for the six months ended June 2023 included losses of $754 million reported in market making and losses of $16 million reported in other principal transactions.

The net unrealized losses on level 3 derivatives for the six months ended June 2023 were attributable to losses on certain equity derivatives (primarily reflecting the impact of an increase in equity prices), losses on certain commodity derivatives (primarily reflecting the impact of changes in commodity prices), and losses on certain interest rate and currency derivatives (in each case, primarily reflecting the impact of an increase in interest rates), partially offset by gains on certain credit derivatives (primarily reflecting the impact of changes in foreign exchange rates).

The drivers of transfers into level 3 derivatives during the six months ended June 2023 were not material.

Transfers out of level 3 derivatives during the six months ended June 2023 primarily reflected transfers of certain interest rate derivative liabilities to level 2 (principally due to certain unobservable volatility inputs no longer being significant to the valuation of these derivatives) and transfers of certain credit derivative liabilities to level 2 (principally due to certain unobservable credit spread inputs no longer being significant to the net risk of certain portfolios).

Level 3 Rollforward Commentary for the Three Months Ended June 2022. The net realized and unrealized gains on level 3 derivatives of $2.18 billion (reflecting $97 million of net realized gains and $2.08 billion of net unrealized gains) for the three months ended June 2022 included gains of $2.18 billion reported in market making and gains of $1 million reported in other principal transactions.

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

Transfers into level 3 derivatives during the three months ended June 2022 primarily reflected transfers of certain commodity derivative assets from level 2 (principally due to decreased transparency of certain electricity price inputs used to value these derivatives), partially offset by transfers of certain currency derivative liabilities from level 2 (principally due to decreased transparency of certain interest rate inputs used to value these derivatives).

Transfers out of level 3 derivatives during the three months ended June 2022 primarily reflected transfers of certain commodity derivative assets to level 2 (principally due to certain correlation inputs no longer being significant to the valuation of these derivatives), partially offset by transfers of certain interest rate derivative liabilities to level 2 (principally due to increased transparency of certain unobservable volatility inputs used to value these derivatives).

Level 3 Rollforward Commentary for the Six Months Ended June 2022. The net realized and unrealized gains on level 3 derivatives of $3.55 billion (reflecting $329 million of net realized gains and $3.23 billion of net unrealized gains) for the six months ended June 2022 included gains of $3.55 billion reported in market making and gains of $8 million reported in other principal transactions.

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

Transfers into level 3 derivatives during the six months ended June 2022 primarily reflected transfers of certain commodity derivative assets from level 2 (principally due to decreased transparency of certain electricity price inputs used to value these derivatives), partially offset by transfers of certain currency derivative liabilities from level 2 (principally due to decreased transparency of certain interest rate inputs used to value these derivatives).

Transfers out of level 3 derivatives during the six months ended June 2022 primarily reflected transfers of certain commodity derivative assets to level 2 (principally due to certain correlation inputs no longer being significant to the valuation of these derivatives) and transfers of 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).

Investments

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

$ in millions	Level 1	Level 2	Level 3	Total
As of June 2023				
Government and agency obligations:				
U.S.	**$ 47,898**	**$ –**	**$ –**	**$ 47,898**
Non-U.S.	**2,206**	**148**	**–**	**2,354**
Corporate debt securities	**155**	**2,214**	**7,520**	**9,889**
Securities backed by real estate	**–**	**18**	**878**	**896**
Money market instruments	**24**	**811**	**–**	**835**
Other debt obligations	**–**	**53**	**246**	**299**
Equity securities	**731**	**2,306**	**9,484**	**12,521**
Subtotal	**$ 51,014**	**$ 5,550**	**$ 18,128**	**$ 74,692**
Investments in funds at NAV				**3,063**
Total investments				**$ 77,755**
As of December 2022				
Government and agency obligations:				
U.S.	$ 47,055	$ –	$ –	$ 47,055
Non-U.S.	2,169	66	–	2,235
Corporate debt securities	145	2,950	7,003	10,098
Securities backed by real estate	–	176	827	1,003
Money market instruments	48	957	–	1,005
Other debt obligations	–	3	256	259
Equity securities	1,522	3,227	8,856	13,605
Subtotal	$ 50,939	$ 7,379	$ 16,942	$ 75,260
Investments in funds at NAV				2,941
Total investments				$ 78,201

See Note 4 for an overview of the firm's fair value measurement policies, 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.

	As of June 2023		As of December 2022	
$ in millions	**Amount or Range**	**Weighted Average**	Amount or Range	Weighted Average
Corporate debt securities				
Level 3 assets	**$ 7,520**		$ 7,003	
Yield	**6.6% to 28.8%**	**12.4%**	5.0% to 21.8%	11.6%
Recovery rate	**8.6% to 58.9%**	**29.2%**	10.0% to 70.0%	55.5%
Duration (years)	**0.9 to 5.2**	**3.3**	1.3 to 5.7	3.3
Multiples	**1.0x to 70.1x**	**7.7x**	1.8x to 83.4x	8.3x
Securities backed by real estate				
Level 3 assets	**$ 878**		$ 827	
Yield	**8.0% to 20.3%**	**14.4%**	8.0% to 20.3%	14.6%
Duration (years)	**1.9 to 3.5**	**3.5**	0.6 to 4.2	4.1
Other debt obligations				
Level 3 assets	**$ 246**		$ 256	
Yield	**7.8% to 9.0%**	**8.4%**	5.2% to 8.4%	7.4%
Equity securities				
Level 3 assets	**$ 9,484**		$ 8,856	
Multiples	**0.5x to 34.8x**	**8.5x**	0.5x to 34.3x	8.3x
Discount rate/yield	**3.9% to 20.3%**	**12.8%**	5.4% to 38.5%	14.6%
Capitalization rate	**4.2% to 10.8%**	**5.3%**	4.0% to 10.8%	5.4%

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 June 2023 and December 2022. 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.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Beginning balance	**$ 17,233**	$ 14,168	**$ 16,942**	$ 13,902
Net realized gains/(losses)	**124**	144	**225**	309
Net unrealized gains/(losses)	**(505)**	(547)	**(550)**	(1,615)
Purchases	**245**	425	**512**	815
Sales	**(164)**	(296)	**(479)**	(417)
Settlements	**(418)**	(567)	**(769)**	(1,288)
Transfers into level 3	**1,918**	3,542	**2,597**	5,550
Transfers out of level 3	**(305)**	(760)	**(350)**	(1,147)
Ending balance	**$ 18,128**	$ 16,109	**$ 18,128**	$ 16,109

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.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Corporate debt securities				
Beginning balance	**$ 7,448**	$ 4,645	**$ 7,003**	$ 4,527
Net realized gains/(losses)	**105**	74	**208**	161
Net unrealized gains/(losses)	**(59)**	(194)	**2**	(180)
Purchases	**110**	203	**276**	393
Sales	**–**	(62)	**(119)**	(28)
Settlements	**(302)**	(265)	**(562)**	(779)
Transfers into level 3	**501**	2,304	**917**	2,650
Transfers out of level 3	**(283)**	(129)	**(205)**	(168)
Ending balance	**$ 7,520**	$ 6,576	**$ 7,520**	$ 6,576
Securities backed by real estate				
Beginning balance	**$ 839**	$ 1,060	**$ 827**	$ 1,078
Net realized gains/(losses)	**2**	10	**10**	20
Net unrealized gains/(losses)	**(94)**	(58)	**(97)**	(208)
Purchases	**31**	33	**53**	79
Sales	**(55)**	(2)	**(57)**	(9)
Settlements	**(10)**	(70)	**(25)**	(121)
Transfers into level 3	**172**	137	**172**	270
Transfers out of level 3	**(7)**	(43)	**(5)**	(42)
Ending balance	**$ 878**	$ 1,067	**$ 878**	$ 1,067
Other debt obligations				
Beginning balance	**$ 251**	$ 322	**$ 256**	$ 382
Net realized gains/(losses)	**1**	3	**2**	5
Net unrealized gains/(losses)	**(5)**	(2)	**(1)**	(5)
Purchases	**1**	11	**1**	26
Sales	**(1)**	(10)	**(3)**	(16)
Settlements	**(1)**	(21)	**(9)**	(89)
Ending balance	**$ 246**	$ 303	**$ 246**	$ 303
Equity securities				
Beginning balance	**$ 8,695**	$ 8,141	**$ 8,856**	$ 7,915
Net realized gains/(losses)	**16**	57	**5**	123
Net unrealized gains/(losses)	**(347)**	(293)	**(454)**	(1,222)
Purchases	**103**	178	**182**	317
Sales	**(108)**	(222)	**(300)**	(364)
Settlements	**(105)**	(211)	**(173)**	(299)
Transfers into level 3	**1,245**	1,101	**1,508**	2,630
Transfers out of level 3	**(15)**	(588)	**(140)**	(937)
Ending balance	**$ 9,484**	$ 8,163	**$ 9,484**	$ 8,163

Level 3 Rollforward Commentary for the Three Months Ended June 2023. The net realized and unrealized losses on level 3 investments of $381 million (reflecting $124 million of net realized gains and $505 million of net unrealized losses) for the three months ended June 2023 included gains/(losses) of $(541) million reported in other principal transactions and $160 million reported in interest income.

The net unrealized losses on level 3 investments for the three months ended June 2023 primarily reflected losses on certain equity securities (principally driven by commercial real estate equity investments).

Transfers into level 3 investments during the three months ended June 2023 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 certain unobservable yield inputs becoming significant to the valuation of 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).

Transfers out of level 3 investments during the three months ended June 2023 primarily reflected transfers of certain corporate debt securities to level 2 (principally due to certain unobservable yield and duration inputs becoming less significant to the valuation of these instruments).

Level 3 Rollforward Commentary for the Six Months Ended June 2023. The net realized and unrealized losses on level 3 investments of $325 million (reflecting $225 million of net realized gains and $550 million of net unrealized losses) for the six months ended June 2023 included gains/(losses) of $(631) million reported in other principal transactions and $306 million reported in interest income.

The net unrealized losses on level 3 investments for the six months ended June 2023 primarily reflected losses on certain equity securities (principally driven by commercial real estate equity investments).

Transfers into level 3 investments during the six months ended June 2023 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 certain unobservable yield inputs becoming significant to the valuation of 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).

Transfers out of level 3 investments during the six months ended June 2023 primarily reflected transfers of certain corporate debt securities (principally due to certain unobservable yield and duration inputs becoming less significant to the valuation of these instruments) and 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).

Level 3 Rollforward Commentary for the Three Months Ended June 2022. The net realized and unrealized losses on level 3 investments of $403 million (reflecting $144 million of net realized gains and $547 million of net unrealized losses) for the three months ended June 2022 included gains/(losses) of $(512) million reported in other principal transactions and $109 million reported in interest income.

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

Transfers into level 3 investments during the three months ended June 2022 primarily reflected 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) and 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).

Transfers out of level 3 investments during the three months ended June 2022 primarily reflected transfers of certain equity securities and corporate debt securities to level 2 (in each case, principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Level 3 Rollforward Commentary for the Six Months Ended June 2022. The net realized and unrealized losses on level 3 investments of $1.31 billion (reflecting $309 million of net realized gains and $1.62 billion of net unrealized losses) for the six months ended June 2022 included gains/(losses) of $(1.53) billion reported in other principal transactions and $220 million reported in interest income.

The net unrealized losses on level 3 investments for the six months ended June 2022 primarily reflected losses on certain equity securities (principally driven by broad macroeconomic and geopolitical concerns and corporate performance), certain securities backed by real estate (principally driven by broad macroeconomic and geopolitical concerns) and certain corporate debt securities (principally driven by corporate performance).

Transfers into level 3 investments during the six months ended June 2022 primarily reflected 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) and 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).

Transfers out of level 3 investments during the six months ended June 2022 primarily reflected transfers of certain equity securities and corporate debt securities to level 2 (in each case, principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Loans

Fair Value 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.

$ in millions	Level 1	Level 2	Level 3	Total
As of June 2023				
Loan Type				
Corporate	**$ –**	**$ 432**	**$ 543**	**$ 975**
Real estate:				
Commercial	**–**	**418**	**428**	**846**
Residential	**–**	**4,115**	**62**	**4,177**
Other collateralized	**–**	**660**	**140**	**800**
Other	**–**	**60**	**78**	**138**
Total	**$ –**	**$ 5,685**	**$ 1,251**	**$ 6,936**
As of December 2022				
Loan Type				
Corporate	$ –	$ 359	$ 637	$ 996
Real estate:				
Commercial	–	435	711	1,146
Residential	–	4,437	74	4,511
Other collateralized	–	576	140	716
Other	–	11	275	286
Total	$ –	$ 5,818	$ 1,837	$ 7,655

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 $(113) million for the three months ended June 2023, $(79) million for the three months ended June 2022, $(37) million for the six months ended June 2023 and $(195) million for the six months ended June 2022. 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.

	As of June 2023		As of December 2022	
$ in millions	**Amount or Range**	**Weighted Average**	Amount or Range	Weighted Average
Corporate				
Level 3 assets	**$ 543**		$ 637	
Yield	**3.5% to 17.7%**	**8.5%**	4.1% to 26.9%	9.6%
Recovery rate	**2.0% to 95.0%**	**62.7%**	23.1% to 95.0%	66.0%
Duration (years)	**0.1 to 4.4**	**2.3**	1.6 to 3.3	2.6
Real estate				
Level 3 assets	**$ 490**		$ 785	
Yield	**3.0% to 20.0%**	**17.5%**	3.0% to 27.0%	16.1%
Recovery rate	**3.9% to 63.2%**	**54.4%**	3.6% to 66.2%	54.4%
Duration (years)	**0.3 to 6.6**	**1.3**	0.6 to 6.7	2.5
Other collateralized				
Level 3 assets	**$ 140**		$ 140	
Yield	**6.0% to 19.3%**	**9.1%**	5.8% to 12.7%	7.7%
Duration (years)	**2.0 to 2.4**	**2.2**	2.5 to 2.9	2.7
Other				
Level 3 assets	**$ 78**		$ 275	
Yield	**9.2% to 16.2%**	**12.2%**	9.4% to 10.0%	9.9%
Duration (years)	**0.2 to 5.2**	**2.3**	N/A	N/A

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 real estate loans is appropriate for valuing a specific real estate loan but may not be appropriate for valuing any other 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 June 2023 and December 2022. 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.
- The significant unobservable inputs for duration related to other loans as of December 2022 did not have a range (and there was no weighted average) as it related to a purchased portfolio of revolving loans with a single duration.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Beginning balance	**$ 1,787**	$ 2,491	**$ 1,837**	$ 2,354
Net realized gains/(losses)	**14**	27	**31**	76
Net unrealized gains/(losses)	**(76)**	(67)	**(79)**	(119)
Purchases	**44**	131	**78**	241
Sales	**(310)**	(42)	**(305)**	(41)
Settlements	**(69)**	(141)	**(160)**	(314)
Transfers into level 3	**–**	89	**–**	211
Transfers out of level 3	**(139)**	(141)	**(151)**	(61)
Ending balance	**$ 1,251**	$ 2,347	**$ 1,251**	$ 2,347

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Corporate				
Beginning balance	**$ 646**	$ 782	**$ 637**	$ 672
Net realized gains/(losses)	**8**	12	**16**	14
Net unrealized gains/(losses)	**(59)**	(18)	**(61)**	(13)
Purchases	**11**	124	**43**	148
Sales	**(41)**	(40)	**(46)**	(38)
Settlements	**(22)**	(32)	**(45)**	(68)
Transfers into level 3	**–**	–	**–**	23
Transfers out of level 3	**–**	(90)	**(1)**	–
Ending balance	**$ 543**	$ 738	**$ 543**	$ 738
Real estate				
Beginning balance	**$ 722**	$ 1,134	**$ 785**	$ 1,188
Net realized gains/(losses)	**5**	7	**9**	43
Net unrealized gains/(losses)	**(21)**	(42)	**(23)**	(93)
Purchases	**–**	5	**1**	76
Sales	**(40)**	–	**(40)**	(1)
Settlements	**(37)**	(64)	**(92)**	(188)
Transfers into level 3	**–**	–	**–**	23
Transfers out of level 3	**(139)**	(33)	**(150)**	(41)
Ending balance	**$ 490**	$ 1,007	**$ 490**	$ 1,007
Other collateralized				
Beginning balance	**$ 141**	$ 237	**$ 140**	$ 229
Net realized gains/(losses)	**–**	–	**–**	1
Net unrealized gains/(losses)	**–**	–	**1**	1
Purchases	**–**	2	**–**	2
Sales	**–**	(2)	**–**	(2)
Settlements	**(1)**	(23)	**(1)**	(26)
Transfers into level 3	**–**	89	**–**	99
Transfers out of level 3	**–**	(18)	**–**	(19)
Ending balance	**$ 140**	$ 285	**$ 140**	$ 285
Other				
Beginning balance	**$ 278**	$ 338	**$ 275**	$ 265
Net realized gains/(losses)	**1**	8	**6**	18
Net unrealized gains/(losses)	**4**	(7)	**4**	(14)
Purchases	**33**	–	**34**	15
Sales	**(229)**	–	**(219)**	–
Settlements	**(9)**	(22)	**(22)**	(32)
Transfers into level 3	**–**	–	**–**	66
Transfers out of level 3	**–**	–	**–**	(1)
Ending balance	**$ 78**	$ 317	**$ 78**	$ 317

Level 3 Rollforward Commentary for the Three Months Ended June 2023. The net realized and unrealized losses on level 3 loans of $62 million (reflecting $14 million of net realized gains and $76 million of net unrealized losses) for the three months ended June 2023 included gains/(losses) of $(71) million reported in other principal transactions and $9 million reported in interest income.

The drivers of net unrealized losses on level 3 loans for the three months ended June 2023 were not material.

There were no transfers into level 3 loans during the three months ended June 2023.

Transfers out of level 3 loans during the three months ended June 2023 reflected transfers of certain loans backed by real estate to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Level 3 Rollforward Commentary for the Six Months Ended June 2023. The net realized and unrealized losses on level 3 loans of $48 million (reflecting $31 million of net realized gains and $79 million of net unrealized losses) for the six months ended June 2023 included gains/(losses) of $(64) million reported in other principal transactions and $16 million reported in interest income.

The drivers of net unrealized losses on level 3 loans for the six months ended June 2023 were not material.

There were no transfers into level 3 loans during the six months ended June 2023.

Transfers out of level 3 loans during the six months ended June 2023 primarily reflected transfers of certain loans backed by real estate to level 2 (principally due to increased price transparency as a result of market evidence, including market transactions in these instruments).

Level 3 Rollforward Commentary for the Three Months Ended June 2022. The net realized and unrealized losses on level 3 loans of $40 million (reflecting $27 million of net realized gains and $67 million of net unrealized losses) for the three months ended June 2022 included gains/(losses) of $(50) million reported in other principal transactions and $10 million reported in interest income.

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

The drivers of both transfers into and transfers out of level 3 loans during the three months ended June 2022 were not material.

Level 3 Rollforward Commentary for the Six Months Ended June 2022. The net realized and unrealized losses on level 3 loans of $43 million (reflecting $76 million of net realized gains and $119 million of net unrealized losses) for the six months ended June 2022 included gains/(losses) of $(59) million reported in other principal transactions and $16 million reported in interest income.

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

The drivers of both transfers into and transfers out of level 3 loans during the six months ended June 2022 were not material.

Other Financial Assets and Liabilities

Fair Value 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.

$ in millions	Level 1	Level 2	Level 3	Total
As of June 2023				
Assets				
Resale agreements	**$ –**	**$ 199,607**	**$ –**	**$ 199,607**
Securities borrowed	**–**	**37,398**	**–**	**37,398**
Customer and other receivables	**–**	**23**	**–**	**23**
Other assets	**–**	**102**	**126**	**228**
Total	**$ –**	**$ 237,130**	**$ 126**	**$ 237,256**
Liabilities				
Deposits	**$ –**	**$ (14,818)**	**$ (2,889)**	**$ (17,707)**
Repurchase agreements	**–**	**(222,983)**	**–**	**(222,983)**
Securities loaned	**–**	**(8,351)**	**–**	**(8,351)**
Other secured financings	**–**	**(9,578)**	**(2,817)**	**(12,395)**
Unsecured borrowings:				
Short-term	**–**	**(42,000)**	**(4,822)**	**(46,822)**
Long-term	**–**	**(63,016)**	**(11,296)**	**(74,312)**
Other liabilities	**–**	**(542)**	**(73)**	**(615)**
Total	**$ –**	**$ (361,288)**	**$ (21,897)**	**$ (383,185)**
As of December 2022				
Assets				
Resale agreements	$ –	$ 225,117	$ –	$ 225,117
Securities borrowed	–	38,578	–	38,578
Customer and other receivables	–	25	–	25
Other assets	–	71	74	145
Total	$ –	$ 263,791	$ 74	$ 263,865
Liabilities				
Deposits	$ –	$ (13,003)	$ (2,743)	$ (15,746)
Repurchase agreements	–	(110,349)	–	(110,349)
Securities loaned	–	(4,372)	–	(4,372)
Other secured financings	–	(10,914)	(1,842)	(12,756)
Unsecured borrowings:				
Short-term	–	(35,641)	(4,090)	(39,731)
Long-term	–	(63,081)	(10,066)	(73,147)
Other liabilities	–	(74)	(85)	(159)
Total	$ –	$ (237,434)	$ (18,826)	$ (256,260)

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

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

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 June 2023 and December 2022.

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 June 2023:

- Yield: 6.4% to 11.4% (weighted average: 8.3%)
- Duration: 0.1 to 6.0 years (weighted average: 1.0 years)

As of December 2022:

- Yield: 4.5% to 9.4% (weighted average: 5.9%)
- Duration: 0.6 to 5.1 years (weighted average: 2.2 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 Assets and Liabilities. Substantially all of the firm's deposits, unsecured short- and long-term borrowings, and other assets and 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 assets and liabilities, these unobservable inputs are incorporated in the firm's derivative disclosures. See Note 12 for further information about other assets, 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 assets and liabilities accounted for at fair value.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Assets				
Beginning balance	**$ 104**	$ –	**$ 74**	$ –
Net unrealized gains/(losses)	**22**	–	**52**	–
Ending balance	**$ 126**	$ –	**$ 126**	$ –
Liabilities				
Beginning balance	**$ (20,238)**	$ (23,628)	**$ (18,826)**	$ (23,567)
Net realized gains/(losses)	**(97)**	(149)	**(170)**	(282)
Net unrealized gains/(losses)	**(133)**	2,911	**(893)**	4,778
Issuances	**(2,379)**	(3,651)	**(4,356)**	(7,576)
Settlements	**2,764**	4,205	**4,602**	7,402
Transfers into level 3	**(2,639)**	(885)	**(3,251)**	(2,037)
Transfers out of level 3	**825**	2,083	**997**	2,168
Ending balance	**$ (21,897)**	$ (19,114)	**$ (21,897)**	$ (19,114)

In the table above:

- Changes in fair value are presented for all other financial assets and liabilities that are classified in level 3 as of the end of the period.
- Net unrealized gains/(losses) relates to other financial assets and 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 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 other financial assets, increases are shown as positive amounts, while decreases are shown as negative amounts. For level 3 other financial liabilities, increases are shown as negative amounts, while decreases are shown as positive amounts.
- Level 3 other financial assets and 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.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Deposits				
Beginning balance	**$ (2,637)**	$ (3,244)	**$ (2,743)**	$ (3,613)
Net realized gains/(losses)	**–**	(3)	**1**	(7)
Net unrealized gains/(losses)	**(57)**	209	**(68)**	346
Issuances	**(104)**	(219)	**(221)**	(399)
Settlements	**155**	391	**376**	777
Transfers into level 3	**(251)**	(13)	**(252)**	(17)
Transfers out of level 3	**5**	90	**18**	124
Ending balance	**$ (2,889)**	$ (2,789)	**$ (2,889)**	$ (2,789)
Other secured financings				
Beginning balance	**$ (1,836)**	$ (2,589)	**$ (1,842)**	$ (2,566)
Net realized gains/(losses)	**(4)**	(2)	**(7)**	(5)
Net unrealized gains/(losses)	**(18)**	80	**(39)**	91
Issuances	**(236)**	(22)	**(558)**	(61)
Settlements	**459**	405	**613**	572
Transfers into level 3	**(1,617)**	–	**(1,509)**	(110)
Transfers out of level 3	**435**	716	**525**	667
Ending balance	**$ (2,817)**	$ (1,412)	**$ (2,817)**	$ (1,412)
Unsecured short-term borrowings				
Beginning balance	**$ (4,514)**	$ (7,028)	**$ (4,090)**	$ (7,829)
Net realized gains/(losses)	**(46)**	(63)	**(87)**	(100)
Net unrealized gains/(losses)	**(147)**	859	**(423)**	1,230
Issuances	**(1,254)**	(1,538)	**(2,255)**	(3,514)
Settlements	**1,301**	2,571	**2,091**	4,752
Transfers into level 3	**(338)**	(420)	**(186)**	(479)
Transfers out of level 3	**176**	410	**128**	731
Ending balance	**$ (4,822)**	$ (5,209)	**$ (4,822)**	$ (5,209)
Unsecured long-term borrowings				
Beginning balance	**$ (11,160)**	$ (10,670)	**$ (10,066)**	$ (9,413)
Net realized gains/(losses)	**(47)**	(81)	**(77)**	(170)
Net unrealized gains/(losses)	**71**	1,751	**(375)**	3,065
Issuances	**(785)**	(1,872)	**(1,322)**	(3,602)
Settlements	**849**	831	**1,522**	1,279
Transfers into level 3	**(433)**	(452)	**(1,304)**	(1,431)
Transfers out of level 3	**209**	867	**326**	646
Ending balance	**$ (11,296)**	$ (9,626)	**$ (11,296)**	$ (9,626)
Other liabilities				
Beginning balance	**$ (91)**	$ (97)	**$ (85)**	$ (146)
Net unrealized gains/(losses)	**18**	12	**12**	46
Settlements	**–**	7	**–**	22
Ending balance	**$ (73)**	$ (78)	**$ (73)**	$ (78)

Level 3 Rollforward Commentary for the Three Months Ended June 2023. The net realized and unrealized losses on level 3 other financial liabilities of $230 million (reflecting $97 million of net realized losses and $133 million of net unrealized losses) for the three months ended June 2023 included losses of $32 million reported in market making, $6 million reported in other principal transactions and $6 million reported in interest expense in the consolidated statements of earnings, and $186 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized losses on level 3 other financial liabilities for the three months ended June 2023 primarily reflected losses on certain hybrid financial instruments included in unsecured short-term borrowings (principally due to an increase in global equity prices).

Transfers into level 3 other financial liabilities during the three months ended June 2023 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 transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings and deposits from level 2 (in each case, principally due to reduced price transparency of certain volatility inputs used to value these instruments).

Transfers out of level 3 other financial liabilities during the three months ended June 2023 primarily reflected transfers of certain other secured financings to level 2 (principally due to increased price transparency of certain yield and duration inputs used to value these instruments) and 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 inputs used to value these instruments).

Level 3 Rollforward Commentary for the Six Months Ended June 2023. The net realized and unrealized losses on level 3 other financial liabilities of $1.06 billion (reflecting $170 million of net realized losses and $893 million of net unrealized losses) for the six months ended June 2023 included losses of $904 million reported in market making, $13 million reported in other principal transactions and $9 million reported in interest expense in the consolidated statements of earnings, and $137 million reported in debt valuation adjustment in the consolidated statements of comprehensive income.

The net unrealized losses on level 3 other financial liabilities for the six months ended June 2023 primarily reflected losses on certain hybrid financial instruments included in unsecured short- and long-term borrowings (principally due to an increase in global equity prices).

Transfers into level 3 other financial liabilities during the six months ended June 2023 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 transfers of certain hybrid financial instruments included in unsecured long- and short-term borrowings and deposits from level 2 (in each case, principally due to reduced price transparency of certain volatility inputs used to value these instruments).

Transfers out of level 3 other financial liabilities during the six months ended June 2023 primarily reflected transfers of certain other secured financings to level 2 (principally due to increased price transparency of certain yield and duration inputs used to value these instruments) and 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 inputs used to value these instruments).

Level 3 Rollforward Commentary for the Three Months Ended June 2022. The net realized and unrealized gains on level 3 other financial liabilities of $2.76 billion (reflecting $149 million of net realized losses and $2.91 billion of net unrealized gains) for the three months ended June 2022 included gains/(losses) of $2.34 billion reported in market making, $57 million reported in other principal transactions and $(4) million reported in interest expense in the consolidated statements of earnings, and $372 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 June 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 three months ended June 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 inputs used to value these instruments).

Transfers out of level 3 other financial liabilities during the three months ended June 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) 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).

Level 3 Rollforward Commentary for the Six Months Ended June 2022. The net realized and unrealized gains on level 3 other financial liabilities of $4.50 billion (reflecting $282 million of net realized losses and $4.78 billion of net unrealized gains) for the six months ended June 2022 included gains/(losses) of $3.79 billion reported in market making, $85 million reported in other principal transactions and $(7) million reported in interest expense in the consolidated statements of earnings, and $626 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 six months ended June 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 six months ended June 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 inputs used to value these instruments).

Transfers out of level 3 other financial liabilities during the six months ended June 2022 primarily reflected transfers of certain hybrid financial instruments included in unsecured short- and long-term borrowings and certain deposits to level 2 (in each case, 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).

Note 6.

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 June 2023		
Trading cash instruments	**$ 349,960**	**$ 143,391**
Derivatives	**50,369**	**50,937**
Total	**$ 400,329**	**$ 194,328**
As of December 2022		
Trading cash instruments	$ 241,832	$ 136,589
Derivatives	59,413	54,735
Total	$ 301,245	$ 191,324

See Note 5 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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Interest rates	**$ (808)**	$ (2,795)	**$ 1,574**	$ (4,656)
Credit	**302**	950	**649**	1,665
Currencies	**1,733**	4,098	**2,096**	8,252
Equities	**2,501**	2,535	**3,979**	4,588
Commodities	**623**	125	**1,486**	1,093
Total	**$ 4,351**	$ 4,913	**$ 9,784**	$ 10,942

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.

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. and non-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.

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 Fixed Income, Currency and Commodities (FICC) and Equities within Global Banking & Markets), and other principal transactions (for derivatives included in Investment banking fees and Other within Global Banking & Markets, as well as derivatives in Asset & Wealth Management) in the consolidated statements of earnings. For each of the three and six months ended June 2023 and June 2022, substantially all of the firm's derivatives were included in Global Banking & Markets.

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 June 2023		As of December 2022	
$ in millions	**Derivative Assets**	**Derivative Liabilities**	Derivative Assets	Derivative Liabilities
Not accounted for as hedges				
Exchange-traded	**$ 435**	**$ 901**	$ 675	$ 1,385
OTC-cleared	**72,701**	**71,440**	74,297	72,979
Bilateral OTC	**184,978**	**164,528**	195,052	174,687
Total interest rates	**258,114**	**236,869**	270,024	249,051
OTC-cleared	**2,069**	**2,319**	1,516	1,802
Bilateral OTC	**12,343**	**9,770**	10,751	9,478
Total credit	**14,412**	**12,089**	12,267	11,280
Exchange-traded	**94**	**19**	1,041	22
OTC-cleared	**471**	**688**	520	589
Bilateral OTC	**96,512**	**97,664**	102,301	111,276
Total currencies	**97,077**	**98,371**	103,862	111,887
Exchange-traded	**7,484**	**7,943**	9,225	9,542
OTC-cleared	**483**	**550**	698	838
Bilateral OTC	**14,603**	**13,177**	30,017	22,745
Total commodities	**22,570**	**21,670**	39,940	33,125
Exchange-traded	**27,533**	**29,125**	26,302	26,607
OTC-cleared	**98**	**160**	685	19
Bilateral OTC	**27,204**	**36,935**	23,574	30,157
Total equities	**54,835**	**66,220**	50,561	56,783
Subtotal	**447,008**	**435,219**	476,654	462,126
Accounted for as hedges				
OTC-cleared	**1**	**–**	–	–
Bilateral OTC	**295**	**14**	335	11
Total interest rates	**296**	**14**	335	11
OTC-cleared	**–**	**48**	29	29
Bilateral OTC	**64**	**246**	53	256
Total currencies	**64**	**294**	82	285
Subtotal	**360**	**308**	417	296
Total gross fair value	**$ 447,368**	**$ 435,527**	$ 477,071	$ 462,422
Offset in the consolidated balance sheets				
Exchange-traded	**$ (30,535)**	**$ (30,535)**	$ (31,229)	$ (31,229)
OTC-cleared	**(74,282)**	**(74,282)**	(75,349)	(75,349)
Bilateral OTC	**(237,617)**	**(237,617)**	(254,304)	(254,304)
Counterparty netting	**(342,434)**	**(342,434)**	(360,882)	(360,882)
OTC-cleared	**(1,336)**	**(385)**	(1,388)	(406)
Bilateral OTC	**(53,229)**	**(41,771)**	(55,388)	(46,399)
Cash collateral netting	**(54,565)**	**(42,156)**	(56,776)	(46,805)
Total amounts offset	**$ (396,999)**	**$ (384,590)**	$ (417,658)	$ (407,687)
Included in the consolidated balance sheets				
Exchange-traded	**$ 5,011**	**$ 7,453**	$ 6,014	$ 6,327
OTC-cleared	**205**	**538**	1,008	501
Bilateral OTC	**45,153**	**42,946**	52,391	47,907
Total	**$ 50,369**	**$ 50,937**	$ 59,413	$ 54,735
Not offset in the consolidated balance sheets				
Cash collateral	**$ (171)**	**$ (1,525)**	$ (298)	$ (1,887)
Securities collateral	**(14,693)**	**(4,433)**	(15,229)	(4,329)
Total	**$ 35,505**	**$ 44,979**	$ 43,886	$ 48,519

	Notional Amounts as of	
$ in millions	**June 2023**	December 2022
Not accounted for as hedges		
Exchange-traded	**$ 4,272,186**	$ 4,241,937
OTC-cleared	**18,654,949**	13,104,682
Bilateral OTC	**12,235,712**	11,137,127
Total interest rates	**35,162,847**	28,483,746
Exchange-traded	**679**	369
OTC-cleared	**561,629**	529,543
Bilateral OTC	**670,302**	577,542
Total credit	**1,232,610**	1,107,454
Exchange-traded	**9,571**	9,012
OTC-cleared	**246,054**	150,561
Bilateral OTC	**6,506,658**	5,304,069
Total currencies	**6,762,283**	5,463,642
Exchange-traded	**329,065**	341,526
OTC-cleared	**3,210**	3,188
Bilateral OTC	**219,883**	255,208
Total commodities	**552,158**	599,922
Exchange-traded	**1,567,934**	1,107,659
OTC-cleared	**1,526**	1,639
Bilateral OTC	**1,209,473**	1,026,736
Total equities	**2,778,933**	2,136,034
Subtotal	**46,488,831**	37,790,798
Accounted for as hedges		
OTC-cleared	**380,827**	257,739
Bilateral OTC	**3,058**	3,156
Total interest rates	**383,885**	260,895
OTC-cleared	**1,315**	2,048
Bilateral OTC	**9,043**	7,701
Total currencies	**10,358**	9,749
Subtotal	**394,243**	270,644
Total notional amounts	**$ 46,883,074**	$ 38,061,442

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 $7.35 billion as of June 2023 and $10.08 billion as of December 2022, and derivative liabilities of $12.86 billion as of June 2023 and $12.71 billion as of December 2022, 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.

OTC Derivatives

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

$ in millions	Less than 1 Year	1 - 5 Years	Greater than 5 Years	Total
As of June 2023				
Assets				
Interest rates	**$ 7,157**	**$14,499**	**$ 50,399**	**$ 72,055**
Credit	**1,644**	**3,179**	**2,257**	**7,080**
Currencies	**12,550**	**8,269**	**6,487**	**27,306**
Commodities	**5,596**	**3,097**	**1,095**	**9,788**
Equities	**5,503**	**3,800**	**1,877**	**11,180**
Counterparty netting in tenors	**(3,657)**	**(2,768)**	**(3,590)**	**(10,015)**
Subtotal	**$ 28,793**	**$30,076**	**$ 58,525**	**$117,394**
Cross-tenor counterparty netting				**(17,471)**
Cash collateral netting				**(54,565)**
Total OTC derivative assets				**$ 45,358**
Liabilities				
Interest rates	**$ 8,653**	**$21,197**	**$ 20,213**	**$ 50,063**
Credit	**848**	**2,768**	**1,141**	**4,757**
Currencies	**13,681**	**7,726**	**7,498**	**28,905**
Commodities	**4,037**	**3,287**	**1,107**	**8,431**
Equities	**8,780**	**8,804**	**3,385**	**20,969**
Counterparty netting in tenors	**(3,657)**	**(2,768)**	**(3,590)**	**(10,015)**
Subtotal	**$ 32,342**	**$41,014**	**$ 29,754**	**$103,110**
Cross-tenor counterparty netting				**(17,470)**
Cash collateral netting				**(42,156)**
Total OTC derivative liabilities				**$ 43,484**
As of December 2022				
Assets				
Interest rates	$ 5,509	$16,963	$ 53,943	$ 76,415
Credit	921	2,622	2,142	5,685
Currencies	12,284	7,819	7,085	27,188
Commodities	10,525	7,513	2,574	20,612
Equities	5,346	4,007	1,782	11,135
Counterparty netting in tenors	(2,661)	(3,942)	(4,830)	(11,433)
Subtotal	$ 31,924	$34,982	$ 62,696	$129,602
Cross-tenor counterparty netting				(19,427)
Cash collateral netting				(56,776)
Total OTC derivative assets				$ 53,399
Liabilities				
Interest rates	$ 9,351	$23,589	$ 21,467	$ 54,407
Credit	993	2,635	1,071	4,699
Currencies	18,987	8,736	8,712	36,435
Commodities	6,400	6,135	945	13,480
Equities	7,629	7,249	2,174	17,052
Counterparty netting in tenors	(2,661)	(3,942)	(4,830)	(11,433)
Subtotal	$ 40,699	$44,402	$ 29,539	$114,640
Cross-tenor counterparty netting				(19,427)
Cash collateral netting				(46,805)
Total OTC derivative liabilities				$ 48,408

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.

See Note 4 for an overview of the firm's fair value measurement policies, valuation techniques and significant inputs used to determine the fair value of derivatives, and Note 5 for information about derivatives within the fair value hierarchy.

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.

- **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 June 2023, written credit derivatives had a total gross notional amount of $582.09 billion and purchased credit derivatives had a total gross notional amount of $650.52 billion, for total net notional purchased protection of $68.43 billion. As of December 2022, written credit derivatives had a total gross notional amount of $528.31 billion and purchased credit derivatives had a total gross notional amount of $579.14 billion, for total net notional purchased protection of $50.83 billion. The firm's written and purchased credit derivatives primarily consist of credit default swaps.

The table below presents information about credit derivatives.

	Credit Spread on Underlier (basis points)				
$ in millions	0 - 250	251 - 500	501 - 1,000	Greater than 1,000	Total
As of June 2023					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	**$146,464**	**$12,341**	**$ 789**	**$ 4,136**	**$163,730**
1 - 5 years	**338,970**	**19,602**	**8,673**	**8,530**	**375,775**
Greater than 5 years	**39,357**	**2,198**	**736**	**291**	**42,582**
Total	**$524,791**	**$34,141**	**$10,198**	**$ 12,957**	**$582,087**
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	**$430,992**	**$24,992**	**$ 8,908**	**$ 11,324**	**$476,216**
Other	**$158,602**	**$11,542**	**$ 1,721**	**$ 2,442**	**$174,307**
Fair Value of Written Credit Derivatives					
Asset	**$ 7,845**	**$ 494**	**$ 195**	**$ 117**	**$ 8,651**
Liability	**701**	**907**	**591**	**3,080**	**5,279**
Net asset/(liability)	**$ 7,144**	**$ (413)**	**$ (396)**	**$ (2,963)**	**$ 3,372**
As of December 2022					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	$108,703	$12,166	$ 1,879	$ 4,135	$126,883
1 - 5 years	306,484	28,188	13,724	9,092	357,488
Greater than 5 years	39,302	2,916	1,416	305	43,939
Total	$454,489	$43,270	$17,019	$ 13,532	$528,310
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	$372,360	$33,149	$14,817	$ 11,757	$432,083
Other	$128,828	$13,211	$ 2,615	$ 2,407	$147,061
Fair Value of Written Credit Derivatives					
Asset	$ 5,405	$ 460	$ 132	$ 84	$ 6,081
Liability	681	1,081	1,027	2,673	5,462
Net asset/(liability)	$ 4,724	$ (621)	$ (895)	$ (2,589)	$ 619

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.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
CVA, net of hedges	**$ (74)**	$ 217	**$ (173)**	$ 300
FVA, net of hedges	**61**	(122)	**75**	(391)
Total	**$ (13)**	$ 95	**$ (98)**	$ (91)

Bifurcated Embedded Derivatives

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

	As of	
$ in millions	**June 2023**	December 2022
Fair value of assets	**$ 424**	$ 288
Fair value of liabilities	**(245)**	(392)
Net asset/(liability)	**$ 179**	$ (104)
Notional amount	**$ 7,589**	$ 8,892

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.

	As of	
$ in millions	**June 2023**	December 2022
Net derivative liabilities under bilateral agreements	**$ 29,596**	$ 33,059
Collateral posted	**$ 23,667**	$ 27,657
Additional collateral or termination payments:		
One-notch downgrade	**$ 286**	$ 343
Two-notch downgrade	**$ 1,201**	$ 1,115

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, certain fixed-rate certificates of deposit and certain U.S. and non-U.S. government securities classified as available-for-sale, (ii) foreign currency forward contracts used to manage the foreign exchange risk of certain securities classified as available-for-sale and (iii) foreign currency forward contracts and foreign currency-denominated debt used to manage foreign exchange risk on the firm's net investment in certain non-U.S. operations.

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 of certain U.S. and non-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., Secured Overnight Financing Rate (SOFR), Overnight Index Swap Rate or Sterling Overnight Index Average), 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%.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Investments				
Interest rate hedges	**$ 271**	$ (55)	**$ 181**	$ (55)
Hedged investments	**(263)**	52	**(177)**	52
Gains/(losses)	**$ 8**	$ (3)	**$ 4**	$ (3)
Borrowings and deposits				
Interest rate hedges	**$ (2,560)**	$ (6,067)	**$ 152**	$(14,809)
Hedged borrowings and deposits	**2,431**	5,843	**(416)**	14,538
Gains/(losses)	**$ (129)**	$ (224)	**$ (264)**	$ (271)

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 June 2023		
Assets		
Investments	**$ 13,124**	**$ (486)**
Liabilities		
Deposits	**$ 4,087**	**$ (210)**
Unsecured short-term borrowings	**$ 11,739**	**$ (182)**
Unsecured long-term borrowings	**$ 132,822**	**$ (14,609)**
As of December 2022		
Assets		
Investments	$ 10,804	$ (350)
Liabilities		
Deposits	$ 6,311	$ (280)
Unsecured short-term borrowings	$ 7,295	$ (47)
Unsecured long-term borrowings	$ 151,215	$ (15,134)

In the table above:

- Cumulative hedging adjustment included $(5.96) billion as of June 2023 and $5.09 billion as of December 2022 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 $13.84 billion as of June 2023 and $11.49 billion as of December 2022.

In addition, cumulative hedging adjustments for items no longer designated in a hedging relationship were $41 million as of June 2023 and $111 million as of December 2022 and were primarily related to unsecured long-term borrowings.

The firm designates foreign currency 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 gross and net gains/(losses) on hedges and the related hedged available-for-sale securities were not material for the three months ended June 2023 and were $10 million (reflecting a loss of $111 million related to hedges and a gain of $121 million on the related hedged available-for-sale securities) for the six months ended June 2023. The net gains/(losses) on hedges and related available-for-sale securities were $(14) million (reflecting a gain of $183 million related to hedges and a loss of $197 million on the related hedged available-for-sale securities) for the three months ended June 2022 and were $(28) million (reflecting a gain of $236 million related to hedges and a loss of $264 million on the related hedged available-for-sale securities) for the six months ended June 2022.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Hedges:				
Foreign currency forward contract	**$ (20)**	$ 1,104	**$ (137)**	$ 1,213
Foreign currency-denominated debt	**$ 23**	$ 428	**$ (208)**	$ 596

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 six months ended June 2023 and June 2022.

The firm had designated $26.72 billion as of June 2023 and $21.46 billion as of December 2022 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.

	As of	
$ in millions	**June 2023**	December 2022
Equity securities, at fair value	**$ 13,758**	$ 14,892
Debt instruments, at fair value	**13,884**	14,075
Available-for-sale securities, at fair value	**50,113**	49,234
Investments, at fair value	**77,755**	78,201
Held-to-maturity securities	**59,079**	51,662
Equity-method investments	**737**	766
Total investments	**$ 137,571**	$ 130,629

See Note 4 for an overview of the firm's fair value measurement policies, valuation techniques and significant inputs used to determine the fair value of investments, and Note 5 for information about investments within the fair value hierarchy.

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.

	As of	
$ in millions	**June 2023**	December 2022
Equity securities, at fair value	**$ 13,758**	$ 14,892
Equity Type		
Public equity	**8%**	13%
Private equity	**92%**	87%
Total	**100%**	100%
Asset Class		
Corporate	**70%**	71%
Real estate	**30%**	29%
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 $5.26 billion as of June 2023 and $5.35 billion as of December 2022. Gains/(losses) recognized as a result of changes in the fair value of equity securities for which the fair value option was elected were $(307) million for the three months ended June 2023, $116 million for the three months ended June 2022, $(412) million for the six months ended June 2023 and $(71) million for the six months ended June 2022. These gains/(losses) are included in other principal transactions.
- Equity securities, at fair value included $1.25 billion as of June 2023 and $1.30 billion as of December 2022 of investments in funds that are measured at NAV.

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.

	As of	
$ in millions	**June 2023**	December 2022
Corporate debt securities	**$ 9,889**	$ 10,098
Securities backed by real estate	**896**	1,003
Money market instruments	**835**	1,005
Other	**2,264**	1,969
Total	**$ 13,884**	$ 14,075

In the table above:

- Substantially all of the firm's money market instruments consist of time deposits.
- Other included $1.81 billion as of June 2023 and $1.64 billion as of December 2022 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.

The firm's investments in funds at NAV includes investments in "covered funds" as defined in the Volcker Rule of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). The firm was required to achieve conformance with the covered fund provisions of the Volcker Rule by July 2023, in accordance with the additional extension received from the Board of Governors of the Federal Reserve System (FRB). The firm achieved such conformance in July 2023.

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 June 2023		
Private equity funds	**$ 835**	**$ 581**
Credit funds	**1,812**	**260**
Hedge funds	**60**	**–**
Real estate funds	**356**	**138**
Total	**$ 3,063**	**$ 979**
As of December 2022		
Private equity funds	$ 815	$ 647
Credit funds	1,645	303
Hedge funds	68	–
Real estate funds	413	138
Total	$ 2,941	$ 1,088

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.

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

$ in millions	Amortized Cost	Fair Value	Weighted Average Yield
As of June 2023			
Less than 1 year	**$ 18,999**	**$ 18,491**	**0.38%**
1 year to 5 years	**30,828**	**28,917**	**1.02%**
5 years to 10 years	**536**	**490**	**1.86%**
Total U.S. government obligations	**50,363**	**47,898**	**0.78%**
Less than 1 year	**10**	**10**	**0.01%**
1 year to 5 years	**1,617**	**1,309**	**0.10%**
5 years to 10 years	**1,121**	**896**	**0.84%**
Total non-U.S. government obligations	**2,748**	**2,215**	**0.40%**
Total available-for-sale securities	**$ 53,111**	**$ 50,113**	**0.76%**
As of December 2022			
Less than 1 year	$ 8,103	$ 7,861	0.37%
1 year to 5 years	41,479	38,706	0.74%
5 years to 10 years	538	488	1.86%
Total U.S. government obligations	50,120	47,055	0.69%
1 year to 5 years	10	10	0.27%
5 years to 10 years	2,616	2,169	0.40%
Total non-U.S. government obligations	2,626	2,179	0.40%
Total available-for-sale securities	$ 52,746	$ 49,234	0.68%

In the table above:

- 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 $3.00 billion as of June 2023 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 not material and the gross unrealized losses included in accumulated other comprehensive income/(loss) were $3.52 billion as of December 2022 and primarily related to U.S. government obligations in a continuous unrealized loss position for more than a year. Net unrealized gains/(losses) included in other comprehensive income/(loss) were $(52) million ($(24) million, net of tax) for the three months ended June 2023, $(589) million ($(441) million, net of tax) for the three months ended June 2022, $514 million ($403 million, net of tax) for the six months ended June 2023 and $(2.40) billion ($(1.80) billion, net of tax) for the six months ended June 2022.
- Substantially all available-for-sale securities were classified in level 1 of the fair value hierarchy as of both June 2023 and December 2022.
- 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 six months ended June 2023 or June 2022. 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 six months ended June 2023 or June 2022.

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Gross realized gains	**$ –**	$ –	**$ 6**	$ –
Gross realized losses	**–**	–	**–**	–
Gains/(losses)	**$ –**	$ –	**$ 6**	$ –
Proceeds from sales	**$ 169**	$ 1	**$ 2,621**	$ 2

In the table above, the specific identification method is used to determine realized gains on available-for-sale securities. Such amounts were reclassified from accumulated other comprehensive income/(loss) to other principal transactions in the consolidated statements of earnings.

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.

$ in millions	Amortized Cost	Fair Value	Weighted Average Yield
As of June 2023			
Less than 1 year	**$ 11,585**	**$ 11,367**	**2.54%**
1 year to 5 years	**44,799**	**43,416**	**3.32%**
5 years to 10 years	**2,471**	**2,379**	**3.43%**
Total government obligations	**58,855**	**57,162**	**3.17%**
5 years to 10 years	**3**	**3**	**7.20%**
Greater than 10 years	**221**	**220**	**5.06%**
Total securities backed by real estate	**224**	**223**	**5.10%**
Total held-to-maturity securities	**$ 59,079**	**$ 57,385**	**3.18%**
As of December 2022			
Less than 1 year	$ 5,319	$ 5,282	2.98%
1 year to 5 years	45,154	43,852	3.00%
5 years to 10 years	1,026	966	2.89%
Total government obligations	51,499	50,100	2.99%
5 years to 10 years	2	2	5.63%
Greater than 10 years	161	158	3.18%
Total securities backed by real estate	163	160	3.24%
Total held-to-maturity securities	$ 51,662	$ 50,260	2.99%

In the table above:

- Substantially all of the government obligations consist of U.S. government obligations.
- 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 and 5. Had these securities been included in the firm's fair value hierarchy, 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 June 2023 and December 2022.
- 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.
- The gross unrealized gains were not material as of both June 2023 and December 2022. The gross unrealized losses were $1.70 billion as of June 2023 and $1.44 billion as of December 2022.
- 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 six months ended June 2023 or June 2022.

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.

$ in millions	Amortized Cost	Fair Value	Held For Sale	Total
As of June 2023				
Loan Type				
Corporate	**$ 35,309**	**$ 975**	**$ 1,961**	**$ 38,245**
Commercial real estate	**25,392**	**846**	**1,826**	**28,064**
Residential real estate	**19,558**	**4,177**	**1**	**23,736**
Securities-based	**15,707**	**–**	**–**	**15,707**
Other collateralized	**52,771**	**800**	**316**	**53,887**
Consumer:				
Installment	**4,890**	**–**	**244**	**5,134**
Credit cards	**16,879**	**–**	**–**	**16,879**
Other	**1,369**	**138**	**206**	**1,713**
Total loans, gross	**171,875**	**6,936**	**4,554**	**183,365**
Allowance for loan losses	**(5,232)**	**–**	**–**	**(5,232)**
Total loans	**$ 166,643**	**$ 6,936**	**$ 4,554**	**$ 178,133**
As of December 2022				
Loan Type				
Corporate	$ 36,822	$ 996	$ 2,317	$ 40,135
Commercial real estate	26,222	1,146	1,511	28,879
Residential real estate	18,523	4,511	1	23,035
Securities-based	16,671	–	–	16,671
Other collateralized	50,473	716	513	51,702
Consumer:				
Installment	6,326	–	–	6,326
Credit cards	15,820	–	–	15,820
Other	1,723	286	252	2,261
Total loans, gross	172,580	7,655	4,594	184,829
Allowance for loan losses	(5,543)	–	–	(5,543)
Total loans	$ 167,037	$ 7,655	$ 4,594	$ 179,286

In the table above:

- 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 June 2023 and December 2022.
- During the first half of 2023, the firm completed the sale of substantially all of the Marcus installment loans portfolio. As a result, the firm recognized net revenues of approximately $(370) million (including a gain of approximately $100 million in the second quarter of 2023), which was more than offset by a related reduction in reserves of approximately $440 million in provision for credit losses.
- Substantially all loans had floating interest rates as of both June 2023 and December 2022.

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 are secured (typically by a senior lien on the assets of the borrower) or unsecured, depending on the loan purpose, the risk profile of the borrower and other factors.
- **Commercial Real Estate.** Commercial real estate loans includes originated loans 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 to wealth management clients and to clients who warehouse assets that are directly or indirectly secured by residential real estate. In addition, residential real estate includes loans purchased by the firm.
- **Securities-Based.** Securities-based loans includes loans that are secured by stocks, bonds, mutual funds, and exchange-traded funds. These loans are primarily extended to the firm's wealth management clients and used for purposes other than purchasing, carrying or trading margin stocks. Securities-based loans require borrowers to post additional collateral based on changes in the underlying collateral's fair value.
- **Other Collateralized.** Other collateralized loans includes loans that are backed by specific collateral (other than securities and real estate). Such loans are extended to clients who warehouse assets that are directly or indirectly secured by corporate loans, consumer loans and other assets. Other collateralized loans also includes loans to investment funds (managed by third parties) that are collateralized by capital commitments of the funds' investors or assets held by the fund, as well as other secured loans extended to the firm's wealth management clients.
- **Installment.** Installment loans are unsecured loans originated by the firm.
- **Credit Cards.** Credit card loans are loans made pursuant to revolving lines of credit issued to consumers by the firm.
- **Other.** Other loans includes unsecured loans extended to wealth management clients and unsecured consumer and credit card loans purchased by the firm.

See Note 4 for an overview of the firm’s fair value measurement policies, valuation techniques and significant inputs used to determine the fair value of loans, and Note 5 for information about loans within the fair value hierarchy.

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 securities-based, real estate, other collateralized 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. Beginning in the first quarter of 2023, the firm also takes into consideration collateral received or other credit support arrangements when determining an internal credit rating on collateralized loans, as management believes that this methodology better reflects the credit quality of the underlying loans. In the table below, prior period amounts have been conformed to reflect the current methodology. The impact to December 2022 was an increase in loans classified as investment-grade and a decrease in loans classified as non-investment-grade of $25.0 billion in real estate (warehouse loans) and other collateralized loans. For consumer loans and for loans that are not assigned an internal credit rating, the firm reviews certain key metrics, including, but not limited to, the Fair Isaac Corporation (FICO) credit scores, delinquency status, collateral value and other risk factors.

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.

$ in millions	Investment-Grade	Non-Investment-Grade	Other Metrics/Unrated	Total
As of June 2023				
Accounting Method				
Amortized cost	**$ 88,942**	**$ 54,065**	**$ 28,868**	**$ 171,875**
Fair value	**2,172**	**2,406**	**2,358**	**6,936**
Held for sale	**666**	**3,346**	**542**	**4,554**
Total	**$ 91,780**	**$ 59,817**	**$ 31,768**	**$ 183,365**
Loan Type				
Corporate	**$ 9,851**	**$ 28,373**	**$ 21**	**$ 38,245**
Real estate:				
Commercial	**11,858**	**15,903**	**303**	**28,064**
Residential	**12,773**	**5,213**	**5,750**	**23,736**
Securities-based	**12,043**	**639**	**3,025**	**15,707**
Other collateralized	**44,415**	**9,177**	**295**	**53,887**
Consumer:				
Installment	**–**	**–**	**5,134**	**5,134**
Credit cards	**–**	**–**	**16,879**	**16,879**
Other	**840**	**512**	**361**	**1,713**
Total	**$ 91,780**	**$ 59,817**	**$ 31,768**	**$ 183,365**
Secured	**90%**	**92%**	**29%**	**80%**
Unsecured	**10%**	**8%**	**71%**	**20%**
Total	**100%**	**100%**	**100%**	**100%**
As of December 2022				
Accounting Method				
Amortized cost	$ 88,497	$ 55,122	$ 28,961	$ 172,580
Fair value	2,116	2,968	2,571	7,655
Held for sale	557	3,991	46	4,594
Total	$ 91,170	$ 62,081	$ 31,578	$ 184,829
Loan Type				
Corporate	$ 10,200	$ 29,935	$ –	$ 40,135
Real estate:				
Commercial	11,922	16,822	135	28,879
Residential	11,994	5,670	5,371	23,035
Securities-based	12,901	764	3,006	16,671
Other collateralized	43,093	8,291	318	51,702
Consumer:				
Installment	–	–	6,326	6,326
Credit cards	–	–	15,820	15,820
Other	1,060	599	602	2,261
Total	$ 91,170	$ 62,081	$ 31,578	$ 184,829
Secured	89%	90%	27%	79%
Unsecured	11%	10%	73%	21%
Total	100%	100%	100%	100%

In the table above:

- Substantially all residential real estate, securities-based, other collateralized and other loans included in the other metrics/unrated category consists of loans where the firm uses other key metrics to assess the borrower's credit quality, such as loan-to-value ratio, delinquency status, collateral value, expected cash flows, 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 91% of loans as of June 2023 and 93% of loans as of December 2022 that were rated pass/non-criticized.

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 June 2023			
$ in millions	Investment-Grade	Non-Investment-Grade	Other Metrics/Unrated	Total
2023	**$ 702**	**$ 707**	**$ 3**	**$ 1,412**
2022	**2,206**	**3,372**	**–**	**5,578**
2021	**1,371**	**4,208**	**–**	**5,579**
2020	**415**	**2,472**	**–**	**2,887**
2019	**189**	**2,440**	**–**	**2,629**
2018 or earlier	**448**	**3,420**	**–**	**3,868**
Revolving	**4,109**	**9,247**	**–**	**13,356**
Corporate	**9,440**	**25,866**	**3**	**35,309**
2023	**349**	**274**	**–**	**623**
2022	**833**	**3,691**	**–**	**4,524**
2021	**712**	**3,447**	**–**	**4,159**
2020	**428**	**1,359**	**–**	**1,787**
2019	**371**	**1,002**	**–**	**1,373**
2018 or earlier	**924**	**960**	**–**	**1,884**
Revolving	**7,807**	**3,235**	**–**	**11,042**
Commercial real estate	**11,424**	**13,968**	**–**	**25,392**
2023	**504**	**208**	**425**	**1,137**
2022	**1,327**	**802**	**1,304**	**3,433**
2021	**892**	**960**	**1,366**	**3,218**
2020	**4**	**23**	**85**	**112**
2019	**7**	**–**	**94**	**101**
2018 or earlier	**18**	**32**	**266**	**316**
Revolving	**9,071**	**2,170**	**–**	**11,241**
Residential real estate	**11,823**	**4,195**	**3,540**	**19,558**
2023	**8**	**–**	**–**	**8**
2022	**5**	**–**	**–**	**5**
2019	**7**	**–**	**–**	**7**
2018 or earlier	**1**	**298**	**–**	**299**
Revolving	**12,022**	**341**	**3,025**	**15,388**
Securities-based	**12,043**	**639**	**3,025**	**15,707**
2023	**4,674**	**796**	**34**	**5,504**
2022	**3,369**	**522**	**87**	**3,978**
2021	**2,023**	**1,479**	**123**	**3,625**
2020	**731**	**679**	**33**	**1,443**
2019	**597**	**79**	**11**	**687**
2018 or earlier	**575**	**270**	**6**	**851**
Revolving	**31,446**	**5,237**	**–**	**36,683**
Other collateralized	**43,415**	**9,062**	**294**	**52,771**
2023	**16**	**31**	**–**	**47**
2022	**47**	**88**	**–**	**135**
2021	**17**	**123**	**–**	**140**
2020	**–**	**21**	**233**	**254**
2019	**–**	**7**	**–**	**7**
2018 or earlier	**–**	**–**	**4**	**4**
Revolving	**717**	**65**	**–**	**782**
Other	**797**	**335**	**237**	**1,369**
Total	**$ 88,942**	**$ 54,065**	**$ 7,099**	**$ 150,106**
Percentage of total	**59%**	**36%**	**5%**	**100%**

	As of December 2022			
$ in millions	Investment-Grade	Non-Investment-Grade	Other Metrics/Unrated	Total
2022	$ 2,607	$ 4,042	$ 2	$ 6,651
2021	1,669	4,273	–	5,942
2020	684	2,595	–	3,279
2019	209	2,779	–	2,988
2018	759	1,911	–	2,670
2017 or earlier	508	2,329	–	2,837
Revolving	3,709	8,746	–	12,455
Corporate	10,145	26,675	2	36,822
2022	805	3,900	2	4,707
2021	771	3,460	–	4,231
2020	407	1,740	–	2,147
2019	480	1,267	–	1,747
2018	212	469	–	681
2017 or earlier	1,238	797	11	2,046
Revolving	7,660	3,003	–	10,663
Commercial real estate	11,573	14,636	13	26,222
2022	1,493	833	1,307	3,633
2021	1,263	888	1,357	3,508
2020	8	6	89	103
2019	7	–	99	106
2018	10	50	138	198
2017 or earlier	31	10	142	183
Revolving	8,065	2,727	–	10,792
Residential real estate	10,877	4,514	3,132	18,523
2022	5	–	–	5
2018	1	–	–	1
2017 or earlier	–	291	–	291
Revolving	12,895	473	3,006	16,374
Securities-based	12,901	764	3,006	16,671
2022	4,556	751	113	5,420
2021	3,339	1,098	146	4,583
2020	1,871	701	36	2,608
2019	523	79	12	614
2018	545	108	6	659
2017 or earlier	487	108	–	595
Revolving	30,669	5,323	2	35,994
Other collateralized	41,990	8,168	315	50,473
2022	44	105	–	149
2021	17	162	–	179
2020	–	29	262	291
2019	–	10	–	10
2017 or earlier	–	–	5	5
Revolving	950	59	80	1,089
Other	1,011	365	347	1,723
Total	$ 88,497	$ 55,122	$ 6,815	$ 150,434
Percentage of total	59%	37%	4%	100%

In the tables above, revolving loans which converted to term loans were $539 million as of June 2023 and $725 million as of December 2022, and primarily included other collateralized loans.

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.

$ in millions	Greater than or equal to 660	Less than 660	Total
As of June 2023			
2023	**$ 2,728**	**$ 150**	**$ 2,878**
2022	**1,837**	**156**	**1,993**
2021	**13**	**3**	**16**
2020	**1**	**1**	**2**
2019	**–**	**1**	**1**
2018 or earlier	**–**	**–**	**–**
Installment	**4,579**	**311**	**4,890**
Credit cards	**11,231**	**5,648**	**16,879**
Total	**$ 15,810**	**$ 5,959**	**$ 21,769**
Percentage of total:			
Installment	**94%**	**6%**	**100%**
Credit cards	**67%**	**33%**	**100%**
Total	**73%**	**27%**	**100%**
As of December 2022			
2022	$ 4,349	$ 242	$ 4,591
2021	1,080	109	1,189
2020	251	23	274
2019	160	23	183
2018	70	13	83
2017 or earlier	5	1	6
Installment	5,915	411	6,326
Credit cards	10,762	5,058	15,820
Total	$ 16,677	$ 5,469	$ 22,146
Percentage of total:			
Installment	94%	6%	100%
Credit cards	68%	32%	100%
Total	75%	25%	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.

$ in millions	Carrying Value	Americas	EMEA	Asia	Total
As of June 2023					
Corporate	**$ 38,245**	**60%**	**31%**	**9%**	**100%**
Commercial real estate	**28,064**	**79%**	**17%**	**4%**	**100%**
Residential real estate	**23,736**	**95%**	**4%**	**1%**	**100%**
Securities-based	**15,707**	**78%**	**21%**	**1%**	**100%**
Other collateralized	**53,887**	**86%**	**12%**	**2%**	**100%**
Consumer:					
Installment	**5,134**	**100%**	**–**	**–**	**100%**
Credit cards	**16,879**	**100%**	**–**	**–**	**100%**
Other	**1,713**	**88%**	**12%**	**–**	**100%**
Total	**$183,365**	**82%**	**15%**	**3%**	**100%**
As of December 2022					
Corporate	$ 40,135	57%	34%	9%	100%
Commercial real estate	28,879	79%	16%	5%	100%
Residential real estate	23,035	96%	3%	1%	100%
Securities-based	16,671	83%	15%	2%	100%
Other collateralized	51,702	86%	12%	2%	100%
Consumer:					
Installment	6,326	100%	–	–	100%
Credit cards	15,820	100%	–	–	100%
Other	2,261	89%	11%	–	100%
Total	$184,829	81%	15%	4%	100%

In the table above:

- EMEA represents Europe, Middle East and Africa.
- The top five industry concentrations for corporate loans as of June 2023 were 26% for technology, media & telecommunications, 18% for diversified industrials, 12% for real estate, 10% for healthcare and 10% for consumer & retail.
- The top five industry concentrations for corporate loans as of December 2022 were 26% for technology, media & telecommunications, 18% for diversified industrials, 11% for real estate, 10% for healthcare and 10% for consumer & retail.

Nonaccrual, Past Due and Modified 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.

The table below presents information about past due loans.

$ in millions	30-89 days	90 days or more	Total
As of June 2023			
Corporate	**$ –**	**$ 120**	**$ 120**
Commercial real estate	**–**	**383**	**383**
Residential real estate	**23**	**28**	**51**
Other collateralized	**1**	**57**	**58**
Consumer:			
Installment	**21**	**7**	**28**
Credit cards	**369**	**338**	**707**
Other	**14**	**15**	**29**
Total	**$ 428**	**$ 948**	**$ 1,376**
Total divided by gross loans at amortized cost			**0.8%**
As of December 2022			
Corporate	$ –	$ 92	$ 92
Commercial real estate	47	362	409
Residential real estate	4	6	10
Securities-based	1	–	1
Other collateralized	10	5	15
Consumer:			
Installment	46	17	63
Credit cards	291	265	556
Other	17	5	22
Total	$ 416	$ 752	$ 1,168
Total divided by gross loans at amortized cost			0.7%

The table below presents information about nonaccrual loans.

	As of	
$ in millions	June 2023	December 2022
Corporate	$ 1,487	$ 1,432
Commercial real estate	1,573	1,079
Residential real estate	47	93
Other collateralized	122	65
Other	34	–
Installment	7	41
Total	**$ 3,270**	$ 2,710
Total divided by gross loans at amortized cost	**1.9%**	1.6%

In the table above:

- Nonaccrual loans included $628 million as of June 2023 and $483 million as of December 2022 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 June 2023 and December 2022.
- Allowance for loan losses as a percentage of total nonaccrual loans was 160.0% as of June 2023 and 204.5% as of December 2022.

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, were considered TDRs as of December 2022. In January 2023, the firm adopted ASU No. 2022-02, which eliminated the recognition and measurement guidance for TDRs and requires enhanced disclosures for certain loan modifications. As of December 2022, loans modified in a TDR were $231 million and commitments related to such loans were not material. Substantially all of such loans modified in a TDR were related to corporate and commercial real estate loans. During both the three and six months ended June 2023, the firm provided loan modifications (in the form of term extensions) to borrowers experiencing financial difficulty. As of June 2023, the carrying value of loans modified during the three months ended June 2023 was $424 million and the carrying value of loans modified during the six months ended June 2023 was $594 million. Lending commitments related to such loans were not material and such loan modifications were primarily related to corporate and commercial real estate loans. The impact of these modifications was not material for either the three or six months ended June 2023. During the six months ended June 2023, the firm charged-off approximately $100 million of loans that had defaulted after being modified. Substantially all of the remaining modified loans were performing in accordance with the modified contractual terms as of June 2023.

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.

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.

	As of			
	June 2023		December 2022	
$ in millions	**Loans**	**Lending Commitments**	Loans	Lending Commitments
Wholesale				
Corporate	**$ 35,309**	**$ 142,536**	$ 36,822	$ 137,149
Commercial real estate	**25,392**	**3,317**	26,222	3,692
Residential real estate	**19,558**	**2,518**	18,523	3,089
Securities-based	**15,707**	**780**	16,671	508
Other collateralized	**52,771**	**14,138**	50,473	13,209
Other	**1,369**	**969**	1,723	944
Consumer				
Installment	**4,890**	**2,496**	6,326	1,882
Credit cards	**16,879**	**69,538**	15,820	62,216
Total	**$ 171,875**	**$ 236,292**	$ 172,580	$ 222,689

In the table above, wholesale loans included $3.26 billion as of June 2023 and $2.67 billion as of December 2022 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 $630 million as of June 2023 and $535 million as of December 2022. These loans included $687 million as of June 2023 and $384 million as of December 2022 of loans which did not require a reserve as the loan was deemed to be recoverable.

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 the 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, is calculated using the present value of expected future cash flows discounted at the loan's 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.

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 and commitments extended in connection with point-of-sale financing. However, no allowance for credit losses is recognized on credit card lending commitments as they are cancellable by the firm.

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.

$ in millions	Wholesale	Consumer	Total
Three Months Ended June 2023			
Allowance for loan losses			
Beginning balance	**$ 2,555**	**$ 2,477**	**$ 5,032**
Charge-offs	**(159)**	**(320)**	**(479)**
Recoveries	**9**	**26**	**35**
Net (charge-offs)/recoveries	**(150)**	**(294)**	**(444)**
Provision	**136**	**552**	**688**
Other	**(44)**	**–**	**(44)**
Ending balance	**$ 2,497**	**$ 2,735**	**$ 5,232**
Allowance ratio	**1.7%**	**12.6%**	**3.0%**
Net charge-off ratio	**0.4%**	**5.8%**	**1.0%**
Allowance for losses on lending commitments			
Beginning balance	**$ 693**	**$ 54**	**$ 747**
Provision	**36**	**(6)**	**30**
Ending balance	**$ 729**	**$ 48**	**$ 777**
Three Months Ended June 2022			
Allowance for loan losses			
Beginning balance	$ 2,300	$ 1,786	$ 4,086
Charge-offs	(74)	(111)	(185)
Recoveries	14	22	36
Net (charge-offs)/recoveries	(60)	(89)	(149)
Provision	216	407	623
Other	2	–	2
Ending balance	$ 2,458	$ 2,104	$ 4,562
Allowance ratio	1.7%	12.8%	2.8%
Net charge-off ratio	0.2%	2.3%	0.4%
Allowance for losses on lending commitments			
Beginning balance	$ 662	$ 2	$ 664
Provision	43	1	44
Other	(3)	–	(3)
Ending balance	$ 702	$ 3	$ 705
Six Months Ended June 2023			
Allowance for loan losses			
Beginning balance	**$ 2,562**	**$ 2,981**	**$ 5,543**
Charge-offs	**(184)**	**(591)**	**(775)**
Recoveries	**23**	**50**	**73**
Net (charge-offs)/recoveries	**(161)**	**(541)**	**(702)**
Provision	**144**	**295**	**439**
Other	**(48)**	**–**	**(48)**
Ending balance	**$ 2,497**	**$ 2,735**	**$ 5,232**
Allowance ratio	**1.7%**	**12.6%**	**3.0%**
Net charge-off ratio	**0.2%**	**5.1%**	**0.8%**
Allowance for losses on lending commitments			
Beginning balance	**$ 711**	**$ 63**	**$ 774**
Provision	**20**	**(15)**	**5**
Other	**(2)**	**–**	**(2)**
Ending balance	**$ 729**	**$ 48**	**$ 777**
Six Months Ended June 2022			
Allowance for loan losses			
Beginning balance	$ 2,135	$ 1,438	$ 3,573
Charge-offs	(172)	(198)	(370)
Recoveries	26	41	67
Net (charge-offs)/recoveries	(146)	(157)	(303)
Provision	473	823	1,296
Other	(4)	–	(4)
Ending balance	$ 2,458	$ 2,104	$ 4,562
Allowance ratio	1.7%	12.8%	2.8%
Net charge-off ratio	0.2%	2.2%	0.4%
Allowance for losses on lending commitments			
Beginning balance	$ 589	$ 187	$ 776
Provision	116	(184)	(68)
Other	(3)	–	(3)
Ending balance	$ 702	$ 3	$ 705

In the table above:

- 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 June 2023

When modeling expected credit losses, the firm employs a weighted, multi-scenario forecast, which includes baseline, adverse and favorable economic scenarios. As of June 2023, this multi-scenario forecast was weighted towards the baseline and adverse economic scenarios.

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 June 2023
U.S. unemployment rate	
Forecast for the quarter ended:	
December 2023	**4.1%**
June 2024	**4.5%**
December 2024	**4.4%**
Growth in U.S. GDP	
Forecast for the year:	
2023	**1.3%**
2024	**0.8%**
2025	**1.7%**

The adverse economic scenario of the forecast model reflects a global recession in the second half of 2023 through the first half of 2024 and a more aggressive tightening of monetary policy by central banks, resulting in an economic contraction and rising unemployment rates. In this scenario, the U.S. unemployment rate peaks at approximately 7.4% during the third quarter of 2024 and the maximum decline in the quarterly U.S. GDP relative to the second quarter of 2023 is approximately 2.7%, which occurs during the second quarter of 2024.

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 June 2023. The allowance for credit losses increased by $230 million during the three months ended June 2023, reflecting seasoning of the credit card portfolio, growth in the consumer point-of-sale loans portfolio and asset-specific provisions and ratings downgrades in the wholesale portfolio, partially offset by lower balances in corporate loans.

Charge-offs for the three months ended June 2023 for wholesale loans were primarily related to corporate loans (principally related to term loans originated prior to 2019) and charge-offs for consumer loans were primarily related to credit cards.

Six Months Ended June 2023. The allowance for credit losses decreased by $308 million during the six months ended June 2023, reflecting a reserve reduction of approximately $440 million associated with the sale of Marcus loans and lower balances in corporate loans, partially offset by asset-specific provisions and ratings downgrades in the wholesale portfolio and growth in the consumer point-of-sale loans portfolio.

Charge-offs for the six months ended June 2023 for wholesale loans (principally related to term loans originated prior to 2019) were primarily related to corporate loans and charge-offs for consumer loans were primarily related to credit cards.

Three Months Ended June 2022. The allowance for credit losses increased by $517 million during the three months ended June 2022, reflecting growth in the lending portfolios (primarily in credit cards) and higher modeled expected losses due to broad macroeconomic conditions.

Charge-offs for the three months ended June 2022 for wholesale loans were primarily related to corporate loans and charge-offs for consumer loans were primarily related to credit cards.

Six Months Ended June 2022. The allowance for credit losses increased by $918 million during the six months ended June 2022, reflecting growth in the lending portfolios (primarily in credit cards) and the impact of macroeconomic and geopolitical concerns.

Charge-offs for the six months ended June 2022 for wholesale loans were primarily related to corporate loans and charge-offs for consumer loans were primarily related to credit cards.

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
As of June 2023				
Amortized cost	**$ 166,643**	**$ 86,798**	**$ 80,837**	**$ 167,635**
Held for sale	**$ 4,554**	**$ 2,675**	**$ 1,880**	**$ 4,555**
As of December 2022				
Amortized cost	$ 167,037	$ 85,921	$ 83,121	$ 169,042
Held for sale	$ 4,594	$ 2,592	$ 2,014	$ 4,606

See Note 4 for an overview of the firm's fair value measurement policies, valuation techniques and significant inputs used to determine the fair value of loans, and Note 5 for information about loans within the fair value hierarchy.

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 bifurcatable 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:

- Repurchase agreements and substantially all resale agreements;
- Certain securities borrowed and loaned transactions;
- Certain customer and other receivables and certain other assets and 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.

See Note 4 for an overview of the firm's fair value measurement policies, valuation techniques and significant inputs used to determine the fair value of other financial assets and liabilities, and Note 5 for information about other financial assets and liabilities within the fair value hierarchy.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Unsecured short-term borrowings	**$ (1,062)**	$ 2,560	**$ (2,823)**	$ 4,265
Unsecured long-term borrowings	**(134)**	3,324	**(2,441)**	5,871
Other	**2**	491	**(139)**	821
Total	**$ (1,194)**	$ 6,375	**$ (5,403)**	$ 10,957

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. 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.
- Gains/(losses) included in other were substantially all related to resale and repurchase agreements, 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 6 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 $124 million as of June 2023. The related amount was not material as of December 2022.

The aggregate contractual principal amount of unsecured long-term borrowings, for which the fair value option was elected, exceeded the related fair value by $4.64 billion as of June 2023 and $5.03 billion as of December 2022.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Pre-tax DVA	**$ (812)**	$ 1,588	**$ (813)**	$ 2,581
After-tax DVA	**$ (610)**	$ 1,188	**$ (611)**	$ 1,928

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 six months ended June 2023 and June 2022.

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 June 2023	As of December 2022
Performing loans		
Aggregate contractual principal in excess of fair value	**$ 2,476**	$ 2,645
Loans on nonaccrual status and/or more than 90 days past due		
Aggregate contractual principal in excess of fair value	**$ 2,299**	$ 3,331
Aggregate fair value	**$ 2,087**	$ 2,633

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 $26 million as of June 2023 and $22 million as of December 2022, and the related total contractual amount of these lending commitments was $200 million as of June 2023 and $307 million as of December 2022. 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 $(60) million for the three months ended June 2023, $(105) million for the three months ended June 2022, $(52) million for the six months ended June 2023 and $(107) million for the six months ended June 2022. 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 with the same settlement date are presented on a net-by-counterparty basis when such transactions meet certain settlement criteria and are subject to netting agreements. 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 obligations, 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.

Repurchase agreements and substantially all resale agreements are recorded at fair value under the fair value option. See Note 5 for further information about repurchase and resale agreements.

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 FICC financing are recorded at fair value under the fair value option. See Note 5 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 and 5. Had these agreements been included in the firm's fair value hierarchy, they would have been classified in level 2 as of both June 2023 and December 2022.

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.

	Assets		Liabilities	
$ in millions	Resale agreements	Securities borrowed	Repurchase agreements	Securities loaned
As of June 2023				
Included in the consolidated balance sheets				
Gross carrying value	**$ 291,665**	**$ 189,468**	**$ 314,784**	**$ 49,032**
Counterparty netting	**(91,801)**	**(1,029)**	**(91,801)**	**(1,029)**
Total	**199,864**	**188,439**	**222,983**	**48,003**
Amounts not offset				
Counterparty netting	**(33,262)**	**(5,584)**	**(33,262)**	**(5,584)**
Collateral	**(161,155)**	**(173,714)**	**(187,475)**	**(42,148)**
Total	**$ 5,447**	**$ 9,141**	**$ 2,246**	**$ 271**
As of December 2022				
Included in the consolidated balance sheets				
Gross carrying value	$ 334,042	$ 199,623	$ 219,274	$ 41,309
Counterparty netting	(108,925)	(10,582)	(108,925)	(10,582)
Total	225,117	189,041	110,349	30,727
Amounts not offset				
Counterparty netting	(15,350)	(4,576)	(15,350)	(4,576)
Collateral	(204,843)	(171,997)	(92,997)	(25,578)
Total	$ 4,924	$ 12,468	$ 2,002	$ 573

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 included in the consolidated balance sheets of $199.61 billion as of June 2023 and $225.12 billion as of December 2022 and all repurchase agreements included in the consolidated balance sheets 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 $37.40 billion as of June 2023 and $38.58 billion as of December 2022, and securities loaned included in the consolidated balance sheets of $8.35 billion as of June 2023 and $4.37 billion as of December 2022 were at fair value under the fair value option. See Note 5 for further information about securities borrowed and securities loaned accounted for at fair value.

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.

$ in millions	Repurchase agreements	Securities loaned
As of June 2023		
Money market instruments	**$ 1,456**	**$ –**
U.S. government and agency obligations	**200,687**	**96**
Non-U.S. government and agency obligations	**86,412**	**715**
Securities backed by commercial real estate	**254**	**–**
Securities backed by residential real estate	**541**	**–**
Corporate debt securities	**15,802**	**392**
State and municipal obligations	**4**	**–**
Other debt obligations	**233**	**–**
Equity securities	**9,395**	**47,829**
Total	**$ 314,784**	**$ 49,032**
As of December 2022		
Money market instruments	$ 10	$ –
U.S. government and agency obligations	112,825	55
Non-U.S. government and agency obligations	87,828	594
Securities backed by commercial real estate	172	–
Securities backed by residential real estate	466	–
Corporate debt securities	11,398	295
State and municipal obligations	143	–
Other debt obligations	108	–
Equity securities	6,324	40,365
Total	$ 219,274	$ 41,309

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

	As of June 2023	
$ in millions	**Repurchase agreements**	**Securities loaned**
No stated maturity and overnight	**$ 136,799**	**$ 31,327**
2 - 30 days	**89,244**	**805**
31 - 90 days	**40,838**	**114**
91 days - 1 year	**34,035**	**8,886**
Greater than 1 year	**13,868**	**7,900**
Total	**$ 314,784**	**$ 49,032**

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 investment entities and 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 $7.41 billion as of June 2023 and $7.94 billion as of December 2022.

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 and 5. Had these financings been included in the firm's fair value hierarchy, substantially all would have been classified in level 3 as of both June 2023 and December 2022.

The table below presents information about other secured financings.

$ in millions	U.S. Dollar	Non-U.S. Dollar	Total
As of June 2023			
Other secured financings (short-term):			
At fair value	**$ 3,204**	**$ 3,373**	**$ 6,577**
At amortized cost	**404**	**360**	**764**
Other secured financings (long-term):			
At fair value	**3,307**	**2,511**	**5,818**
At amortized cost	**284**	**–**	**284**
Total other secured financings	**$ 7,199**	**$ 6,244**	**$ 13,443**
Other secured financings collateralized by:			
Financial instruments	**$ 2,864**	**$ 5,285**	**$ 8,149**
Other assets	**$ 4,335**	**$ 959**	**$ 5,294**
As of December 2022			
Other secured financings (short-term):			
At fair value	$ 3,478	$ 2,963	$ 6,441
At amortized cost	398	–	398
Other secured financings (long-term):			
At fair value	3,793	2,522	6,315
At amortized cost	395	397	792
Total other secured financings	$ 8,064	$ 5,882	$ 13,946
Other secured financings collateralized by:			
Financial instruments	$ 3,817	$ 4,895	$ 8,712
Other assets	$ 4,247	$ 987	$ 5,234

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 6.34% as of June 2023 and 5.56% as of December 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 0.47% as of June 2023. 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 3.71% as of June 2023 and 3.54% as of December 2022. 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 0.45% as of December 2022. This rate includes the effect of hedging activities.
- Total other secured financings included $1.96 billion as of June 2023 and $1.69 billion as of December 2022 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 $1.93 billion as of June 2023 and $1.64 billion as of December 2022.
- Other secured financings collateralized by financial instruments included $6.36 billion as of June 2023 and $7.49 billion as of December 2022 of other secured financings collateralized by trading assets, investments and loans, and included $1.79 billion as of June 2023 and $1.22 billion as of December 2022 of other secured financings collateralized by financial instruments received as collateral and repledged.

The table below presents other secured financings by maturity.

$ in millions	As of June 2023
Other secured financings (short-term)	**$ 7,341**
Other secured financings (long-term):	
2024	**1,712**
2025	**1,339**
2026	**498**
2027	**150**
2028	**779**
2029 - thereafter	**1,624**
Total other secured financings (long-term)	**6,102**
Total other secured financings	**$ 13,443**

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.

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.

	As of	
	June	December
$ in millions	2023	2022
Collateral available to be delivered or repledged	**$ 943,301**	$ 971,699
Collateral that was delivered or repledged	**$ 818,831**	$ 797,919

The table below presents information about assets pledged.

	As of	
	June	December
$ in millions	2023	2022
Pledged to counterparties that had the right to deliver or repledge		
Trading assets	**$ 90,993**	$ 40,143
Investments	**$ 8,968**	$ 9,818
Pledged to counterparties that did not have the right to deliver or repledge		
Trading assets	**$ 115,894**	$ 70,912
Investments	**$ 17,719**	$ 1,726
Loans	**$ 8,147**	$ 6,600
Other assets	**$ 6,946**	$ 7,525

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 $32.34 billion as of June 2023 and $49.60 billion as of December 2022.

Note 12.

Other Assets

The table below presents other assets by type.

	As of	
	June	December
$ in millions	2023	2022
Property, leasehold improvements and equipment	**$ 15,485**	$ 17,074
Goodwill	**5,942**	6,374
Identifiable intangible assets	**1,921**	2,009
Operating lease right-of-use assets	**2,132**	2,172
Income tax-related assets	**7,670**	7,012
Miscellaneous receivables and other	**5,692**	4,567
Total	**$ 38,842**	$ 39,208

Property, Leasehold Improvements and Equipment

Property, leasehold improvements and equipment is net of accumulated depreciation and amortization of $13.65 billion as of June 2023 and $12.19 billion as of December 2022. Property, leasehold improvements and equipment included $6.93 billion as of June 2023 and $7.17 billion as of December 2022 that the firm uses in connection with its operations, and $64 million as of June 2023 and $89 million as of December 2022 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. Any impairments recognized are included in depreciation and amortization.

The firm had impairments of approximately $485 million during the three months ended June 2023 and of approximately $840 million during the six months ended June 2023, related to commercial real estate included within consolidated investment entities. In addition, the firm had impairments of approximately $35 million related to capitalized software during the six months ended June 2023. Substantially all of these impairments were included within Asset & Wealth Management. There were no material impairments during either the three or six months ended June 2022.

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.

	As of	
$ in millions	June 2023	December 2022
Global Banking & Markets:		
Investment banking	**$ 267**	$ 267
FICC	**269**	269
Equities	**2,647**	2,647
Asset & Wealth Management:		
Asset management	**1,405**	1,385
Wealth management	**1,340**	1,310
Platform Solutions:		
Consumer platforms	**–**	482
Transaction banking and other	**14**	14
Total	**$ 5,942**	$ 6,374

In the table above:

- The decrease in goodwill from December 2022 to June 2023 was attributable to the impairment of goodwill associated with Consumer platforms. During the first quarter of 2023, goodwill for Consumer platforms increased by $22 million as a result of an updated purchase price allocation related to the GreenSky acquisition. In connection with the exploration of a potential sale of GreenSky, the firm performed a quantitative goodwill test and determined that the goodwill associated with Consumer platforms was impaired, and accordingly, recorded a $504 million impairment in the second quarter of 2023.
- During 2022, goodwill increased by $2.09 billion, substantially all in connection with the acquisitions of GreenSky and NN Investment Partners (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 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 carrying value (including goodwill and identifiable intangible assets). If the reporting unit's estimated fair value exceeds its carrying value, goodwill is not impaired. An impairment is recognized if the estimated fair value of a reporting unit is less than its carrying value and any such impairment is included in depreciation and amortization.

In the fourth quarter of 2022, goodwill was tested for impairment using a quantitative test. The estimated fair value of each of the reporting units exceeded its respective carrying value, and therefore, goodwill was not impaired.

The estimated fair value of each reporting unit was based on valuation techniques the firm believes market participants would use to value these reporting units. Estimated fair values are generally derived from utilizing a relative value technique, which applies observable price-to-earnings multiples or price-to-book multiples of comparable competitors to the reporting units' net earnings or net book value, or a discounted cash flow valuation approach, for reporting units with businesses in early stages of development. The 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.

Based on the evaluation of relevant factors during the second quarter of 2023, other than the impairment noted above, the firm determined that it was more likely than not that the estimated fair value of each of the reporting units exceeded its respective carrying value as of June 2023.

Identifiable Intangible Assets

The table below presents identifiable intangible assets by type.

	As of	
$ in millions	June 2023	December 2022
Customer lists and merchant relationships		
Gross carrying value	**$ 3,235**	$ 3,225
Accumulated amortization	**(1,360)**	(1,275)
Net carrying value	**1,875**	1,950
Acquired leases and other		
Gross carrying value	**485**	486
Accumulated amortization	**(439)**	(427)
Net carrying value	**46**	59
Total gross carrying value	**3,720**	3,711
Total accumulated amortization	**(1,799)**	(1,702)
Total net carrying value	**$ 1,921**	$ 2,009

During the six months ended June 2023, the amount of intangible assets acquired by the firm was not material. The firm acquired approximately $1.79 billion of identifiable intangible assets (with a weighted average amortization period of 13 years) during 2022, substantially all in connection with the acquisitions of GreenSky and NNIP. Substantially all of these identifiable intangible assets consisted of customer lists and merchant relationships.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Amortization	**$ 48**	$ 51	**$ 100**	$ 70

$ in millions	**As of June 2023**
Estimated future amortization	
Remainder of 2023	**$100**
2024	**$189**
2025	**$172**
2026	**$165**
2027	**$164**
2028	**$163**

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 six months ended June 2023 or June 2022.

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 $43 million for the three months ended June 2023, $49 million for the three months ended June 2022, $81 million for the six months ended June 2023 and $116 million for the six months ended June 2022. 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 six months ended June 2023 or June 2022.

Miscellaneous Receivables and Other

Miscellaneous receivables and other included:

- Investments in qualified affordable housing projects of $1.32 billion as of June 2023 and $793 million as of December 2022. The firm accounts for these investments using the proportional amortization method such that the investment is amortized in proportion to the income tax credits received on such investments. The amortization of investments and the related income tax credit are recorded as a component of the provision for taxes. The impact of the amortization and the related tax credits was not material for either the three or six months ended June 2023 or June 2022.
- Assets classified as held for sale of $477 million as of June 2023 and $285 million as of December 2022 related to certain of the firm's consolidated investments within Asset & Wealth Management, substantially all of which consisted of property and equipment.

Note 13.

Deposits

The table below presents the types and sources of deposits.

$ in millions	Savings and Demand	Time	Total
As of June 2023			
Consumer	**$ 115,679**	**$ 32,631**	**$ 148,310**
Private bank	**82,728**	**8,136**	**90,864**
Brokered certificates of deposit	**–**	**38,818**	**38,818**
Deposit sweep programs	**33,614**	**–**	**33,614**
Transaction banking	**68,465**	**2,783**	**71,248**
Other	**1,174**	**14,825**	**15,999**
Total	**$ 301,660**	**$ 97,193**	**$ 398,853**
As of December 2022			
Consumer	$ 98,580	$ 21,330	$ 119,910
Private bank	94,133	11,716	105,849
Brokered certificates of deposit	–	32,624	32,624
Deposit sweep programs	44,819	–	44,819
Transaction banking	65,155	5,069	70,224
Other	808	12,431	13,239
Total	$ 303,495	$ 83,170	$ 386,665

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 $17.71 billion as of June 2023 and $15.75 billion as of December 2022 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 0.8 years as of June 2023 and 0.9 years as of December 2022.
- Consumer deposits consist of deposits from both Marcus and Apple Card customers.
- Deposit sweep programs include long-term contractual agreements with U.S. broker-dealers who sweep client cash to FDIC-insured deposits.
- Transaction banking deposits consist of deposits that the firm raised through its cash management services business for corporate and other institutional clients.
- Other deposits are substantially all from institutional clients.
- Deposits insured by the FDIC were $211.21 billion as of June 2023 and $184.88 billion as of December 2022.
- Deposits insured by non-U.S. insurance programs were $25.89 billion as of June 2023 and $31.74 billion as of December 2022. The decline in insured deposits from December 2022 reflected a change in an insurance program that became effective in January 2023, which reduced the population of deposit accounts eligible for insurance coverage and lowered the applicable insurance limits.

The table below presents the location of deposits.

	As of	
$ in millions	**June 2023**	December 2022
U.S. offices	**$ 319,597**	$ 313,598
Non-U.S. offices	**79,256**	73,067
Total	**$ 398,853**	$ 386,665

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.

	As of June 2023		
$ in millions	**U.S.**	**Non-U.S.**	**Total**
Remainder of 2023	**$ 26,029**	**$ 14,485**	**$ 40,514**
2024	**39,953**	**5,737**	**45,690**
2025	**4,062**	**528**	**4,590**
2026	**2,690**	**285**	**2,975**
2027	**1,254**	**193**	**1,447**
2028	**640**	**186**	**826**
2029 - thereafter	**934**	**217**	**1,151**
Total	**$ 75,562**	**$ 21,631**	**$ 97,193**

As of June 2023, deposits in U.S. offices included $13.49 billion and deposits in non-U.S. offices included $20.69 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 June 2023 and December 2022. 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 and 5. Had these deposits been included in the firm's fair value hierarchy, they would have been classified in level 2 as of both June 2023 and December 2022.

Note 14.
Unsecured Borrowings

The table below presents information about unsecured borrowings.

	As of	
$ in millions	June 2023	December 2022
Unsecured short-term borrowings	$ 70,056	$ 60,961
Unsecured long-term borrowings	230,813	247,138
Total	**$ 300,869**	$ 308,099

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 and 5. Had these borrowings been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both June 2023 and December 2022.

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

	As of	
$ in millions	June 2023	December 2022
Current portion of unsecured long-term borrowings	$ 45,763	$ 38,635
Hybrid financial instruments	21,506	18,383
Commercial paper	79	1,718
Other unsecured short-term borrowings	2,708	2,225
Total unsecured short-term borrowings	**$ 70,056**	$ 60,961
Weighted average interest rate	**3.44%**	3.71%

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.

Unsecured Long-Term Borrowings

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

$ in millions	U.S. Dollar	Non-U.S. Dollar	Total
As of June 2023			
Fixed-rate obligations	**$ 111,430**	**$ 34,274**	**$ 145,704**
Floating-rate obligations	**52,739**	**32,370**	**85,109**
Total	**$ 164,169**	**$ 66,644**	**$ 230,813**
As of December 2022			
Fixed-rate obligations	$ 118,986	$ 38,538	$ 157,524
Floating-rate obligations	55,689	33,925	89,614
Total	$ 174,675	$ 72,463	$ 247,138

In the table above:

- Unsecured long-term borrowings consists principally of senior borrowings, which have maturities extending through 2061.
- Floating-rate obligations includes equity-linked, credit-linked and indexed instruments. Floating interest rates are generally based on SOFR, Euro Interbank Offered Rate or USD London Interbank Offered Rate (LIBOR). In connection with the cessation of USD LIBOR, as of July 1, 2023, the firm replaced the USD LIBOR rate with term SOFR plus the statutorily prescribed tenor spread.
- U.S. dollar-denominated debt had interest rates ranging from 0.66% to 6.75% (with a weighted average rate of 3.56%) as of June 2023 and 0.66% to 6.75% (with a weighted average rate of 3.51%) as of December 2022. 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 7.25% (with a weighted average rate of 2.02%) as of June 2023 and 0.13% to 7.25% (with a weighted average rate of 1.85%) as of December 2022. 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.

$ in millions	As of June 2023
2024	$ 23,666
2025	37,807
2026	23,707
2027	33,234
2028	23,098
2029 - thereafter	89,301
Total	**$ 230,813**

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 $(14.53) 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: $(207) million in 2024, $(1.15) billion in 2025, $(820) million in 2026, $(1.58) billion in 2027, $(1.64) billion in 2028 and $(9.13) billion in 2029 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.

	As of	
$ in millions	June 2023	December 2022
Fixed-rate obligations:		
At fair value	$ 7,693	$ 6,147
At amortized cost	10,915	6,065
Floating-rate obligations:		
At fair value	66,619	67,000
At amortized cost	145,586	167,926
Total	**$ 230,813**	$ 247,138

In the table above, the aggregate amounts of unsecured long-term borrowings had weighted average interest rates of 5.67% (2.92% related to fixed-rate obligations and 5.85% related to floating-rate obligations) as of June 2023 and 4.97% (4.08% related to fixed-rate obligations and 5.00% related to floating-rate obligations) as of December 2022. 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 $156.50 billion as of June 2023 and $173.99 billion as of December 2022. The estimated fair value of such unsecured long-term borrowings was $158.07 billion as of June 2023 and $173.70 billion as of December 2022. As these borrowings are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 and 5. Had these borrowings been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of both June 2023 and December 2022.

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 June 2023 and December 2022.

The table below presents information about subordinated borrowings.

$ in millions	Par Amount	Carrying Value	Rate
As of June 2023			
Subordinated debt	**$ 12,200**	**$ 11,760**	**7.45%**
Junior subordinated debt	**968**	**1,046**	**6.01%**
Total	**$ 13,168**	**$ 12,806**	**7.35%**
As of December 2022			
Subordinated debt	$ 12,261	$ 11,882	6.40%
Junior subordinated debt	968	1,054	4.86%
Total	$ 13,229	$ 12,936	6.29%

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 June 2023 and December 2022, 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.

	As of	
$ in millions	**June 2023**	December 2022
Compensation and benefits	**$ 4,736**	$ 7,225
Income tax-related liabilities	**2,674**	2,669
Operating lease liabilities	**2,113**	2,154
Noncontrolling interests	**531**	649
Employee interests in consolidated funds	**21**	25
Accrued expenses and other	**8,496**	8,733
Total	**$ 18,571**	$ 21,455

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.

$ in millions		Operating lease liabilities
As of June 2023		
Remainder of 2023	**$**	**145**
2024		**354**
2025		**295**
2026		**251**
2027		**218**
2028 - thereafter		**1,510**
Total undiscounted lease payments		**2,773**
Imputed interest		**(660)**
Total operating lease liabilities	**$**	**2,113**
Weighted average remaining lease term		**13 years**
Weighted average discount rate		**3.80%**
As of December 2022		
2023	$	325
2024		334
2025		283
2026		236
2027		203
2028 - thereafter		1,424
Total undiscounted lease payments		2,805
Imputed interest		(651)
Total operating lease liabilities	$	2,154
Weighted average remaining lease term		13 years
Weighted average discount rate		3.66%

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 $119 million for the three months ended June 2023, $117 million for the three months ended June 2022, $238 million for the six months ended June 2023 and $237 million for the six months ended June 2022. Variable lease costs, which are included in operating lease costs, were not material for each of the three and six months ended June 2023 and June 2022. Total occupancy expenses for space held in excess of the firm's current requirements were not material for each of the three and six months ended June 2023 and June 2022.

Lease payments relating to operating lease arrangements that were signed but had not yet commenced were $1.38 billion as of June 2023.

Accrued Expenses and Other

Accrued expenses and other included:

- Liabilities classified as held for sale were $527 million as of June 2023 and were related to certain of the firm's consolidated investments within Asset & Wealth Management, substantially all of which consisted of other secured financings. There were no material liabilities classified as held for sale as of December 2022. 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 $128 million as of June 2023 and $113 million as of December 2022.

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.

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 Note 4 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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Residential mortgages	**$11,460**	$ 8,626	**$18,957**	$20,009
Commercial mortgages	**794**	5,293	**1,397**	11,514
Other financial assets	**532**	1,090	**996**	2,772
Total financial assets securitized	**$12,786**	$15,009	**$21,350**	$34,295
Retained interests cash flows	**$ 124**	$ 152	**$ 234**	$ 331

The firm securitized assets of $66 million during the three months ended June 2023, $199 million during the three months ended June 2022, $110 million during the six months ended June 2023 and $399 million during the six months ended June 2022, 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 June 2023			
U.S. government agency-issued CMOs	**$ 44,447**	**$ 1,742**	**$ –**
Other residential mortgage-backed	**29,339**	**1,279**	**90**
Other commercial mortgage-backed	**60,497**	**1,287**	**88**
Corporate debt and other asset-backed	**8,491**	**592**	**30**
Total	**$ 142,774**	**$ 4,900**	**$ 208**
As of December 2022			
U.S. government agency-issued CMOs	$ 38,617	$ 1,835	$ –
Other residential mortgage-backed	27,075	1,461	117
Other commercial mortgage-backed	59,688	1,349	82
Corporate debt and other asset-backed	8,750	398	46
Total	$ 134,130	$ 5,043	$ 245

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 $4.84 billion as of June 2023 and $5.03 billion as of December 2022.

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 $84 million as of June 2023 and $72 million as of December 2022, and the notional amount of these derivatives and commitments was $1.84 billion as of June 2023 and $1.90 billion as of December 2022. The notional amounts of these derivatives and commitments are included in maximum exposure to loss in the nonconsolidated VIE table in Note 17. Additionally, the firm has provided seller financing of approximately $2.6 billion in connection with the sale of $3.24 billion of Marcus loans.

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 June 2023	As of December 2022
Fair value of retained interests	**$ 4,258**	$ 4,644
Weighted average life (years)	**6.8**	6.6
Constant prepayment rate	**8.0%**	7.7%
Impact of 10% adverse change	**$ (36)**	$ (27)
Impact of 20% adverse change	**$ (69)**	$ (48)
Discount rate	**7.8%**	9.5%
Impact of 10% adverse change	**$ (129)**	$ (138)
Impact of 20% adverse change	**$ (249)**	$ (266)

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 $577 million and a weighted average life of 6.1 years as of June 2023, and a fair value of $384 million and a weighted average life of 6.4 years as of December 2022. 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 June 2023 and December 2022. The firm's maximum exposure to adverse changes in the value of these interests is the carrying value of $592 million as of June 2023 and $398 million as of December 2022.

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.

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.

	As of	
$ in millions	**June 2023**	December 2022
Total nonconsolidated VIEs		
Assets in VIEs	**$ 199,174**	$ 181,697
Carrying value of variable interests — assets	**$ 14,608**	$ 12,325
Carrying value of variable interests — liabilities	**$ 1,046**	$ 659
Maximum exposure to loss:		
Retained interests	**$ 4,900**	$ 5,043
Purchased interests	**917**	861
Commitments and guarantees	**3,155**	3,087
Derivatives	**8,451**	8,802
Debt and equity	**8,418**	6,026
Total	**$ 25,841**	$ 23,819

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.

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

$ in millions	As of June 2023	As of December 2022
Mortgage-backed		
Assets in VIEs	**$ 135,690**	$ 127,290
Carrying value of variable interests — assets	**$ 4,580**	$ 4,977
Maximum exposure to loss:		
Retained interests	**$ 4,308**	$ 4,645
Purchased interests	**272**	332
Commitments and guarantees	**41**	64
Derivatives	**2**	2
Total	**$ 4,623**	$ 5,043
Real estate, credit- and power-related and other investing		
Assets in VIEs	**$ 36,903**	$ 29,193
Carrying value of variable interests — assets	**$ 4,591**	$ 4,415
Carrying value of variable interests — liabilities	**$ 363**	$ 2
Maximum exposure to loss:		
Commitments and guarantees	**$ 2,983**	$ 2,679
Debt and equity	**4,590**	4,414
Total	**$ 7,573**	$ 7,093
Corporate debt and other asset-backed		
Assets in VIEs	**$ 22,182**	$ 19,428
Carrying value of variable interests — assets	**$ 5,343**	$ 2,817
Carrying value of variable interests — liabilities	**$ 683**	$ 657
Maximum exposure to loss:		
Retained interests	**$ 592**	$ 398
Purchased interests	**645**	529
Commitments and guarantees	**128**	190
Derivatives	**8,449**	8,800
Debt and equity	**3,734**	1,496
Total	**$ 13,548**	$ 11,413
Investments in funds		
Assets in VIEs	**$ 4,399**	$ 5,786
Carrying value of variable interests — assets	**$ 94**	$ 116
Maximum exposure to loss:		
Commitments and guarantees	**$ 3**	$ 154
Debt and equity	**94**	116
Total	**$ 97**	$ 270

As of both June 2023 and December 2022, 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 June 2023	As of December 2022
Total consolidated VIEs		
Assets		
Cash and cash equivalents	**$ 332**	$ 348
Customer and other receivables	**2**	7
Trading assets	**107**	103
Investments	**83**	101
Loans	**936**	1,177
Other assets	**291**	336
Total	**$ 1,751**	$ 2,072
Liabilities		
Other secured financings	**$ 831**	$ 952
Customer and other payables	**3**	51
Trading liabilities	**–**	9
Unsecured short-term borrowings	**60**	58
Unsecured long-term borrowings	**16**	16
Other liabilities	**119**	112
Total	**$ 1,029**	$ 1,198

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.

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

$ in millions	As of June 2023	As of December 2022
Real estate, credit-related and other investing		
Assets		
Cash and cash equivalents	**$ 313**	$ 339
Customer and other receivables	**2**	7
Trading assets	**39**	42
Investments	**83**	101
Loans	**936**	1,177
Other assets	**291**	336
Total	**$ 1,664**	$ 2,002
Liabilities		
Other secured financings	**$ 145**	$ 170
Customer and other payables	**3**	51
Trading liabilities	**–**	9
Other liabilities	**119**	112
Total	**$ 267**	$ 342
Corporate debt and other asset-backed		
Assets		
Cash and cash equivalents	**$ 19**	$ 9
Trading assets	**14**	20
Total	**$ 33**	$ 29
Liabilities		
Other secured financings	**$ 369**	$ 482
Total	**$ 369**	$ 482
Principal-protected notes		
Assets		
Trading assets	**$ 54**	$ 41
Total	**$ 54**	$ 41
Liabilities		
Other secured financings	**$ 317**	$ 300
Unsecured short-term borrowings	**60**	58
Unsecured long-term borrowings	**16**	16
Total	**$ 393**	$ 374

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 June 2023	As of December 2022
Commitment Type		
Commercial lending:		
Investment-grade	**$ 103,428**	$ 100,438
Non-investment-grade	**58,818**	53,486
Warehouse financing	**8,995**	9,116
Consumer	**72,034**	64,098
Total lending	**243,275**	227,138
Risk participations	**8,847**	9,173
Collateralized agreement	**119,445**	105,301
Collateralized financing	**31,396**	22,532
Investment	**6,647**	7,705
Other	**7,245**	9,690
Total commitments	**$ 416,855**	$ 381,539

The table below presents commitments by expiration.

$ in millions	As of June 2023 Remainder of 2023	2024 - 2025	2026 - 2027	2028 - Thereafter
Commitment Type				
Commercial lending:				
Investment-grade	**$ 7,560**	**$ 25,959**	**$ 51,720**	**$ 18,189**
Non-investment-grade	**2,588**	**16,974**	**26,164**	**13,092**
Warehouse financing	**639**	**5,745**	**2,361**	**250**
Consumer	**71,410**	**624**	**–**	**–**
Total lending	**82,197**	**49,302**	**80,245**	**31,531**
Risk participations	**1,441**	**3,184**	**3,573**	**649**
Collateralized agreement	**115,975**	**3,470**	**–**	**–**
Collateralized financing	**30,596**	**800**	**–**	**–**
Investment	**1,050**	**1,349**	**1,626**	**2,622**
Other	**6,268**	**748**	**–**	**229**
Total commitments	**$ 237,527**	**$ 58,853**	**$ 85,444**	**$ 35,031**

In the table above, beginning in the first quarter of 2023, the firm made certain changes to its methodology for determining internal credit ratings. See Note 9 for further information about these changes. Prior period amounts have been conformed to reflect the current methodology. The impact to December 2022 was an increase in commercial lending commitments classified as investment-grade and a decrease in commercial lending commitments classified as non-investment-grade of $2.78 billion.

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.

The table below presents information about lending commitments.

	As of	
$ in millions	**June 2023**	December 2022
Held for investment	**$ 236,292**	$ 222,689
Held for sale	**5,958**	3,355
At fair value	**1,025**	1,094
Total	**$ 243,275**	$ 227,138

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 $977 million (including allowance for credit losses of $777 million) as of June 2023 and $1.01 billion (including allowance for credit losses of $774 million) as of December 2022. The estimated fair value of such lending commitments was a liability of $5.78 billion as of June 2023 and $5.95 billion as of December 2022. Had these lending commitments been carried at fair value and included in the fair value hierarchy, $2.94 billion as of June 2023 and $3.11 billion as of December 2022 would have been classified in level 2, and $2.84 billion as of June 2023 and $2.84 billion as of December 2022 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 $93 million as of June 2023 and $88 million as of December 2022. 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 June 2023 and December 2022.
- 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 $134.27 billion as of June 2023 and $127.60 billion as of December 2022, related to relationship lending activities (principally used for operating and general corporate purposes), and $10.17 billion as of June 2023 and $7.71 billion as of December 2022, 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, commercial real estate financing and other collateralized lending. 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 collateralized 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 were $69.54 billion as of June 2023 and $62.22 billion as of December 2022. These credit card lines are cancellable by the firm.
- Commitments to provide unsecured installment loans to consumers were $2.50 billion as of June 2023 and $1.88 billion as of December 2022.

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.

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 $1.26 billion as of June 2023 and $1.29 billion as of December 2022, 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.

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.

$ in millions	Derivatives	Securities lending and clearing	Other financial guarantees
As of June 2023			
Carrying Value of Net Liability	**$ 6,629**	**$ –**	**$ 408**
Maximum Payout/Notional Amount by Period of Expiration			
Remainder of 2023	**$ 80,664**	**$ 26,229**	**$ 394**
2024 - 2025	**177,263**	**–**	**3,439**
2026 - 2027	**25,861**	**–**	**2,446**
2028 - thereafter	**31,463**	**–**	**428**
Total	**$ 315,251**	**$ 26,229**	**$ 6,707**
As of December 2022			
Carrying Value of Net Liability	$ 7,485	$ –	$ 395
Maximum Payout/Notional Amount by Period of Expiration			
2023	$ 110,599	$ 20,970	$ 1,634
2024 - 2025	133,090	–	3,308
2026 - 2027	20,252	–	1,837
2028 - thereafter	27,518	–	93
Total	$ 291,459	$ 20,970	$ 6,872

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 $347 million as of June 2023 and $578 million as of December 2022, and derivative liabilities of $6.98 billion as of June 2023 and $8.06 billion as of December 2022.

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 $13.43 billion as of June 2023 and $12.23 billion as of December 2022. Collateral held by the lenders in connection with securities lending indemnifications was $13.92 billion as of June 2023 and $12.62 billion as of December 2022. 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.

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. The maximum payout on this guarantee was $12.80 billion as of June 2023 and $8.74 billion as of December 2022. The related collateral held was $12.80 billion as of June 2023 and $8.70 billion as of December 2022.

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 semi-annual reports and other communications from Malaysia in evaluating the progress of Malaysia's recovery efforts. The firm and the Government of Malaysia disagree about and, following an extension of the contractual dispute resolution period, 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. If the parties are unable to resolve this dispute, it 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.

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 June 2023 and December 2022.

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 June 2023 and December 2022.

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 June 2023 and December 2022, 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.

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 June		Six Months Ended June	
in millions, except per share amounts	**2023**	2022	**2023**	2022
Common share repurchases	**2.2**	1.5	**9.3**	2.9
Average cost per share	**$ 335.03**	$ 323.74	**$ 353.83**	$ 342.48
Total cost of common share repurchases	**$ 750**	$ 500	**$ 3,296**	$ 1,000

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 six months ended June 2023, 499 shares were remitted with a total value of $0.2 million and the firm cancelled 3.8 million share-based awards with a total value of $1.34 billion.

The table below presents common stock dividends declared.

	Three Months Ended June		Six Months Ended June	
	2023	2022	**2023**	2022
Dividends declared per common share	**$ 2.50**	$ 2.00	**$ 5.00**	$ 4.00

On July 17, 2023, the Board of Directors of Group Inc. (Board) increased the quarterly dividend to $2.75 per common share from $2.50 per common share. This dividend will be paid on September 28, 2023 to common shareholders of record on August 31, 2023.

Preferred Equity

The tables below present information about the perpetual preferred stock issued and outstanding as of June 2023.

Series	Shares Authorized	Shares Issued	Shares Outstanding	Depositary 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	Currently redeemable	$ 25,000	**1,000**
K	May 10, 2024	$ 25,000	**700**
O	November 10, 2026	$ 25,000	**650**
P	Currently redeemable	$ 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 depositary 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.

The table below presents the dividend rates of perpetual preferred stock as of June 2023.

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	3 month LIBOR + 3.64%, 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	3 month LIBOR + 2.874%, payable quarterly
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:

- In connection with the cessation of LIBOR, as of July 1, 2023, the firm replaced the three-month LIBOR rate with the three-month SOFR rate plus the statutorily prescribed tenor spread, consistent with the FRB's final rule implementing the Adjustable Interest Rate (LIBOR) Act.
- Dividends on each series of preferred stock are payable in arrears for the periods specified.

The table below presents preferred stock dividends declared.

	2023		2022	
Series	***per share***	***$ in millions***	*per share*	*$ in millions*
Three Months Ended June				
A	**$ 346.69**	**$ 10**	$ 231.77	$ 7
C	**$ 346.69**	**3**	$ 247.22	2
D	**$ 341.74**	**19**	$ 247.22	13
E	**$ 1,464.32**	**11**	$ 1,022.22	9
F	**$ 1,464.95**	**3**	$ 1,022.22	1
J	**$ 343.75**	**14**	$ 343.75	14
K	**$ 398.44**	**11**	$ 398.44	11
O	**$ 662.50**	**17**	$ 662.50	17
P	**$ 477.96**	**29**	$ 625.00	38
T	**$ 475.00**	**13**	$ 475.00	13
V	**$ 515.63**	**15**	$ 547.14	16
Total		**$ 145**		$ 141
Six Months Ended June				
A	**$ 687.98**	**$ 20**	$ 471.35	$ 14
C	**$ 687.98**	**6**	$ 502.78	4
D	**$ 677.92**	**37**	$ 502.78	27
E	**$ 2,846.34**	**21**	$ 2,022.22	16
F	**$ 2,847.59**	**5**	$ 2,022.22	3
J	**$ 687.50**	**28**	$ 687.50	28
K	**$ 796.88**	**22**	$ 796.88	22
O	**$ 662.50**	**17**	$ 662.50	17
P	**$ 954.95**	**57**	$ 625.00	38
Q	**$ 687.50**	**14**	$ 687.50	14
R	**$ 618.75**	**15**	$ 618.75	15
S	**$ 550.00**	**8**	$ 550.00	8
T	**$ 475.00**	**13**	$ 475.00	13
U	**$ 456.25**	**14**	$ 486.67	14
V	**$ 515.63**	**15**	$ 547.14	16
Total		**$ 292**		$ 249

On July 10, 2023, Group Inc. declared dividends of $388.88 per share of Series A Preferred Stock, $388.88 per share of Series C Preferred Stock, $383.77 per share of Series D Preferred Stock, $573.52 per share of Series J Preferred Stock, $398.44 per share of Series K Preferred Stock, $524.58 per share of Series P Preferred Stock, $687.50 per share of Series Q Preferred Stock, $618.75 per share of Series R Preferred Stock, $550.00 per share of Series S Preferred Stock and $456.25 per share of Series U Preferred Stock to be paid on August 10, 2023 to preferred shareholders of record on July 26, 2023. In addition, the firm declared dividends of $1,600.67 per share of Series E Preferred Stock and $1,601.31 per share of Series F Preferred Stock to be paid on September 1, 2023 to preferred shareholders of record on August 17, 2023.

Accumulated Other Comprehensive Income/(Loss)

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

$ in millions	Beginning balance	Other comprehensive income/(loss) adjustments, net of tax	Ending balance
Three Months Ended June 2023			
Currency translation	**$ (816)**	**$ (12)**	**$ (828)**
Debt valuation adjustment	**891**	**(610)**	**281**
Pension and postretirement liabilities	**(485)**	**10**	**(475)**
Available-for-sale securities	**(2,191)**	**(24)**	**(2,215)**
Total	**$ (2,601)**	**$ (636)**	**$ (3,237)**
Three Months Ended June 2022			
Currency translation	$ (753)	$ (16)	$ (769)
Debt valuation adjustment	229	1,188	1,417
Pension and postretirement liabilities	(314)	(1)	(315)
Available-for-sale securities	(1,846)	(441)	(2,287)
Total	$ (2,684)	$ 730	$ (1,954)
Six Months Ended June 2023			
Currency translation	**$ (785)**	**$ (43)**	**$ (828)**
Debt valuation adjustment	**892**	**(611)**	**281**
Pension and postretirement liabilities	**(499)**	**24**	**(475)**
Available-for-sale securities	**(2,618)**	**403**	**(2,215)**
Total	**$ (3,010)**	**$ (227)**	**$ (3,237)**
Six Months Ended June 2022			
Currency translation	$ (738)	$ (31)	$ (769)
Debt valuation adjustment	(511)	1,928	1,417
Pension and postretirement liabilities	(327)	12	(315)
Available-for-sale securities	(492)	(1,795)	(2,287)
Total	$ (2,068)	$ 114	$ (1,954)

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.

Consolidated Regulatory Capital Requirements

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

	Standardized	Advanced
As of June 2023		
CET1 capital ratio	**13.8%**	**10.0%**
Tier 1 capital ratio	**15.3%**	**11.5%**
Total capital ratio	**17.3%**	**13.5%**
As of December 2022		
CET1 capital ratio	13.3%	9.5%
Tier 1 capital ratio	14.8%	11.0%
Total capital ratio	16.8%	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 (Method 2) of 3.0% as of June 2023 and 2.5% as of December 2022 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 6.3% 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 2023 Comprehensive Capital Analysis and Review submission, the FRB reduced the firm's SCB from 6.3% to 5.5% for the period from October 1, 2023 through September 30, 2024. As a result, beginning on October 1, 2023, the firm's Standardized requirements will be 13.0% for the CET1 capital ratio, 14.5% for the Tier 1 capital ratio and 16.5% for the Total capital ratio.

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

$ in millions	Standardized	Advanced
As of June 2023		
CET1 capital	**$ 98,188**	**$ 98,188**
Tier 1 capital	**$ 108,674**	**$ 108,674**
Tier 2 capital	**$ 15,699**	**$ 11,765**
Total capital	**$ 124,373**	**$ 120,439**
RWAs	**$ 661,198**	**$ 683,540**
CET1 capital ratio	**14.9%**	**14.4%**
Tier 1 capital ratio	**16.4%**	**15.9%**
Total capital ratio	**18.8%**	**17.6%**
As of December 2022		
CET1 capital	$ 98,050	$ 98,050
Tier 1 capital	$ 108,552	$ 108,552
Tier 2 capital	$ 15,958	$ 12,115
Total capital	$ 124,510	$ 120,667
RWAs	$ 653,419	$ 679,450
CET1 capital ratio	15.0%	14.4%
Tier 1 capital ratio	16.6%	16.0%
Total capital ratio	19.1%	17.8%

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	
$ in millions	**June 2023**	December 2022
Tier 1 capital	**$ 108,674**	$ 108,552
Average total assets	**$ 1,562,151**	$ 1,500,225
Deductions from Tier 1 capital	**(7,869)**	(8,259)
Average adjusted total assets	**1,554,282**	1,491,966
Off-balance sheet and other exposures	**400,758**	375,392
Total leverage exposure	**$ 1,955,040**	$ 1,867,358
Tier 1 leverage ratio	**7.0%**	7.3%
SLR	**5.6%**	5.8%

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.

	As of	
$ in millions	**June 2023**	December 2022
Common shareholders' equity	**$ 105,790**	$ 106,486
Impact of CECL transition	**553**	829
Deduction for goodwill	**(5,252)**	(5,674)
Deduction for identifiable intangible assets	**(1,680)**	(1,770)
Other adjustments	**(1,223)**	(1,821)
CET1 capital	**98,188**	98,050
Preferred stock	**10,703**	10,703
Deduction for investments in covered funds	**(215)**	(199)
Other adjustments	**(2)**	(2)
Tier 1 capital	**$ 108,674**	$ 108,552
Standardized Tier 2 and Total capital		
Tier 1 capital	**$ 108,674**	$ 108,552
Qualifying subordinated debt	**10,353**	10,637
Allowance for credit losses	**5,351**	5,331
Other adjustments	**(5)**	(10)
Standardized Tier 2 capital	**15,699**	15,958
Standardized Total capital	**$ 124,373**	$ 124,510
Advanced Tier 2 and Total capital		
Tier 1 capital	**$ 108,674**	$ 108,552
Standardized Tier 2 capital	**15,699**	15,958
Allowance for credit losses	**(5,351)**	(5,331)
Other adjustments	**1,417**	1,488
Advanced Tier 2 capital	**11,765**	12,115
Advanced Total capital	**$ 120,439**	$ 120,667

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. The total amount of reduction to be phased in from January 1, 2022 through January 1, 2025 (at 25% per year) was $1.11 billion, of which $553 million had been phased in as of June 2023. 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 impact of CECL transition reflects the remaining amount of reduction to be phased in as of both June 2023 and December 2022.
- Deduction for goodwill was net of deferred tax liabilities of $690 million as of June 2023 and $700 million as of December 2022.
- Deduction for identifiable intangible assets was net of deferred tax liabilities of $241 million as of June 2023 and $239 million as of December 2022.
- Deduction for investments in covered funds represents the firm's aggregate investments in applicable covered funds. 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.

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

$ in millions	Standardized	Advanced
Six Months Ended June 2023		
CET1 capital		
Beginning balance	**$ 98,050**	**$ 98,050**
Change in:		
Common shareholders' equity	**(696)**	**(696)**
Impact of CECL transition	**(276)**	**(276)**
Deduction for goodwill	**422**	**422**
Deduction for identifiable intangible assets	**90**	**90**
Other adjustments	**598**	**598**
Ending balance	**$ 98,188**	**$ 98,188**
Tier 1 capital		
Beginning balance	**$ 108,552**	**$ 108,552**
Change in:		
CET1 capital	**138**	**138**
Deduction for investments in covered funds	**(16)**	**(16)**
Ending balance	**108,674**	**108,674**
Tier 2 capital		
Beginning balance	**15,958**	**12,115**
Change in:		
Qualifying subordinated debt	**(284)**	**(284)**
Allowance for credit losses	**20**	**–**
Other adjustments	**5**	**(66)**
Ending balance	**15,699**	**11,765**
Total capital	**$ 124,373**	**$ 120,439**

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.

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 both the six months ended June 2023 and the year ended 2022. 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.

$ in millions	Standardized	Advanced
As of June 2023		
Credit RWAs		
Derivatives	**$ 145,988**	**$ 111,498**
Commitments, guarantees and loans	**239,289**	**195,277**
Securities financing transactions	**75,743**	**19,681**
Equity investments	**31,047**	**33,526**
Other	**78,619**	**98,683**
Total Credit RWAs	**570,686**	**458,665**
Market RWAs		
Regulatory VaR	**21,755**	**21,755**
Stressed VaR	**46,369**	**46,369**
Incremental risk	**4,264**	**4,264**
Comprehensive risk	**2,846**	**2,846**
Specific risk	**15,278**	**15,278**
Total Market RWAs	**90,512**	**90,512**
Total Operational RWAs	**–**	**134,363**
Total RWAs	**$ 661,198**	**$ 683,540**
As of December 2022		
Credit RWAs		
Derivatives	$ 142,696	$ 111,344
Commitments, guarantees and loans	247,026	198,508
Securities financing transactions	73,189	21,659
Equity investments	30,899	33,451
Other	76,335	96,351
Total Credit RWAs	570,145	461,313
Market RWAs		
Regulatory VaR	18,981	18,981
Stressed VaR	37,833	37,833
Incremental risk	6,470	6,470
Comprehensive risk	3,641	3,641
Specific risk	16,349	16,349
Total Market RWAs	83,274	83,274
Total Operational RWAs	–	134,863
Total RWAs	$ 653,419	$ 679,450

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.

The table below presents changes in RWAs.

$ in millions	Standardized	Advanced
Six Months Ended June 2023		
RWAs		
Beginning balance	$ 653,419	$ 679,450
Credit RWAs		
Change in:		
Derivatives	3,292	154
Commitments, guarantees and loans	(7,737)	(3,231)
Securities financing transactions	2,554	(1,978)
Equity investments	148	75
Other	2,284	2,332
Change in Credit RWAs	541	(2,648)
Market RWAs		
Change in:		
Regulatory VaR	2,774	2,774
Stressed VaR	8,536	8,536
Incremental risk	(2,206)	(2,206)
Comprehensive risk	(795)	(795)
Specific risk	(1,071)	(1,071)
Change in Market RWAs	7,238	7,238
Change in Operational RWAs	–	(500)
Ending balance	$ 661,198	$ 683,540

RWAs Rollforward Commentary

Six Months Ended June 2023. Standardized Credit RWAs as of June 2023 increased by $541 million compared with December 2022, primarily reflecting an increase in derivatives (principally due to increased exposures), an increase in securities financing transactions (principally due to increased funding activity) and an increase in other credit RWAs (principally due to an increase in other assets and cash and cash equivalents). These increases were partially offset by a decrease in commitments, guarantees and loans (principally due to reduced lending activity). Standardized Market RWAs as of June 2023 increased by $7.24 billion compared with December 2022, primarily reflecting an increase in stressed VaR (principally due to increased exposures to interest rates).

Advanced Credit RWAs as of June 2023 decreased by $2.65 billion compared with December 2022, primarily reflecting a decrease in commitments, guarantees and loans (principally due to reduced lending activity) and a decrease in securities financing transactions (principally due to reduced modeled exposures). These decreases were partially offset by an increase in other credit RWAs (principally due to an increase in other assets and cash and cash equivalents). Advanced Market RWAs as of June 2023 increased by $7.24 billion compared with December 2022, primarily reflecting an increase in stressed VaR (principally due to increased exposures to interest rates).

Bank Subsidiaries

GS Bank USA. GS Bank USA is the firm's primary U.S. bank subsidiary. GS Bank USA is a 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 deposits of GS Bank USA are insured by the FDIC to the extent provided by law.

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.

$ in millions	Standardized	Advanced
As of June 2023		
CET1 capital	**$ 49,912**	**$ 49,912**
Tier 1 capital	**$ 49,912**	**$ 49,912**
Tier 2 capital	**$ 6,030**	**$ 3,372**
Total capital	**$ 55,942**	**$ 53,284**
RWAs	**$ 378,509**	**$ 308,125**
CET1 capital ratio	**13.2%**	**16.2%**
Tier 1 capital ratio	**13.2%**	**16.2%**
Total capital ratio	**14.8%**	**17.3%**
As of December 2022		
CET1 capital	$ 46,845	$ 46,845
Tier 1 capital	$ 46,845	$ 46,845
Tier 2 capital	$ 8,042	$ 5,382
Total capital	$ 54,887	$ 52,227
RWAs	$ 357,112	$ 275,451
CET1 capital ratio	13.1%	17.0%
Tier 1 capital ratio	13.1%	17.0%
Total capital ratio	15.4%	19.0%

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 June 2023 and December 2022.
- 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 at 25% per year through January 2025. 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 CET1 and Tier 1 capital ratios increased from December 2022 to June 2023, primarily reflecting an increase in capital, principally due to net earnings. The Standardized Total capital ratio decreased from December 2022 to June 2023, primarily reflecting an increase in Market RWAs. The Advanced capital ratios decreased from December 2022 to June 2023, reflecting an increase in both Market RWAs and Credit RWAs, partially offset by an increase in capital, principally due to net earnings.

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

	For the Three Months Ended or as of	
$ in millions	**June 2023**	December 2022
Tier 1 capital	**$ 49,912**	$ 46,845
Average adjusted total assets	**$ 514,400**	$ 499,108
Total leverage exposure	**$ 699,123**	$ 671,215
Tier 1 leverage ratio	**9.7%**	9.4%
SLR	**7.1%**	7.0%

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 FRB requires that GS Bank USA maintain cash reserves with the Federal Reserve. As of both June 2023 and December 2022, the reserve requirement ratio was zero percent. See Note 26 for further information about cash deposits held by the firm at the Federal Reserve.

GS Bank USA is a registered swap dealer with the CFTC and a registered security-based swap dealer with the SEC. As of both June 2023 and December 2022, 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 eligible retail deposits of GSIB are covered by the U.K. Financial Services Compensation Scheme to the extent provided by law.

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

	As of	
	June 2023	December 2022
Risk-based capital requirements		
CET1 capital ratio	**9.8%**	9.7%
Tier 1 capital ratio	**12.1%**	11.9%
Total capital ratio	**15.1%**	14.9%

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

$ in millions	As of June 2023	As of December 2022
Risk-based capital and risk-weighted assets		
CET1 capital	**$ 3,658**	$ 3,395
Tier 1 capital	**$ 3,658**	$ 3,395
Tier 2 capital	**$ 826**	$ 828
Total capital	**$ 4,484**	$ 4,223
RWAs	**$ 15,774**	$ 15,766
Risk-based capital ratios		
CET1 capital ratio	**23.2%**	21.5%
Tier 1 capital ratio	**23.2%**	21.5%
Total capital ratio	**28.4%**	26.8%

In the table above, the risk-based capital ratios as of June 2023 reflected profits after foreseeable charges that are still subject to audit by GSIB's external auditors and approval by GSIB's Board of Directors for inclusion in risk-based capital. These profits contributed approximately 188 basis points to the CET1 capital ratio as of June 2023.

The table below presents GSIB's leverage ratio requirement which became effective in January 2023 and the leverage ratio.

	As of June 2023
Leverage ratio requirement	**3.45%**
Leverage ratio	**7.0%**

In the table above, the leverage ratio as of June 2023 reflected profits after foreseeable charges that are still subject to audit by GSIB's external auditors and approval by GSIB's Board of Directors for inclusion in risk-based capital. These profits contributed approximately 57 basis points to the leverage ratio as of June 2023.

GSIB is subject to minimum reserve requirements at central banks in certain of the jurisdictions in which it operates. As of both June 2023 and December 2022, GSIB was in compliance with these requirements.

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 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.

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

	As of June 2023	As of December 2022
Risk-based capital requirements		
CET1 capital ratio	**9.9%**	9.2%
Tier 1 capital ratio	**11.9%**	11.3%
Total capital ratio	**14.7%**	14.0%

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

$ in millions	As of June 2023	As of December 2022
Risk-based capital and risk-weighted assets		
CET1 capital	**$ 13,674**	$ 9,536
Tier 1 capital	**$ 13,674**	$ 9,536
Tier 2 capital	**$ 22**	$ 21
Total capital	**$ 13,696**	$ 9,557
RWAs	**$ 34,598**	$ 30,154
Risk-based capital ratios		
CET1 capital ratio	**39.5%**	31.6%
Tier 1 capital ratio	**39.5%**	31.6%
Total capital ratio	**39.6%**	31.7%

In the table above, the risk-based capital ratios as of June 2023 reflected profits after foreseeable charges that are still subject to audit by GSBE's external auditors and approval by GSBE's shareholder (GS Bank USA) for inclusion in risk-based capital. These profits contributed approximately 112 basis points to the CET1 capital ratio as of June 2023.

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

	As of	
	June 2023	December 2022
Leverage ratio requirement	**3.0%**	3.0%
Leverage ratio	**12.2%**	10.6%

In the table above, the leverage ratio as of June 2023 reflected profits after foreseeable charges that are still subject to audit by GSBE's external auditors and approval by GSBE's shareholder (GS Bank USA) for inclusion in risk-based capital. These profits contributed approximately 34 basis points to the leverage ratio as of June 2023.

GSBE is subject to minimum reserve requirements at central banks in certain of the jurisdictions in which it operates. As of both June 2023 and December 2022, GSBE was in compliance with these requirements.

GSBE is a registered swap dealer with the CFTC and a registered security-based swap dealer with the SEC. As of both June 2023 and December 2022, 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 $133.31 billion as of June 2023 and $134.59 billion as of December 2022, of which Group Inc. was required to maintain $95.44 billion as of June 2023 and $82.52 billion as of December 2022, 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 non-U.S. dollar-denominated debt and derivatives. See Note 7 for information about the firm's net investment hedges used to hedge this risk.

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.

	Three Months Ended June		Six Months Ended June	
in millions, except per share amounts	**2023**	2022	**2023**	2022
Net earnings to common	**$ 1,071**	$ 2,786	**$ 4,158**	$ 6,617
Weighted average basic shares	**342.3**	355.0	**344.4**	353.1
Effect of dilutive RSUs	**4.9**	5.5	**4.8**	5.1
Weighted average diluted shares	**347.2**	360.5	**349.2**	358.2
Basic EPS	**$ 3.09**	$ 7.81	**$ 12.00**	$ 18.67
Diluted EPS	**$ 3.08**	$ 7.73	**$ 11.91**	$ 18.47

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 $0.04 for both the three months ended June 2023 and June 2022, and $0.07 for both the six months ended June 2023 and June 2022.
- Diluted EPS does not include antidilutive RSUs, including those that are subject to market or performance conditions, of 0.5 million for both the three and six months ended June 2023, 1.0 million for the three months ended June 2022 and 0.7 million for the six months ended June 2022.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Fees earned from funds	**$ 1,152**	$ 1,288	**$ 2,317**	$ 2,250

	As of	
$ in millions	**June 2023**	December 2022
Fees receivable from funds	**$ 1,412**	$ 1,175
Aggregate carrying value of interests in funds	**$ 3,980**	$ 3,801

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 $8 million for the three months ended June 2023, $11 million for the three months ended June 2022, $16 million for the six months ended June 2023 and $99 million for the six months ended June 2022.

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 six months ended June 2023 or June 2022.

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.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Deposits with banks	**$ 2,796**	$ 277	**$ 5,266**	$ 285
Collateralized agreements	**4,068**	372	**7,457**	170
Trading assets	**1,944**	1,127	**3,768**	2,217
Investments	**911**	474	**1,728**	855
Loans	**3,687**	1,900	**7,145**	3,450
Other interest	**3,430**	701	**6,410**	1,086
Total interest income	**16,836**	4,851	**31,774**	8,063
Deposits	**4,031**	794	**7,526**	1,164
Collateralized financings	**3,136**	307	**5,496**	318
Trading liabilities	**538**	482	**1,136**	914
Short-term borrowings	**315**	104	**531**	181
Long-term borrowings	**2,722**	1,176	**5,372**	1,930
Other interest	**4,410**	254	**8,248**	(5)
Total interest expense	**15,152**	3,117	**28,309**	4,502
Net interest income	**$ 1,684**	$ 1,734	**$ 3,465**	$ 3,561

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.

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

Jurisdiction	As of June 2023
U.S. Federal	**2011**
New York State and City	**2015**
United Kingdom	**2017**
Japan	**2017**
Hong Kong	**2017**

The firm has been accepted into the Compliance Assurance Process program by the IRS for each of the tax years from 2013 through 2023. 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 through 2018 tax years have been resolved and completion is pending final review by the Joint Committee on Taxation. All issues for the 2019 and 2020 tax years have been resolved and will be effectively settled pending administrative completion by the IRS. Final completion of tax years 2011 through 2020 will not have a material impact on the effective tax rate. The 2021 tax year remains 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 manages and reports its activities in three business segments: Global Banking & Markets, Asset & Wealth Management and Platform Solutions. See Note 1 for information about the firm's business segments.

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 three 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.

Segment Results

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

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Global Banking & Markets				
Non-interest revenues	**$ 6,987**	$ 7,859	**$ 15,084**	$ 17,223
Net interest income	**202**	483	**549**	1,181
Total net revenues	**7,189**	8,342	**15,633**	18,404
Provision for credit losses	**56**	208	**185**	399
Operating expenses	**4,282**	4,431	**8,911**	9,404
Pre-tax earnings	**$ 2,851**	$ 3,703	**$ 6,537**	$ 8,601
Net earnings	**$ 2,091**	$ 3,058	**$ 5,077**	$ 7,202
Net earnings to common	**$ 1,982**	$ 2,952	**$ 4,858**	$ 7,016
Average common equity	**$ 71,205**	$ 70,932	**$ 70,362**	$ 69,439
Return on average common equity	**11.1%**	16.6%	**13.8%**	20.2%
Asset & Wealth Management				
Non-interest revenues	**$ 2,226**	$ 2,324	**$ 4,556**	$ 4,125
Net interest income	**821**	855	**1,707**	1,657
Total net revenues	**3,047**	3,179	**6,263**	5,782
Provision for credit losses	**15**	149	**(550)**	352
Operating expenses	**3,275**	2,823	**6,443**	5,232
Pre-tax earnings/(loss)	**$ (243)**	$ 207	**$ 370**	$ 198
Net earnings/(loss)	**$ (208)**	$ 174	**$ 288**	$ 166
Net earnings/(loss) to common	**$ (239)**	$ 142	**$ 225**	$ 108
Average common equity	**$ 31,047**	$ 30,923	**$ 31,781**	$ 30,968
Return on average common equity	**(3.1)%**	1.8%	**1.4%**	0.7%
Platform Solutions				
Non-interest revenues	**$ (2)**	$ (53)	**$ 14**	$ (112)
Net interest income	**661**	396	**1,209**	723
Total net revenues	**659**	343	**1,223**	611
Provision for credit losses	**544**	310	**809**	477
Operating expenses	**987**	399	**1,592**	733
Pre-tax earnings/(loss)	**$ (872)**	$ (366)	**$ (1,178)**	$ (599)
Net earnings/(loss)	**$ (667)**	$ (305)	**$ (915)**	$ (502)
Net earnings/(loss) to common	**$ (672)**	$ (308)	**$ (925)**	$ (507)
Average common equity	**$ 4,022**	$ 3,671	**$ 3,965**	$ 3,176
Return on average common equity	**(66.8)%**	(33.6)%	**(46.7)%**	(31.9)%
Total				
Non-interest revenues	**$ 9,211**	$ 10,130	**$ 19,654**	$ 21,236
Net interest income	**1,684**	1,734	**3,465**	3,561
Total net revenues	**10,895**	11,864	**23,119**	24,797
Provision for credit losses	**615**	667	**444**	1,228
Operating expenses	**8,544**	7,653	**16,946**	15,369
Pre-tax earnings	**$ 1,736**	$ 3,544	**$ 5,729**	$ 8,200
Net earnings	**$ 1,216**	$ 2,927	**$ 4,450**	$ 6,866
Net earnings to common	**$ 1,071**	$ 2,786	**$ 4,158**	$ 6,617
Average common equity	**$106,274**	$105,526	**$106,108**	$103,583
Return on average common equity	**4.0%**	10.6%	**7.8%**	12.8%

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.
- Expenses not directly associated with specific segments are allocated based on an estimate of support provided to each segment.

The table below presents depreciation and amortization expense by segment.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Global Banking & Markets	**$ 285**	$ 260	**$ 562**	$ 518
Asset & Wealth Management	**729**	252	**1,347**	460
Platform Solutions	**580**	58	**655**	84
Total	**$ 1,594**	$ 570	**$ 2,564**	$ 1,062

In the table above:

- Asset & Wealth Management included impairments related to commercial real estate included within consolidated investment entities of approximately $485 million for the three months ended June 2023 and approximately $840 million for the six months ended June 2023.
- Platform Solutions included an impairment of goodwill related to Consumer platforms of $504 million for the three months ended June 2023.

Segment Assets

The table below presents assets by segment.

	As of	
$ in millions	**June 2023**	December 2022
Global Banking & Markets	**$ 1,312,170**	$ 1,169,539
Asset & Wealth Management	**196,448**	214,970
Platform Solutions	**62,768**	57,290
Total	**$ 1,571,386**	$ 1,441,799

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:

- Global Banking & Markets: Investment banking fees and Other: location of the client and investment banking team; FICC intermediation and Equities intermediation: location of the market-making desk; FICC financing and Equities financing: location of the desk.
- Asset & Wealth Management (excluding direct-to-consumer business, Equity investments and Debt investments): location of the sales team and/or investments; Direct-to-consumer business: location of the client; Equity investments and Debt investments: location of the investment or investment professional.
- Platform Solutions: location of the client.

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

$ in millions	**2023**		2022	
Three Months Ended June				
Americas	**$ 6,801**	**63%**	$ 6,980	59%
EMEA	**2,868**	**26%**	3,429	29%
Asia	**1,226**	**11%**	1,455	12%
Total net revenues	**$ 10,895**	**100%**	$ 11,864	100%
Americas	**$ 600**	**35%**	$ 1,783	50%
EMEA	**904**	**52%**	1,392	39%
Asia	**232**	**13%**	369	11%
Total pre-tax earnings	**$ 1,736**	**100%**	$ 3,544	100%
Six Months Ended June				
Americas	**$ 13,995**	**60%**	$ 14,314	58%
EMEA	**6,452**	**28%**	7,300	29%
Asia	**2,672**	**12%**	3,183	13%
Total net revenues	**$ 23,119**	**100%**	$ 24,797	100%
Americas	**$ 2,619**	**46%**	$ 4,064	50%
EMEA	**2,464**	**43%**	3,197	39%
Asia	**646**	**11%**	939	11%
Total pre-tax earnings	**$ 5,729**	**100%**	$ 8,200	100%

In the table above:

- Americas pre-tax earnings for both the three and six months ended June 2023 were impacted by impairments related to commercial real estate included within consolidated investment entities and an impairment of goodwill related to Consumer platforms.
- Results in Americas were primarily 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 clearinghouse 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.

	As of	
$ in millions	**June 2023**	December 2022
U.S. government and agency obligations	**$ 219,926**	$ 205,935
Percentage of total assets	**14.0%**	14.3%
Non-U.S. government and agency obligations	**$ 81,645**	$ 40,334
Percentage of total assets	**5.2%**	2.8%

In addition, the firm had $230.44 billion as of June 2023 and $208.53 billion as of December 2022 of cash deposits held at central banks (included in cash and cash equivalents), of which $124.73 billion as of June 2023 and $165.77 billion as of December 2022 was held at the Federal Reserve.

As of both June 2023 and December 2022, the firm did not have credit exposure to any other counterparty that exceeded 2% of total assets.

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	
	June	December
$ in millions	**2023**	2022
U.S. government and agency obligations	**$ 115,268**	$ 164,897
Non-U.S. government and agency obligations	**$ 100,262**	$ 76,456

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, France and Italy.
- 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 June 2023 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 $2.2 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.

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, and 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).

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 plaintiff 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 plaintiff moved for class certification. On July 31, 2023, the plaintiff's motion for leave to file a third amended complaint was granted.

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. 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 May 18, 2023, the court dismissed certain state common law claims, but denied dismissal of the remaining claims. On July 7, 2023, the plaintiffs filed a second amended complaint.

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. On April 11, 2023, GSI commenced administrative proceedings against the BoP, seeking the nullification of the BoP's September 2015 and December 2015 decisions on new grounds.

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, LP (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. On December 21, 2021, the plaintiffs filed a corrected amended complaint. The complaint seeks rescission and compensatory damages in unspecified amounts. On January 4, 2022, the plaintiffs moved for class certification. On February 6, 2023, the court dismissed the claims against ViacomCBS and the individual defendants, but denied the defendants' motions to dismiss with respect to GS&Co. and the other underwriter defendants. On February 15, 2023, the underwriter defendants appealed the court's denial of the motion to dismiss. On March 10, 2023, the plaintiffs appealed the court's dismissal of the claims against ViacomCBS and the individual defendants. On April 18, 2023, the plaintiffs moved for class certification. On June 12, 2023, the court denied the underwriter defendants' motion to stay the proceedings pending their appeal of the court's denial of the motion to dismiss, and on June 27, 2023 the underwriter defendants appealed.

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 March 31, 2023, the court granted the defendants' motions to dismiss the amended complaints without prejudice. In May 2023, the plaintiffs in the class actions filed second amended complaints, and on July 18, 2023, the defendants moved to dismiss the second 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.

Silicon Valley Bank Matters

GS&Co. is among the underwriters named as defendants in a putative securities class action filed on April 7, 2023 in the U.S. District Court for the Northern District of California relating to SVB Financial Group's (SVBFG) January 2021 public offerings of $500 million principal amount of senior notes and $750 million of depositary shares representing interests in preferred stock, March 2021 public offering of approximately $1.2 billion of common stock, May 2021 public offerings of $1.0 billion of depositary shares representing interests in preferred stock and $500 million principal amount of senior notes, August 2021 public offering of approximately $1.3 billion of common stock, and April 2022 public offering of $800 million aggregate principal amount of senior notes, among other public offerings of securities. In addition to the underwriters, the defendants include certain of SVBFG's officers and directors and its auditor. GS&Co. underwrote an aggregate of 831,250 depositary shares representing an aggregate offering price of approximately $831 million, an aggregate of 3,266,108 shares of common stock representing an aggregate offering price of approximately $1.8 billion and senior notes representing an aggregate price to the public of approximately $727 million. The complaint asserts claims under the federal securities laws and alleges that the offering documents contained material misstatements and omissions. The complaint seeks compensatory damages in unspecified amounts. On March 17, 2023, SVBFG filed for Chapter 11 bankruptcy in the U.S. Bankruptcy Court for the Southern District of New York.

The firm is also cooperating with and providing information to various governmental bodies in connection with their investigations and inquiries regarding SVBFG and its affiliates (collectively SVB), including the firm's business with SVB in or around March 2023, when SVB engaged the firm to assist with a proposed capital raise and SVB sold the firm a portfolio of securities.

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 February 27, 2023, the U.S. Court of Appeals for the Ninth Circuit denied the defendants' petition seeking interlocutory review of the district court's grant of class certification.

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.

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, and on May 19, 2023, the court granted the defendants' motion to dismiss the amended consolidated complaint. On July 5, 2023, the court denied the plaintiffs' request for leave to amend the amended consolidated complaint and dismissed the case with prejudice.

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, and on March 10, 2023, the court granted the defendants' motion to dismiss the consolidated amended complaint with leave to amend. On April 10, 2023, the plaintiffs filed a second consolidated amended complaint, and on June 9, 2023, the defendants moved to dismiss the second 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 November 29, 2022, the court granted in part and denied in part the defendants' motion to dismiss the amended complaint, denying dismissal of the claims for violations of Section 11 of the Securities Act. On April 6, 2023, the plaintiffs moved for class certification.

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 February 3, 2023, the court granted the defendants' motion to dismiss the amended complaint. On March 6, 2023, plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit.

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. On May 15, 2023, the court granted the defendants' motion to dismiss the consolidated amended complaint with prejudice, and on June 15, 2023, the plaintiffs moved for a rehearing or for leave to amend the consolidated amended complaint and also appealed.

Rivian Automotive Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions filed on March 7, 2022 and February 28, 2023 in the U.S. District Court for the Central District of California and in the Superior Court of the State of California, County of Orange, respectively, 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 March 2, 2023, the plaintiffs in the federal court action filed an amended consolidated complaint, and on July 3, 2023, the court denied the defendants' motion to dismiss the amended consolidated complaint. On June 30, 2023, the court in the state court action granted the defendants' motion to dismiss the 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. On December 16, 2022, the defendants moved to dismiss the amended complaint in the federal action.

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 February 10, 2023, the court granted the defendants' motion to dismiss the complaint with leave to amend, and on March 13, 2023, the plaintiffs filed a second amended complaint. On May 12, 2023, the defendants moved to dismiss the second 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, including a director who was a Managing Director of GS&Co. at the time of the initial public offering. 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, and on July 7, 2023, the court granted the defendants' motion to dismiss the consolidated complaint with leave to amend.

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 November 28, 2022, the plaintiffs filed a second amended complaint, and on June 2, 2023, the court granted the defendants' motion to dismiss the second amended complaint.

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. On December 5, 2022, the plaintiffs filed an amended complaint. On April 4, 2023, the defendants moved to dismiss the amended complaint.

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 February 10, 2023, the court granted in part and denied in part the defendants' motion to dismiss, dismissing the claim alleging a violation of Section 12(a)(2) of the Securities Act and, with respect to the May 2021 secondary equity offering only, the claim alleging a violation of Section 11 of the Securities Act, but declining to dismiss the remaining claims.

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. In July 2023, the parties reached a settlement in principle, subject to final documentation and court approval, to resolve this action.

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 and transferred to the U.S. District Court for the Southern District of New York in November 2022 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. On January 31, 2023, the plaintiffs filed an amended complaint. On March 31, 2023, the defendants moved to dismiss the amended complaint.

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. On December 19, 2022, the plaintiffs filed an amended complaint, and on April 10, 2023, the defendants' motion to dismiss the amended complaint was denied. On June 2, 2023, the plaintiffs moved for class certification.

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 and transferred to the U.S. District Court for the Southern District of New York on November 18, 2022 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. On April 24, 2023, the plaintiffs filed a second amended complaint, and on June 23, 2023, the defendants moved to dismiss the second amended complaint.

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. On May 24, 2023, the plaintiffs filed an amended complaint, and on July 28, 2023, the defendants moved to dismiss the amended complaint.

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.

Rent the Runway, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on November 14, 2022 in the U.S. District Court for the Eastern District of New York relating to Rent the Runway, Inc.'s (Rent the Runway) $357 million October 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Rent the Runway and certain of its officers and directors. GS&Co. underwrote 5,254,304 shares of common stock representing an aggregate offering price of approximately $110 million.

Opendoor Technologies Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on November 22, 2022 in the U.S. District Court for the District of Arizona relating to, among other things, Opendoor Technologies Inc.'s (Opendoor) approximately $886 million February 2021 public offering of common stock. In addition to the underwriters, the defendants include Opendoor and certain of its officers and directors. GS&Co. underwrote 10,173,401 shares of common stock representing an aggregate offering price of approximately $275 million. On April 17, 2023, the plaintiffs filed a consolidated amended complaint, and on June 30, 2023, the defendants moved to dismiss the consolidated amended complaint.

FIGS, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on December 8, 2022 in the U.S. District Court for the Central District of California relating to FIGS, Inc.'s (FIGS) approximately $668 million May 2021 initial public offering and approximately $413 million September 2021 secondary equity offering. In addition to the underwriters, the defendants include FIGS, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 9,545,073 shares of common stock in the May 2021 initial public offering representing an aggregate offering price of approximately $210 million and 3,179,047 shares of common stock in the September 2021 secondary equity offering representing an aggregate offering price of approximately $128 million. On April 10, 2023, the plaintiffs filed a consolidated complaint, and on May 25, 2023, the defendants moved to dismiss the consolidated complaint.

Silvergate Capital Corporation. GS&Co. is among the underwriters and sales agents named as defendants in a putative securities class action filed on January 19, 2023 in the U.S. District Court for the Southern District of California, as amended on May 11, 2023, relating to Silvergate Capital Corporation's (Silvergate) approximately $288 million January 2021 public offering of common stock, approximately $300 million "at-the-market" offering of common stock conducted from March through May 2021, approximately $200 million July 2021 public offering of depositary shares representing interests in preferred stock, and approximately $552 million December 2021 public offering of common stock. In addition to the underwriters and sales agents, the defendants include Silvergate and certain of its officers and directors. GS&Co. underwrote 1,711,313 shares of common stock in the January 2021 public offering of common stock representing an aggregate offering price of approximately $108 million, acted as a sales agent with respect to up to a $300 million aggregate offering price of shares of common stock in the March through May 2021 "at-the-market" offering, underwrote 1,600,000 depositary shares in the July 2021 public offering representing an aggregate offering price of approximately $40 million, and underwrote 1,375,397 shares of common stock in the December 2021 public offering of common stock representing an aggregate offering price of approximately $199 million. On July 10, 2023, the defendants moved to dismiss the consolidated amended complaint.

Centessa Pharmaceuticals plc. GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on February 10, 2023 in the U.S. District Court for the Southern District of New York relating to Centessa Pharmaceuticals plc's (Centessa) approximately $380 million May 2021 initial public offering of ADS. In addition to the underwriters, the defendants include Centessa and certain of its officers and directors. GS&Co. underwrote 6,072,000 ADS representing an aggregate offering price of approximately $121 million. On June 7, 2023, the defendants moved to dismiss the amended complaint.

iQIYI, Inc. GS Asia is among the underwriters named as defendants in a putative securities class action filed on June 1, 2021 in the U.S. District Court for the Eastern District of New York relating to iQIYI's approximately $2.4 billion March 2018 initial public offering of ADS. In addition to the underwriters, the defendants include iQIYI, certain of its officers and directors and its controlling shareholder. GS Asia underwrote 69,751,212 ADS representing an aggregate offering price of approximately $1.3 billion. On November 30, 2022, the defendants served a motion to dismiss the amended complaint.

F45 Training Holdings Inc. GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on May 19, 2023 in the U.S. District Court for the Western District of Texas relating to F45 Training Holdings Inc.'s (F45) approximately $350 million July 2021 initial public offering of common stock. In addition to the underwriters, the defendants include F45, certain of its officers and directors and certain of its shareholders. GS&Co. acted as a qualified independent underwriter for the offering and underwrote 8,303,744 shares of common stock representing an aggregate offering price of approximately $133 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, and on March 24, 2023, the U.S. Court of Appeals for the Second Circuit affirmed the dismissal. 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. On August 15, 2022, the plaintiffs and defendants filed objections to the Magistrate Judge's report and recommendation with the district court. In May 2023, certain parties, including the firm, reached a settlement in principle, subject to final documentation and court approval, to resolve this action. The firm has reserved the full amount of its proposed contribution to the settlement.

Variable Rate Demand Obligations Antitrust Litigation

Group Inc. and GS&Co. were 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. Group Inc. was voluntarily dismissed from the putative class action on June 3, 2019. 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.

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, and on February 27, 2023, the U.S. Court of Appeals for the Second Circuit reversed the district court's dismissal of certain plaintiffs' antitrust claims and vacated the district court's dismissal of the plaintiffs' Commodity Exchange Act claim. On April 12, 2023, the defendants' petition for rehearing or rehearing en banc with the U.S. Court of Appeals for the Second Circuit was denied.

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 November 10, 2022, the district court denied the plaintiffs' motion for an indicative ruling 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.

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 June 5, 2023, the court dismissed the claims against certain foreign defendants for lack of personal jurisdiction, but denied the defendants' motion to dismiss with respect to GS&Co., GSI and the remaining defendants.

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.

On May 15, 2023, the court preliminarily approved a settlement among the parties pursuant to which the firm agreed to a payment of $215 million. The settlement also provides that the firm will engage an independent expert to complete standard validation studies of its performance evaluation and promotion from vice president to managing director processes, continue or implement certain practices as part of its performance evaluation and promotion processes, and engage an independent expert to perform an annual pay equity analysis for the 2023, 2024 and 2025 year-end compensation cycles.

Consumer Investigation and Review

The firm is cooperating with the Consumer Financial Protection Bureau and other governmental bodies relating to investigations and/or inquiries concerning GS Bank USA's credit card account management practices and is providing information regarding the application of refunds, crediting of nonconforming payments, billing error resolution, advertisements, reporting to credit bureaus, and any other consumer-related information requested by them.

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 and regulatory 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 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 June 30, 2023, the related consolidated statements of earnings, comprehensive income and changes in shareholders' equity for the three and six month periods ended June 30, 2023 and 2022, and the consolidated statements of cash flows for the six month periods ended June 30, 2023 and 2022, 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, 2022, 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 23, 2023, 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, 2022, 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
August 2, 2023

Distribution of Assets, Liabilities and Shareholders' Equity

The tables below present information about average balances, interest and average interest rates.

	Average Balance for the			
	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Assets				
U.S.	**$ 136,597**	$ 146,786	**$ 137,637**	$ 139,663
Non-U.S.	**127,291**	110,036	**126,569**	109,247
Deposits with banks	**263,888**	256,822	**264,206**	248,910
U.S.	**209,791**	256,014	**203,763**	260,353
Non-U.S.	**165,629**	171,899	**165,267**	172,688
Collateralized agreements	**375,420**	427,913	**369,030**	433,041
U.S.	**197,342**	159,288	**190,389**	162,093
Non-U.S.	**148,867**	126,807	**136,469**	129,014
Trading assets	**346,209**	286,095	**326,858**	291,107
U.S.	**119,624**	94,362	**117,466**	82,820
Non-U.S.	**15,149**	14,717	**15,182**	15,831
Investments	**134,773**	109,079	**132,648**	98,651
U.S.	**153,310**	142,721	**154,432**	137,237
Non-U.S.	**20,073**	23,015	**20,106**	23,136
Loans	**173,383**	165,736	**174,538**	160,373
U.S.	**92,718**	101,711	**89,340**	102,674
Non-U.S.	**54,831**	63,387	**57,448**	62,756
Other interest-earning assets	**147,549**	165,098	**146,788**	165,430
Interest-earning assets	**1,441,222**	1,410,743	**1,414,068**	1,397,512
Cash and due from banks	**6,901**	7,691	**6,742**	8,274
Other non-interest-earning assets	**113,475**	145,767	**115,022**	140,118
Assets	**$1,561,598**	$1,564,201	**$1,535,832**	$1,545,904
Liabilities				
U.S.	**$ 305,594**	$ 297,332	**$ 303,450**	$ 291,885
Non-U.S.	**78,274**	74,562	**76,539**	76,787
Interest-bearing deposits	**383,868**	371,894	**379,989**	368,672
U.S.	**151,467**	109,624	**139,891**	112,467
Non-U.S.	**98,574**	85,866	**88,839**	86,768
Collateralized financings	**250,041**	195,490	**228,730**	199,235
U.S.	**65,475**	89,393	**65,739**	81,672
Non-U.S.	**74,673**	89,551	**73,442**	87,320
Trading liabilities	**140,148**	178,944	**139,181**	168,992
U.S.	**48,640**	34,735	**44,576**	31,098
Non-U.S.	**27,752**	30,245	**26,737**	29,546
Short-term borrowings	**76,392**	64,980	**71,313**	60,644
U.S.	**199,919**	223,037	**205,359**	227,735
Non-U.S.	**45,195**	35,766	**44,854**	34,089
Long-term borrowings	**245,114**	258,803	**250,213**	261,824
U.S.	**156,540**	171,485	**156,318**	167,878
Non-U.S.	**97,967**	98,060	**96,939**	97,950
Other interest-bearing liabilities	**254,507**	269,545	**253,257**	265,828
Interest-bearing liabilities	**1,350,070**	1,339,656	**1,322,683**	1,325,195
Non-interest-bearing deposits	**4,776**	4,787	**4,759**	5,061
Other non-interest-bearing liabilities	**89,775**	103,529	**91,579**	101,362
Liabilities	**1,444,621**	1,447,972	**1,419,021**	1,431,618
Shareholders' equity				
Preferred stock	**10,703**	10,703	**10,703**	10,703
Common stock	**106,274**	105,526	**106,108**	103,583
Shareholders' equity	**116,977**	116,229	**116,811**	114,286
Liabilities and shareholders' equity	**$1,561,598**	$1,564,201	**$1,535,832**	$1,545,904
Percentage attributable to non-U.S. operations				
Interest-earning assets	**36.90%**	36.14%	**36.85%**	36.68%
Interest-bearing liabilities	**31.29%**	30.91%	**30.80%**	31.12%

	Interest for the			
	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Assets				
U.S.	**$ 1,844**	$ 309	**$ 3,611**	$ 372
Non-U.S.	**952**	(32)	**1,655**	(87)
Deposits with banks	**2,796**	277	**5,266**	285
U.S.	**2,784**	359	**5,136**	272
Non-U.S.	**1,284**	13	**2,321**	(102)
Collateralized agreements	**4,068**	372	**7,457**	170
U.S.	**1,268**	702	**2,476**	1,439
Non-U.S.	**676**	425	**1,292**	778
Trading assets	**1,944**	1,127	**3,768**	2,217
U.S.	**712**	342	**1,341**	569
Non-U.S.	**199**	132	**387**	286
Investments	**911**	474	**1,728**	855
U.S.	**3,253**	1,640	**6,357**	2,948
Non-U.S.	**434**	260	**788**	502
Loans	**3,687**	1,900	**7,145**	3,450
U.S.	**2,076**	506	**3,837**	805
Non-U.S.	**1,354**	195	**2,573**	281
Other interest-earning assets	**3,430**	701	**6,410**	1,086
Interest-earning assets	**$ 16,836**	$ 4,851	**$ 31,774**	$ 8,063
Liabilities				
U.S.	**$ 3,354**	$ 653	**$ 6,320**	$ 954
Non-U.S.	**677**	141	**1,206**	210
Interest-bearing deposits	**4,031**	794	**7,526**	1,164
U.S.	**2,084**	237	**3,765**	280
Non-U.S.	**1,052**	70	**1,731**	38
Collateralized financings	**3,136**	307	**5,496**	318
U.S.	**186**	220	**446**	432
Non-U.S.	**352**	262	**690**	482
Trading liabilities	**538**	482	**1,136**	914
U.S.	**286**	70	**473**	131
Non-U.S.	**29**	34	**58**	50
Short-term borrowings	**315**	104	**531**	181
U.S.	**2,664**	1,132	**5,248**	1,862
Non-U.S.	**58**	44	**124**	68
Long-term borrowings	**2,722**	1,176	**5,372**	1,930
U.S.	**2,691**	128	**5,102**	(159)
Non-U.S.	**1,719**	126	**3,146**	154
Other interest-bearing liabilities	**4,410**	254	**8,248**	(5)
Interest-bearing liabilities	**$ 15,152**	$ 3,117	**$ 28,309**	$ 4,502
Net interest income				
U.S.	**$ 672**	$ 1,418	**$ 1,404**	$ 2,905
Non-U.S.	**1,012**	316	**2,061**	656
Net interest income	**$ 1,684**	$ 1,734	**$ 3,465**	$ 3,561

	Annualized Average Rate for the			
	Three Months Ended June		Six Months Ended June	
	2023	2022	**2023**	2022
Assets				
U.S.	**5.40 %**	0.84 %	**5.25 %**	0.54 %
Non-U.S.	**2.99 %**	(0.12)%	**2.62 %**	(0.16)%
Deposits with banks	**4.24 %**	0.43 %	**3.99 %**	0.23 %
U.S.	**5.31 %**	0.56 %	**5.04 %**	0.21 %
Non-U.S.	**3.10 %**	0.03 %	**2.81 %**	(0.12)%
Collateralized agreements	**4.33 %**	0.35 %	**4.04 %**	0.08 %
U.S.	**2.57 %**	1.76 %	**2.60 %**	1.79 %
Non-U.S.	**1.82 %**	1.34 %	**1.89 %**	1.21 %
Trading assets	**2.25 %**	1.58 %	**2.31 %**	1.53 %
U.S.	**2.38 %**	1.45 %	**2.28 %**	1.38 %
Non-U.S.	**5.25 %**	3.59 %	**5.10 %**	3.63 %
Investments	**2.70 %**	1.74 %	**2.61 %**	1.74 %
U.S.	**8.49 %**	4.60 %	**8.23 %**	4.32 %
Non-U.S.	**8.65 %**	4.52 %	**7.84 %**	4.36 %
Loans	**8.51 %**	4.59 %	**8.19 %**	4.33 %
U.S.	**8.96 %**	1.99 %	**8.59 %**	1.58 %
Non-U.S.	**9.88 %**	1.23 %	**8.96 %**	0.90 %
Other interest-earning assets	**9.30 %**	1.70 %	**8.73 %**	1.32 %
Interest-earning assets	**4.67 %**	1.38 %	**4.49 %**	1.16 %
Liabilities				
U.S.	**4.39 %**	0.88 %	**4.17 %**	0.66 %
Non-U.S.	**3.46 %**	0.76 %	**3.15 %**	0.55 %
Interest-bearing deposits	**4.20 %**	0.85 %	**3.96 %**	0.63 %
U.S.	**5.50 %**	0.86 %	**5.38 %**	0.50 %
Non-U.S.	**4.27 %**	0.33 %	**3.90 %**	0.09 %
Collateralized financings	**5.02 %**	0.63 %	**4.81 %**	0.32 %
U.S.	**1.14 %**	0.98 %	**1.36 %**	1.06 %
Non-U.S.	**1.89 %**	1.17 %	**1.88 %**	1.11 %
Trading liabilities	**1.54 %**	1.08 %	**1.63 %**	1.09 %
U.S.	**2.35 %**	0.81 %	**2.12 %**	0.85 %
Non-U.S.	**0.42 %**	0.45 %	**0.43 %**	0.34 %
Short-term borrowings	**1.65 %**	0.64 %	**1.49 %**	0.60 %
U.S.	**5.33 %**	2.03 %	**5.11 %**	1.64 %
Non-U.S.	**0.51 %**	0.49 %	**0.55 %**	0.40 %
Long-term borrowings	**4.44 %**	1.82 %	**4.29 %**	1.48 %
U.S.	**6.88 %**	0.30 %	**6.53 %**	(0.19)%
Non-U.S.	**7.02 %**	0.51 %	**6.49 %**	0.32 %
Other interest-bearing liabilities	**6.93 %**	0.38 %	**6.51 %**	–
Interest-bearing liabilities	**4.49 %**	0.93 %	**4.28 %**	0.68 %
Interest rate spread	**0.18 %**	0.45 %	**0.21 %**	0.48 %
U.S.	**0.30 %**	0.63 %	**0.31 %**	0.66 %
Non-U.S.	**0.76 %**	0.25 %	**0.79 %**	0.26 %
Net yield on interest-earning assets	**0.47 %**	0.49 %	**0.49 %**	0.51 %

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.
- Average collateralized agreements included $182.97 billion of resale agreements and $192.45 billion of securities borrowed for the three months ended June 2023, $237.23 billion of resale agreements and $190.68 billion of securities borrowed for the three months ended June 2022, $175.31 billion of resale agreements and $193.72 billion of securities borrowed for the six months ended June 2023, and $241.68 billion of resale agreements and $191.36 billion of securities borrowed for the six months ended June 2022.
- Other interest-earning assets primarily consists of certain receivables from customers and counterparties.
- Collateralized financings included $202.82 billion of repurchase agreements and $47.22 billion of securities loaned for the three months ended June 2023, $154.10 billion of repurchase agreements and $41.39 billion of securities loaned for the three months ended June 2022, $185.42 billion of repurchase agreements and $43.31 billion of securities loaned for the six months ended June 2023, and $156.03 billion of repurchase agreements and $43.21 billion of securities loaned for the six months ended June 2022.
- Substantially all other interest-bearing liabilities consists of certain 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 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 manage and report our activities in three business segments: Global Banking & Markets, Asset & Wealth Management and Platform Solutions. 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, 2022. References to "the 2022 Form 10-K" are to our Annual Report on Form 10-K for the year ended December 31, 2022. References to "this Form 10-Q" are to our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2023. 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 June 2023, March 2023 and June 2022 refer to our periods ended, or the dates, as the context requires, June 30, 2023, March 31, 2023 and June 30, 2022, respectively. All references to December 2022 refer to the date December 31, 2022. 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 June 2023 versus June 2022. We generated net earnings of $1.22 billion for the second quarter of 2023, compared with $2.93 billion for the second quarter of 2022. Diluted earnings per common share (EPS) was $3.08 for the second quarter of 2023, compared with $7.73 for the second quarter of 2022. Annualized return on average common shareholders' equity (ROE) was 4.0% for the second quarter of 2023, compared with 10.6% for the second quarter of 2022. Book value per common share was $309.33 as of June 2023, essentially unchanged compared with March 2023 and 1.9% higher compared with December 2022.

Net revenues were $10.90 billion for the second quarter of 2023, 8% lower than the second quarter of 2022, reflecting lower net revenues in Global Banking & Markets and slightly lower net revenues in Asset & Wealth Management, partially offset by higher net revenues in Platform Solutions. Net revenues in Global Banking & Markets reflected significantly lower net revenues in Fixed Income, Currency, and Commodities (FICC) compared with a strong prior year period and significantly lower Investment banking fees. Net revenues in Asset & Wealth Management reflected significantly higher net losses in Equity investments, significantly lower Incentive fees and significantly lower net revenues in Debt investments, partially offset by significantly higher net revenues in Private banking and lending and slightly higher Management and other fees. Net revenues in Platform Solutions reflected significantly higher net revenues in Consumer platforms.

Provision for credit losses was $615 million for the second quarter of 2023, compared with $667 million for the second quarter of 2022. Provisions for the second quarter of 2023 reflected net provisions related to the credit card and point-of-sale loan portfolios, driven by net charge-offs and growth, and individual impairments on wholesale loans, partially offset by a reserve reduction related to the repayment of a term deposit with First Republic Bank (First Republic). Provisions for the second quarter of 2022 reflected growth (primarily in credit cards) and the impact of broad macroeconomic concerns.

Operating expenses were $8.54 billion for the second quarter of 2023, 12% higher than the second quarter of 2022, due to an impairment of goodwill of $504 million related to Consumer platforms and impairments of approximately $485 million related to commercial real estate included within consolidated investment entities. Our efficiency ratio (total operating expenses divided by total net revenues) was 78.4% for the second quarter of 2023, compared with 64.5% for the second quarter of 2022.

During the quarter, we returned a total of $1.61 billion of capital to common shareholders, including common stock repurchases of $750 million and common stock dividends of $864 million. As of June 2023, our Common Equity Tier 1 (CET1) capital ratio was 14.9% under the Standardized Capital Rules and 14.4% under the Advanced Capital Rules. See Note 20 to the consolidated financial statements for further information about our capital ratios.

Six Months Ended June 2023 versus June 2022. We generated net earnings of $4.45 billion for the first half of 2023, compared with $6.87 billion for the first half of 2022. Diluted EPS was $11.91 for the first half of 2023, compared with $18.47 for the first half of 2022. Annualized ROE was 7.8% for the first half of 2023, compared with 12.8% for the first half of 2022.

Net revenues were $23.12 billion for the first half of 2023, 7% lower than the first half of 2022, reflecting lower net revenues in Global Banking & Markets, partially offset by higher net revenues in Platform Solutions and Asset & Wealth Management. Net revenues in Global Banking & Markets reflected significantly lower net revenues in FICC compared with a strong prior year period and significantly lower Investment banking fees. Net revenues in Asset & Wealth Management primarily reflected higher Management and other fees and higher net revenues in Private banking and lending, partially offset by significantly lower Incentive fees. Net revenues in Platform Solutions reflected significantly higher net revenues in Consumer platforms.

Provision for credit losses was $444 million for the first half of 2023, compared with $1.23 billion for the first half of 2022. Provisions for the first half of 2023 reflected net provisions related to the credit card and point-of-sale loan portfolios, driven by net charge-offs and growth, partially offset by a reserve reduction related to the sale of substantially all of the Marcus loans portfolio. Provisions for the first half of 2022 primarily reflected portfolio growth (primarily in credit cards) and the impact of macroeconomic and geopolitical concerns.

Operating expenses were $16.95 billion for the first half of 2023, 10% higher than the first half of 2022, primarily due to impairments of approximately $840 million related to commercial real estate included within consolidated investment entities and an impairment of goodwill of $504 million related to Consumer platforms. Our efficiency ratio for the first half of 2023 was 73.3%, compared with 62.0% for the first half of 2022.

During the first half of 2023, we returned a total of $5.03 billion of capital to common shareholders, including common stock repurchases of $3.30 billion and common stock dividends of $1.73 billion.

Business Environment

During the second quarter of 2023, broad macroeconomic and geopolitical concerns continued to weigh on global economic activity. Stress in the banking sector remained a key focus early in the second quarter, subsiding after regional banks showed stability. Uncertainty heightened regarding a resolution on the U.S. federal debt ceiling before being resolved. Concerns about persistent inflation and the economic outlook remained, but declining inflationary measures and signs of improved sentiment were positive developments. These factors contributed to higher global equity prices compared with the end of the first quarter of 2023, while the commercial real estate market continued to face increased pressure.

There remains uncertainty about the economic outlook, reflecting concerns about geopolitical risks, inflation and the commercial real estate sector, and about potential increases in regulatory requirements. 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 1.7% as of both June 2023 and March 2023, and 1.8% as of December 2022 of our total assets. See Notes 4 and 5 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.

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, S&P Global Services, Bloomberg, ICE Data Services, Pricing Direct, 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.

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 June 2023 (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 second half of 2023 through the first half of 2024 and a more aggressive tightening of monetary policy by central banks, resulting in an economic contraction and rising unemployment rates. A 100% weighting to the adverse economic scenario would have resulted in an approximate $0.8 billion increase in our allowance for credit losses as of June 2023. 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 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 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. In connection with the exploration of a potential sale of GreenSky, we performed a quantitative goodwill test and determined that the goodwill associated with Consumer platforms was impaired, and accordingly, recorded a $504 million impairment in the second quarter of 2023. 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, the performance of one or more of our reporting units or our common stock price, or additional increases in capital requirements, our goodwill could be impaired in the future.

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. In connection with the exploration of a potential sale of GreenSky, we quantitatively tested GreenSky's identifiable intangible assets for impairment and determined that these assets were not impaired. We will continue to evaluate these assets to determine whether an impairment is required in the future. The identifiable intangible assets related to GreenSky were approximately $625 million as of June 2023 and approximately $660 million as of December 2022. 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 2022 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 2022 Form 10-K for further information about the impact of economic and market conditions on our results of operations.

Financial Overview

The table below presents an overview of our financial results and selected financial ratios.

	Three Months Ended June		Six Months Ended June	
$ in millions, except per share amounts	2023	2022	2023	2022
Net revenues	**$ 10,895**	$ 11,864	**$ 23,119**	$ 24,797
Pre-tax earnings	**$ 1,736**	$ 3,544	**$ 5,729**	$ 8,200
Net earnings	**$ 1,216**	$ 2,927	**$ 4,450**	$ 6,866
Net earnings to common	**$ 1,071**	$ 2,786	**$ 4,158**	$ 6,617
Diluted EPS	**$ 3.08**	$ 7.73	**$ 11.91**	$ 18.47
ROE	**4.0%**	10.6%	**7.8%**	12.8%
ROTE	**4.4%**	11.4%	**8.5%**	13.6%
Net earnings to average assets	**0.3%**	0.7%	**0.6%**	0.9%
Return on shareholders' equity	**4.2%**	10.1%	**7.6%**	12.0%
Average equity to average assets	**7.5%**	7.4%	**7.6%**	7.4%
Dividend payout ratio	**81.2%**	25.9%	**42.0%**	21.7%

Our target (through-the-cycle) is to achieve ROE within a range of 14% to 16% and annualized return on average tangible common shareholders' equity (ROTE) within a range of 15% to 17%.

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, ROTE, net earnings to average total 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.
- ROTE is calculated by dividing annualized net earnings to common by average monthly tangible common shareholders' equity. 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 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.

  The table below presents our average equity and the reconciliation of average common shareholders' equity to average tangible common shareholders' equity.

	Average for the			
	Three Months Ended June		Six Months Ended June	
$ in millions	2023	2022	2023	2022
Total shareholders' equity	**$ 116,977**	$ 116,229	**$ 116,811**	$ 114,286
Preferred stock	**(10,703)**	(10,703)	**(10,703)**	(10,703)
Common shareholders' equity	**106,274**	105,526	**106,108**	103,583
Goodwill	**(6,315)**	(5,957)	**(6,341)**	(5,241)
Identifiable intangible assets	**(1,942)**	(1,844)	**(1,963)**	(1,242)
Tangible common shareholders' equity	**$ 98,017**	$ 97,725	**$ 97,804**	$ 97,100

- 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.

Net Revenues

The table below presents our net revenues by line item.

	Three Months Ended June		Six Months Ended June	
$ in millions	2023	2022	2023	2022
Investment banking	**$ 1,432**	$ 1,799	**$ 3,010**	$ 3,943
Investment management	**2,356**	2,394	**4,645**	4,464
Commissions and fees	**893**	1,071	**1,981**	2,074
Market making	**4,351**	4,913	**9,784**	10,942
Other principal transactions	**179**	(47)	**234**	(187)
Total non-interest revenues	**9,211**	10,130	**19,654**	21,236
Interest income	**16,836**	4,851	**31,774**	8,063
Interest expense	**15,152**	3,117	**28,309**	4,502
Net interest income	**1,684**	1,734	**3,465**	3,561
Total net revenues	**$ 10,895**	$ 11,864	**$ 23,119**	$ 24,797

In the table above:

- Investment banking consists of revenues (excluding net interest) from financial advisory and underwriting assignments. These activities are included in Global Banking & Markets.
- Investment management consists of revenues (excluding net interest) from providing asset management and wealth advisory services across all major asset classes to a diverse set of clients. These activities are included in Asset & Wealth Management.
- 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. Substantially all of these activities are included in Global Banking & Markets.
- 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 Global Banking & Markets.
- Other principal transactions consists of revenues (excluding net interest) from our equity investing activities, including revenues related to our consolidated investments (included in Asset & Wealth Management), and debt investing and lending activities (included across our three segments).

Operating Environment. During the second quarter of 2023, the operating environment was generally characterized by continued broad macroeconomic concerns, including inflationary concerns, geopolitical tensions and the outlook for economic growth. These factors contributed to a decline in market-making activity levels and negatively affected industry-wide investment banking activity levels. However, improvements in the outlook for economic conditions contributed to an increase in equity prices compared with the end of the first quarter of 2023, while the commercial real estate market faced increased pressure. In the U.S., the rate of unemployment remained low and the pace of growth in consumer spending declined compared with the first quarter of 2023.

If concerns about the economic outlook grow, including those about geopolitical concerns, inflation, the commercial real estate sector, and potential increases in regulatory requirements, it may lead to a decline in asset prices, a further decline in market-making activity levels, or a continued decline in investment banking activity levels, 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 June 2023 versus June 2022. Net revenues in the consolidated statements of earnings were $10.90 billion for the second quarter of 2023, 8% lower than the second quarter of 2022, primarily reflecting lower market making revenues, significantly lower investment banking revenues and lower commissions and fees, partially offset by net gains in other principal transactions revenues compared with net losses in the prior year period.

Non-Interest Revenues. Investment banking revenues in the consolidated statements of earnings were $1.43 billion for the second quarter of 2023, 20% lower than the second quarter of 2022, primarily due to significantly lower revenues in advisory, reflecting a significant decline in industry-wide completed mergers and acquisitions transactions, partially offset by significantly higher revenues in equity underwriting, primarily reflecting a significant increase in industry-wide volumes.

Investment management revenues in the consolidated statements of earnings were $2.36 billion for the second quarter of 2023, 2% lower than the second quarter of 2022, due to significantly lower incentive fees, driven by significant harvesting in the prior year period, largely offset by higher management and other fees, primarily reflecting the impact of higher average assets under supervision (AUS).

Commissions and fees in the consolidated statements of earnings were $893 million for the second quarter of 2023, 17% lower than the second quarter of 2022, primarily reflecting the impact of GreenSky in the prior year period.

Market making revenues in the consolidated statements of earnings were $4.35 billion for the second quarter of 2023, 11% lower than a strong second quarter of 2022, reflecting significantly lower revenues in intermediation, partially offset by significantly higher revenues in financing. The decrease from intermediation activities reflected significantly lower revenues in equity derivatives, interest rate products, commodities and currencies, partially offset by significantly improved results in mortgages. The increase from financing activities reflected significantly higher revenues in equity financing products.

Other principal transactions revenues in the consolidated statements of earnings were $179 million for the second quarter of 2023, compared with $(47) million for the second quarter of 2022, reflecting improved performance in investments in public equities, corporate private equities and corporate debt, which together had net losses in the prior year period, and a gain of approximately $100 million related to the sale of substantially all of the Marcus loans portfolio, largely offset by weaker performance in real estate investments, which had net losses in the current year period compared with net gains in the prior year period.

Net Interest Income. Net interest income in the consolidated statements of earnings was $1.68 billion for the second quarter of 2023, 3% lower than the second quarter of 2022, reflecting a significant increase in interest expense primarily related to other interest-bearing liabilities, deposits, collateralized financings, and borrowings, each reflecting the impact of higher average interest rates. The increase in interest expense was partially offset by a significant increase in interest income primarily related to collateralized agreements, other interest-earning assets, deposits with banks and loans, 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.

Six Months Ended June 2023 versus June 2022. Net revenues in the consolidated statements of earnings were $23.12 billion for the first half of 2023, 7% lower than the first half of 2022, primarily reflecting lower market making revenues and significantly lower investment banking revenues, partially offset by net gains in other principal transactions revenues compared with net losses in the prior year period.

Non-Interest Revenues. Investment banking revenues in the consolidated statements of earnings were $3.01 billion for the first half of 2023, 24% lower than the first half of 2022, due to significantly lower revenues in advisory, reflecting a significant decline in industry-wide completed mergers and acquisitions transactions, and significantly lower revenues in debt underwriting, reflecting a decline in industry-wide volumes, partially offset by significantly higher revenues in equity underwriting, primarily reflecting increased activity in secondary offerings.

Investment management revenues in the consolidated statements of earnings were $4.65 billion for the first half of 2023, 4% higher than the first half of 2022, due to higher management and other fees, primarily reflecting the inclusion of NN Investment Partners (NNIP) and a reduction in fee waivers on money market funds, partially offset by significantly lower incentive fees, driven by significant harvesting in the prior year period.

Commissions and fees in the consolidated statements of earnings were $1.98 billion for the first half of 2023, 4% lower than the first half of 2022.

Market making revenues in the consolidated statements of earnings were $9.78 billion for the first half of 2023, 11% lower than a strong first half of 2022, reflecting significantly lower revenues in intermediation, partially offset by significantly higher revenues in financing. The decrease from intermediation activities reflected significantly lower revenues in equity derivatives, currencies and commodities, partially offset by significantly improved results in mortgages. The increase from financing activities reflected significantly higher revenues in equity financing products.

Other principal transactions revenues in the consolidated statements of earnings were $234 million for the first half of 2023, compared with $(187) million for the first half of 2022, reflecting improved performance in investments in public equities, corporate private equities and corporate debt, which together had significant net losses in the prior year period driven by a challenging environment, largely offset by weaker performance in real estate investments, which had net losses in the current year period compared with net gains in the prior year period, and net revenues of approximately $(370) million related to the sale of substantially all of the Marcus loans portfolio.

Net Interest Income. Net interest income in the consolidated statements of earnings was $3.47 billion for the first half of 2023, 3% lower than the first half of 2022, reflecting a significant increase in interest expense related to other interest-bearing liabilities, deposits, collateralized financings, and borrowings, each reflecting the impact of higher average interest rates. The increase in interest expense was partially offset by a significant increase in interest income primarily related to collateralized agreements, other interest-earning assets, deposits with banks and loans, 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.

Provision for Credit Losses

Provision for credit losses consists of provision for credit losses on financial assets and commitments accounted for at amortized cost, including loans and lending commitments held for investment. See Note 9 to the consolidated financial statements for further information about the provision for credit losses on loans and lending commitments.

The table below presents our provision for credit losses.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Provision for credit losses	**$ 615**	$ 667	**$ 444**	$ 1,228

Three Months Ended June 2023 versus June 2022. Provision for credit losses in the consolidated statements of earnings was $615 million for the second quarter of 2023, compared with $667 million for the second quarter of 2022. Provisions for the second quarter of 2023 reflected net provisions related to the credit card and point-of-sale loan portfolios, driven by net charge-offs and growth, and individual impairments on wholesale loans, partially offset by a reserve reduction related to the repayment of a term deposit with First Republic. Provisions for the second quarter of 2022 reflected portfolio growth (primarily in credit cards) and the impact of broad macroeconomic concerns.

Six Months Ended June 2023 versus June 2022. Provision for credit losses in the consolidated statements of earnings was $444 million for the first half of 2023, compared with $1.23 billion for the first half of 2022. Provisions for the first half of 2023 reflected net provisions related to the credit card and point-of-sale loan portfolios, driven by net charge-offs and growth, partially offset by a reserve reduction of approximately $440 million related to the sale of substantially all of the Marcus loans portfolio. Provisions for the first half of 2022 primarily reflected portfolio growth (primarily in credit cards) and the impact of macroeconomic and geopolitical concerns.

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.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Compensation and benefits	**$ 3,619**	$ 3,695	**$ 7,709**	$ 7,778
Transaction based	**1,385**	1,317	**2,790**	2,561
Market development	**146**	235	**318**	397
Communications and technology	**482**	444	**948**	868
Depreciation and amortization	**1,594**	570	**2,564**	1,062
Occupancy	**253**	259	**518**	510
Professional fees	**392**	490	**775**	927
Other expenses	**673**	643	**1,324**	1,266
Total operating expenses	**$ 8,544**	$ 7,653	**$16,946**	$15,369
Headcount at period-end	**44,600**	47,000		

Three Months Ended June 2023 versus June 2022. Operating expenses in the consolidated statements of earnings were $8.54 billion for the second quarter of 2023, 12% higher than the second quarter of 2022. Our efficiency ratio was 78.4% for the second quarter of 2023, compared with 64.5% for the second quarter of 2022.

The increase in operating expenses compared with the second quarter of 2022 reflected an impairment of goodwill of $504 million related to Consumer platforms and impairments of approximately $485 million related to commercial real estate included within consolidated investment entities (both in depreciation and amortization). While certain expenses (e.g., compensation and benefits, occupancy and market development) were impacted by inflationary pressures, the overall impact of higher inflation was not material to operating expenses for the second quarter of 2023. Net provisions for litigation and regulatory proceedings were $19 million for the second quarter of 2023 compared with $91 million for the second quarter of 2022.

As of June 2023, headcount decreased 2% compared with March 2023.

Six Months Ended June 2023 versus June 2022. Operating expenses in the consolidated statements of earnings were $16.95 billion for the first half of 2023, 10% higher than the first half of 2022. Our efficiency ratio was 73.3% for the first half of 2023, compared with our through-the-cycle target efficiency ratio of approximately 60%. Our efficiency ratio was 62.0% for the first half of 2022. The ratio of compensation and benefits to net revenues, net of provision for credit losses, was 34.0% for the first half of 2023, compared with 33.0% for both the first quarter of 2023 and the first half of 2022.

The increase in operating expenses compared with the first half of 2022 primarily reflected impairments of approximately $840 million related to commercial real estate included within consolidated investment entities and an impairment of goodwill of $504 million related to Consumer platforms (both in depreciation and amortization). Additional increases in technology and transaction based expenses and the inclusion of NNIP were partially offset by lower professional fees. Net provisions for litigation and regulatory proceedings were $91 million for the first half of 2023 compared with $216 million for the first half of 2022.

As of June 2023, headcount decreased 8% compared with December 2022, primarily reflecting a headcount reduction initiative during the first half of 2023. Severance-related costs included in compensation and benefits expenses were approximately $260 million for the first half of 2023.

Provision for Taxes

The effective income tax rate for the first half of 2023 was 22.3%, up from the full year income tax rate of 16.5% for 2022 and 19.0% for the first quarter of 2023, primarily due to the impact of an increase in taxes on non-U.S. earnings.

In May 2023, the New York State fiscal year 2024 budget was enacted. The legislation extends the temporary increase in the New York State corporate income tax rate from 6.5% to 7.25% through calendar year 2026. The legislation is not expected to have a material impact on our 2023 annual effective tax rate.

In July 2023, the U.K. Finance (No. 2) Act 2023 was enacted. The legislation enacts a domestic and multinational top-up tax to implement the Domestic Minimum Top-up Tax and Income Inclusion Rule, two of the Organisation for Economic Co-operation and Development Global Anti-Base Erosion Model Rules (Pillar Two), which will apply to us beginning in calendar year 2024. Pillar Two aims to ensure that multinationals pay a minimum effective corporate tax rate of 15% in each jurisdiction in which they operate. The legislation will not impact our 2023 annual effective tax rate and we are currently evaluating the impact on our 2024 annual effective tax rate.

We expect our 2023 tax rate to be approximately 22%.

Segment Assets and Operating Results

Segment Assets. The table below presents assets by segment.

	As of	
$ in millions	**June 2023**	December 2022
Global Banking & Markets	**$1,312,170**	$1,169,539
Asset & Wealth Management	**196,448**	214,970
Platform Solutions	**62,768**	57,290
Total	**$1,571,386**	$1,441,799

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.

Segment Operating Results. The table below presents our segment operating results.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Global Banking & Markets				
Net revenues	**$ 7,189**	$ 8,342	**$ 15,633**	$ 18,404
Provision for credit losses	**56**	208	**185**	399
Operating expenses	**4,282**	4,431	**8,911**	9,404
Pre-tax earnings	**$ 2,851**	$ 3,703	**$ 6,537**	$ 8,601
Net earnings to common	**$ 1,982**	$ 2,952	**$ 4,858**	$ 7,016
Average common equity	**$ 71,205**	$ 70,932	**$ 70,362**	$ 69,439
Return on average common equity	**11.1%**	16.6%	**13.8%**	20.2%
Asset & Wealth Management				
Net revenues	**$ 3,047**	$ 3,179	**$ 6,263**	$ 5,782
Provision for credit losses	**15**	149	**(550)**	352
Operating expenses	**3,275**	2,823	**6,443**	5,232
Pre-tax earnings/(loss)	**$ (243)**	$ 207	**$ 370**	$ 198
Net earnings/(loss) to common	**$ (239)**	$ 142	**$ 225**	$ 108
Average common equity	**$ 31,047**	$ 30,923	**$ 31,781**	$ 30,968
Return on average common equity	**(3.1)%**	1.8%	**1.4%**	0.7%
Platform Solutions				
Net revenues	**$ 659**	$ 343	**$ 1,223**	$ 611
Provision for credit losses	**544**	310	**809**	477
Operating expenses	**987**	399	**1,592**	733
Pre-tax earnings/(loss)	**$ (872)**	$ (366)	**$ (1,178)**	$ (599)
Net earnings/(loss) to common	**$ (672)**	$ (308)	**$ (925)**	$ (507)
Average common equity	**$ 4,022**	$ 3,671	**$ 3,965**	$ 3,176
Return on average common equity	**(66.8)%**	(33.6)%	**(46.7)%**	(31.9)%
Total				
Net revenues	**$ 10,895**	$ 11,864	**$ 23,119**	$ 24,797
Provision for credit losses	**615**	667	**444**	1,228
Operating expenses	**8,544**	7,653	**16,946**	15,369
Pre-tax earnings	**$ 1,736**	$ 3,544	**$ 5,729**	$ 8,200
Net earnings to common	**$ 1,071**	$ 2,786	**$ 4,158**	$ 6,617
Average common equity	**$106,274**	$105,526	**$106,108**	$103,583
Return on average common equity	**4.0%**	10.6%	**7.8%**	12.8%

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.

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.

Global Banking & Markets

Global Banking & Markets generates revenues from the following:

Investment banking fees. We provide advisory and underwriting services and help companies raise capital to strengthen and grow their businesses. Investment banking fees includes the following:

- **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 for both local and cross-border transactions of a wide range of securities and other financial instruments, including acquisition financing.

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, 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.

  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.

- **FICC financing.** Includes (i) secured lending to our clients through structured credit and asset-backed lending, including warehouse loans backed by mortgages (including residential and commercial mortgage loans), corporate loans and consumer loans (including auto loans and private student loans), (ii) commodity financing to clients through structured transactions and (iii) financing 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.
- **Equities financing.** Includes prime financing, which provides 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. Financing activities also include portfolio financing, which clients can utilize to manage their investment portfolios, and other equity financing activities, including securities-based loans to individuals.

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.

Other. We lend to corporate clients, including through relationship lending and acquisition financing. The hedges related to this lending and financing activity are also reported as part of Other. Other also includes equity and debt investing activities related to our Global Banking & Markets activities.

The table below presents our Global Banking & Markets assets.

$ in millions	As of June 2023	As of December 2022
Cash and cash equivalents	$ 189,889	$ 167,203
Collateralized agreements	371,856	380,157
Customer and other receivables	144,605	122,037
Trading assets	367,327	272,788
Investments	111,451	103,229
Loans	109,532	107,648
Other assets	17,510	16,477
Total	**$ 1,312,170**	$ 1,169,539

The table below presents details about our Global Banking & Markets loans.

$ in millions	As of June 2023	As of December 2022
Corporate	$ 24,877	$ 25,776
Real estate	34,412	33,215
Securities-based	3,684	3,857
Other collateralized	47,372	45,407
Other	539	561
Loans, gross	110,884	108,816
Allowance for loan losses	(1,352)	(1,168)
Total loans	**$ 109,532**	$ 107,648

Our average Global Banking & Markets gross loans were $110.21 billion for the three months ended June 2023, $104.79 billion for the three months ended June 2022, $109.84 billion for the six months ended June 2023 and $101.12 billion for the six months ended June 2022.

The table below presents our Global Banking & Markets operating results.

$ in millions	Three Months Ended June 2023	Three Months Ended June 2022	Six Months Ended June 2023	Six Months Ended June 2022
Advisory	$ 645	$ 1,197	$ 1,463	$ 2,324
Equity underwriting	338	145	593	421
Debt underwriting	448	457	954	1,198
Investment banking fees	1,431	1,799	3,010	3,943
FICC intermediation	2,089	2,921	5,369	7,020
FICC financing	622	721	1,273	1,352
FICC	2,711	3,642	6,642	8,372
Equities intermediation	1,533	1,767	3,274	3,945
Equities financing	1,433	1,177	2,707	2,238
Equities	2,966	2,944	5,981	6,183
Other	81	(43)	–	(94)
Net revenues	7,189	8,342	15,633	18,404
Provision for credit losses	56	208	185	399
Operating expenses	4,282	4,431	8,911	9,404
Pre-tax earnings	2,851	3,703	6,537	8,601
Provision for taxes	760	645	1,460	1,399
Net earnings	2,091	3,058	5,077	7,202
Preferred stock dividends	109	106	219	186
Net earnings to common	**$ 1,982**	$ 2,952	**$ 4,858**	$ 7,016
Average common equity	**$71,205**	$70,932	**$70,362**	$69,439
Return on average common equity	**11.1%**	16.6%	**13.8%**	20.2%

The table below presents our FICC and Equities net revenues by line item in the consolidated statements of earnings.

$ in millions	FICC	Equities
Three Months Ended June 2023		
Market making	$ 2,312	$ 2,039
Commissions and fees	–	889
Other principal transactions	165	24
Net interest income	234	14
Total	**$ 2,711**	**$ 2,966**
Three Months Ended June 2022		
Market making	$ 3,056	$ 1,857
Commissions and fees	–	938
Other principal transactions	116	5
Net interest income	470	144
Total	$ 3,642	$ 2,944
Six Months Ended June 2023		
Market making	$ 5,885	$ 3,899
Commissions and fees	–	1,925
Other principal transactions	237	47
Net interest income	520	110
Total	**$ 6,642**	**$ 5,981**
Six Months Ended June 2022		
Market making	$ 6,967	$ 3,975
Commissions and fees	–	1,940
Other principal transactions	237	15
Net interest income	1,168	253
Total	$ 8,372	$ 6,183

In the table above:

- 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.

The table below presents our financial advisory and underwriting transaction volumes.

	Three Months Ended June		Six Months Ended June	
$ in billions	**2023**	2022	**2023**	2022
Announced mergers and acquisitions	**$ 215**	$ 467	**$ 325**	$ 830
Completed mergers and acquisitions	**$ 136**	$ 387	**$ 353**	$ 766
Equity and equity-related offerings	**$ 10**	$ 8	**$ 21**	$ 18
Debt offerings	**$ 55**	$ 52	**$ 128**	$ 139

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. It also includes publicly registered and Rule 144A issues and excludes leveraged loans.

Operating Environment. During the second quarter of 2023, Global Banking & Markets operated in an environment generally characterized by continued broad macroeconomic concerns, including inflationary concerns, geopolitical tensions and the outlook for economic growth. These factors negatively affected industry-wide investment banking activity levels and contributed to a decline in market-making activity levels.

In investment banking, industry-wide completed mergers and acquisitions transactions continued to decline from elevated levels in the prior year, while industry-wide equity and debt underwriting volumes remained below historical averages.

In interest rates, the yield on 10-year U.S. Treasury notes increased approximately 35 basis points and the yield on 10-year U.K. gilts increased approximately 90 basis points. In equities, the S&P 500 Index increased by 8% and MSCI World Index increased by 6%, compared with the end of the first quarter of 2023.

In the future, if market and economic conditions deteriorate further, and activity levels or volatility decline further, or credit spreads related to hedges on our relationship lending portfolio tighten, net revenues in Global Banking & Market 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 June 2023 versus June 2022. Net revenues in Global Banking & Markets were $7.19 billion for the second quarter of 2023, 14% lower than the second quarter of 2022.

Investment banking fees were $1.43 billion, 20% lower than the second quarter of 2022, primarily due to significantly lower net revenues in Advisory, reflecting a significant decline in industry-wide completed mergers and acquisitions transactions, partially offset by significantly higher net revenues in Equity underwriting, primarily reflecting a significant increase in industry-wide volumes.

As of June 2023, our Investment banking fees backlog increased compared with March 2023, primarily due to higher estimated net revenues from potential advisory transactions, partially offset by lower estimated net revenues from potential equity underwriting transactions (primarily from initial public offerings).

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.

Net revenues in FICC were $2.71 billion, 26% lower than a strong second quarter of 2022, primarily reflecting significantly lower net revenues in FICC intermediation, driven by significantly lower net revenues in commodities, interest rate products and currencies, partially offset by significantly higher net revenues in mortgages and higher net revenues in credit products. Net revenues in FICC financing were lower, primarily in commodities financing.

The decrease in FICC intermediation net revenues reflected significantly lower client activity, as activity in the prior year period benefited from an evolving macroeconomic environment. The following provides information about our FICC intermediation net revenues by business, compared with results for the second quarter of 2022:

- Net revenues in commodities, interest rate products and currencies primarily reflected lower client activity.
- Net revenues in mortgages and credit products primarily reflected the impact of improved market-making conditions on our inventory.

Net revenues in Equities were $2.97 billion, essentially unchanged compared with the second quarter of 2022, due to significantly higher net revenues in Equities financing, primarily in prime financing, largely offset by lower net revenues in Equities intermediation, primarily in derivatives.

Net revenues in Other were $81 million, compared with $(43) million for the second quarter of 2022, driven by net gains from direct investments compared with net losses in the prior year period.

Provision for credit losses was $56 million for the second quarter of 2023, compared with $208 million for the second quarter of 2022. Provisions for the second quarter of 2023 reflected net provisions related to the commercial real estate portfolio, partially offset by a reserve reduction related to the repayment of a term deposit with First Republic. Provisions for the second quarter of 2022 primarily reflected the impact of broad macroeconomic concerns.

Operating expenses were $4.28 billion for the second quarter of 2023, 3% lower than the second quarter of 2022, due to lower compensation and benefits expenses (reflecting a decline in operating performance compared with a strong second quarter of 2022). Pre-tax earnings were $2.85 billion for the second quarter of 2023, 23% lower than the second quarter of 2022.

Six Months Ended June 2023 versus June 2022. Net revenues in Global Banking & Markets were $15.63 billion for the first half of 2023, 15% lower than a strong first half of 2022.

Investment banking fees were $3.01 billion, 24% lower than the first half of 2022, due to significantly lower net revenues in Advisory, reflecting a significant decline in industry-wide completed mergers and acquisitions transactions, and significantly lower net revenues in Debt underwriting, reflecting a decline in industry-wide volumes, partially offset by significantly higher net revenues in Equity underwriting, primarily reflecting increased activity in secondary offerings.

As of June 2023, our Investment banking fees backlog decreased compared with December 2022, due to significantly lower estimated net revenues from potential equity underwriting transactions (primarily from initial public offerings) and lower estimated net revenues from potential advisory transactions.

Net revenues in FICC were $6.64 billion, 21% lower than the first half of 2022, primarily reflecting significantly lower net revenues in FICC intermediation, driven by significantly lower net revenues in currencies and commodities, partially offset by significantly higher net revenues in mortgages and credit products and slightly higher net revenues in interest rate products. Net revenues in FICC financing were slightly lower.

The decrease in FICC intermediation net revenues primarily reflected lower client activity, as activity in the prior year period benefited from an evolving macroeconomic environment. The following provides information about our FICC intermediation net revenues by business, compared with results for the first half of 2022:

- Net revenues in currencies primarily reflected lower client activity.
- Net revenues in commodities primarily reflected the impact of less favorable market-making conditions on our inventory.
- Net revenues in mortgages, credit products and interest rate products primarily reflected the impact of improved market-making conditions on our inventory.

Net revenues in Equities were $5.98 billion, 3% lower than the first half of 2022, due to lower net revenues in Equities intermediation, primarily in derivatives, partially offset by significantly higher net revenues in Equities financing, primarily in prime financing.

Provision for credit losses was $185 million for the first half of 2023, compared with $399 million for the first half of 2022. Provisions for the first half of 2023 primarily reflected net provisions related to the commercial real estate portfolio. Provisions for the first half of 2022 reflected the impact of macroeconomic and geopolitical concerns and portfolio growth.

Operating expenses were $8.91 billion for the first half of 2023, 5% lower than the first half of 2022, due to lower compensation and benefits expenses (reflecting a decline in operating performance compared with a strong first half of 2022). Pre-tax earnings were $6.54 billion for the first half of 2023, 24% lower than the first half of 2022.

Asset & Wealth Management

Asset & Wealth Management provides investment services to help clients preserve and grow their financial assets and achieve their financial goals. We provide these services to our clients, both institutional and individuals, including investors who primarily access our products through a network of third-party distributors around the world.

We manage client assets across a broad range of investment strategies and asset classes, 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.

We also provide 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 companies that sponsor financial wellness programs for their employees.

We offer personalized financial planning to individuals and also provide customized investment advisory solutions, and offer structuring and execution capabilities in securities and derivative products across all major global markets. 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.

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.

We also raise deposits and have issued unsecured loans to consumers through Marcus. During the first half of 2023, we completed the sale of substantially all of the Marcus loans portfolio.

Asset & Wealth Management generates revenues from the following:

- **Management and other fees.** We receive fees related to managing assets for institutional and individual clients, 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. 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, see "Assets Under Supervision" below. The fees that we charge vary by asset class, client 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.

- **Private banking and lending.** Our private banking and lending activities include issuing loans to our wealth management clients. We also accept deposits from wealth management clients, including through Marcus. We also issued unsecured loans to consumers through Marcus. During the first half of 2023, we completed the sale of substantially all of this portfolio. Additionally, we provide investing services through *Marcus Invest* to U.S. customers. Private banking and lending revenues include net interest income allocated to deposits and net interest income earned on loans to individual clients.

- **Equity investments.** Includes investing activities related to our asset management activities primarily related to public and private equity investments in corporate, real estate and infrastructure assets. We also make investments through consolidated investment entities (CIEs), substantially all of which are engaged in real estate investment activities.

- **Debt investments.** Includes lending activities related to our asset management activities, including investing in corporate debt, lending to middle-market clients, and providing 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 & Wealth Management assets.

$ in millions	As of June 2023	As of December 2022
Cash and cash equivalents	$ 55,856	$ 54,065
Collateralized agreements	10,984	23,723
Customer and other receivables	12,667	13,409
Trading assets	22,040	19,860
Investments	26,120	27,400
Loans	49,518	56,338
Other assets	19,263	20,175
Total	**$ 196,448**	$ 214,970

The table below presents details about our Asset & Wealth Management loans.

$ in millions	As of June 2023	As of December 2022
Corporate	$ 13,368	$ 14,359
Real estate	17,388	18,699
Securities-based	12,023	12,814
Other collateralized	6,515	6,295
Installment	260	4,474
Other	1,116	1,700
Loans, gross	50,670	58,341
Allowance for loan losses	(1,152)	(2,003)
Total loans	**$ 49,518**	$ 56,338

The average Asset & Wealth Management gross loans were $52.97 billion for the three months ended June 2023, $59.85 billion for the three months ended June 2022, $54.97 billion for the six months ended June 2023 and $59.41 billion for the six months ended June 2022.

The table below presents our Asset & Wealth Management operating results.

$ in millions	Three Months Ended June 2023	Three Months Ended June 2022	Six Months Ended June 2023	Six Months Ended June 2022
Management and other fees	$ 2,354	$ 2,243	$ 4,636	$ 4,278
Incentive fees	25	185	78	264
Private banking and lending	874	538	1,228	1,030
Equity investments	(403)	(104)	(284)	(398)
Debt investments	197	317	605	608
Net revenues	3,047	3,179	6,263	5,782
Provision for credit losses	15	149	(550)	352
Operating expenses	3,275	2,823	6,443	5,232
Pre-tax earnings/(loss)	(243)	207	370	198
Provision/(benefit) for taxes	(35)	33	82	32
Net earnings/(loss)	(208)	174	288	166
Preferred stock dividends	31	32	63	58
Net earnings/(loss) to common	**$ (239)**	$ 142	**$ 225**	$ 108
Average common equity	**$31,047**	$ 30,923	**$31,781**	$30,968
Return on average common equity	**(3.1)%**	1.8%	**1.4%**	0.7%

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.

Our target is to achieve pre-tax margins in the mid-twenties and ROE in the mid-teens within the medium term (three to five year time horizon from year-end 2022) for Asset & Wealth Management.

The table below presents our Asset management and Wealth management net revenues by line item in Asset & Wealth Management.

$ in millions	Asset management	Wealth management	Asset & Wealth Management
Three Months Ended June 2023			
Management and other fees	$ 1,029	$ 1,325	$ 2,354
Incentive fees	25	–	25
Private banking and lending	–	874	874
Equity investments	(403)	–	(403)
Debt investments	197	–	197
Total	**$ 848**	**$ 2,199**	**$ 3,047**
Three Months Ended June 2022			
Management and other fees	$ 1,013	$ 1,230	$ 2,243
Incentive fees	185	–	185
Private banking and lending	–	538	538
Equity investments	(104)	–	(104)
Debt investments	317	–	317
Total	$ 1,411	$ 1,768	$ 3,179
Six Months Ended June 2023			
Management and other fees	$ 2,062	$ 2,574	$ 4,636
Incentive fees	78	–	78
Private banking and lending	–	1,228	1,228
Equity investments	(284)	–	(284)
Debt investments	605	–	605
Total	**$ 2,461**	**$ 3,802**	**$ 6,263**
Six Months Ended June 2022			
Management and other fees	$ 1,784	$ 2,494	$ 4,278
Incentive fees	264	–	264
Private banking and lending	–	1,030	1,030
Equity investments	(398)	–	(398)
Debt investments	608	–	608
Total	$ 2,258	$ 3,524	$ 5,782

The table below presents our Equity investments net revenues by equity type and asset class.

$ in millions	Three Months Ended June 2023	Three Months Ended June 2022	Six Months Ended June 2023	Six Months Ended June 2022
Equity Type				
Private equity	$ (304)	$ 538	$ (270)	$ 804
Public equity	(99)	(642)	(14)	(1,202)
Total	**$ (403)**	$ (104)	**$ (284)**	$ (398)
Asset Class				
Real estate	$ (250)	$ 543	$ (240)	$ 939
Corporate	(153)	(647)	(44)	(1,337)
Total	**$ (403)**	$ (104)	**$ (284)**	$ (398)

The table below presents details about our Debt investments net revenues.

$ in millions	Three Months Ended June 2023	Three Months Ended June 2022	Six Months Ended June 2023	Six Months Ended June 2022
Fair value net gains/(losses)	$ (190)	$ (102)	$ (144)	$ (242)
Net interest income	387	419	749	850
Total	**$ 197**	$ 317	**$ 605**	$ 608

Operating Environment. During the second quarter of 2023, Asset & Wealth Management operated in an environment generally characterized by continued broad macroeconomic concerns, including increased pressure in the commercial real estate market. However, improvements in the outlook for economic conditions contributed to an increase in equity prices compared with the end of the first quarter of 2023, positively affecting assets under supervision.

In the future, if market and economic conditions deteriorate further, it may lead to a decline in asset prices, or investors transitioning to asset classes that typically generate lower fees or withdrawing their assets, and net revenues in Asset & Wealth Management would likely continue to be negatively impacted.

Three Months Ended June 2023 versus June 2022. Net revenues in Asset & Wealth Management were $3.05 billion for the second quarter of 2023, 4% lower than the second quarter of 2022, reflecting significantly higher net losses in Equity investments, significantly lower Incentive fees and significantly lower net revenues in Debt investments, partially offset by significantly higher net revenues in Private banking and lending and slightly higher Management and other fees.

The increase in net losses in Equity investments primarily reflected net losses from real estate investments compared with net gains in the prior year period, partially offset by significantly lower net losses from investments in public equities. The decrease in Incentive fees was driven by significant harvesting in the prior year period. The decrease in Debt investments net revenues reflected net mark-downs in real estate investments. The increase in Private banking and lending net revenues primarily reflected the impact of higher deposit spreads and balances, as well as a gain of approximately $100 million related to the sale of substantially all of the remaining Marcus loans portfolio. The increase in Management and other fees primarily reflected the impact of higher average assets under supervision.

Provision for credit losses was $15 million for the second quarter of 2023, compared with $149 million for the second quarter of 2022. Provisions for the second quarter of 2023 reflected individual impairments on wholesale loans, offset by a reserve reduction related to sales and paydowns. Provisions for the second quarter of 2022 reflected growth in the Marcus loans portfolio and the impact of broad macroeconomic concerns.

Operating expenses were $3.28 billion for the second quarter of 2023, 16% higher than the second quarter of 2022, largely due to impairments of approximately $485 million related to commercial real estate included within consolidated investment entities. Pre-tax loss was $243 million for the second quarter of 2023, compared with pre-tax earnings of $207 million for the second quarter of 2022.

Six Months Ended June 2023 versus June 2022. Net revenues in Asset & Wealth Management were $6.26 billion for the first half of 2023, 8% higher than the first half of 2022, primarily reflecting higher Management and other fees and higher net revenues in Private banking and lending, partially offset by significantly lower Incentive fees. Net revenues in Private banking and lending included net revenues of approximately $(370) million related to the sale of substantially all of the Marcus loans portfolio (offset by a related reserve reduction of approximately $440 million in provision for credit losses).

The increase in Management and other fees primarily reflected the inclusion of NNIP and a reduction in fee waivers on money market funds. The increase in Private banking and lending net revenues primarily reflected the impact of higher deposit spreads and balances, partially offset by the impact of the sale of substantially all of the Marcus loans portfolio. The decrease in net losses in Equity investments reflected significantly lower net losses from investments in public equities, partially offset by net losses from real estate investments compared with net gains in the prior year period. The decrease in Incentive fees was driven by significant harvesting in the prior year period.

Provision for credit losses was a net benefit of $550 million for the first half of 2023, compared with a provision of $352 million for the first half of 2022. The net benefit for the first half of 2023 reflected reserve reductions related to the sale of substantially all of the Marcus loans portfolio, as well as other sales and paydowns. Provisions for the first half of 2022 reflected growth in the Marcus loans portfolio and the impact of macroeconomic and geopolitical concerns.

Operating expenses were $6.44 billion for the first half of 2023, 23% higher than the first half of 2022, primarily due to impairments of approximately $840 million related to commercial real estate included within consolidated investment entities, higher compensation and benefits expenses and the inclusion of NNIP. Pre-tax earnings were $370 million for the first half of 2023, compared with pre-tax earnings of $198 million for the first half of 2022.

Assets Under Supervision. AUS includes our institutional clients' assets, assets sourced through third-party distributors and high-net-worth clients' assets 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 asset class, client channel, region and vehicle.

	As of June	
$ in billions	**2023**	2022
Asset Class		
Alternative investments	**$ 267**	$ 254
Equity	**627**	552
Fixed income	**1,056**	1,007
Total long-term AUS	**1,950**	1,813
Liquidity products	**764**	682
Total AUS	**$ 2,714**	$ 2,495
Client Channel		
Institutional	**$ 955**	$ 927
Wealth management	**772**	671
Third-party distributed	**987**	897
Total AUS	**$ 2,714**	$ 2,495
Region		
Americas	**$ 1,931**	$ 1,775
EMEA	**588**	536
Asia	**195**	184
Total AUS	**$ 2,714**	$ 2,495
Vehicle		
Separate accounts	**$ 1,462**	$ 1,362
Public funds	**914**	831
Private funds and other	**338**	302
Total AUS	**$ 2,714**	$ 2,495

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 June		Six Months Ended June	
$ in billions	**2023**	2022	**2023**	2022
Beginning balance	**$ 2,672**	$ 2,394	**$ 2,547**	$ 2,470
Net inflows/(outflows):				
Alternative investments	**(1)**	4	**–**	9
Equity	**(3)**	1	**(5)**	15
Fixed income	**12**	(3)	**21**	(5)
Total long-term AUS net inflows/(outflows)	**8**	2	**16**	19
Liquidity products	**4**	(7)	**53**	(13)
Total AUS net inflows/(outflows)	**12**	(5)	**69**	6
Acquisitions	**–**	305	**–**	312
Net market appreciation/(depreciation)	**30**	(199)	**98**	(293)
Ending balance	**$ 2,714**	$ 2,495	**$ 2,714**	$ 2,495

In the table above, acquisitions for the second quarter of 2022 included inflows from the acquisition of NNIP and acquisitions for the first half of 2022 also included inflows 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.

The table below presents information about our average monthly firmwide AUS by asset class.

	Average for the			
	Three Months Ended June		Six Months Ended June	
$ in billions	**2023**	2022	**2023**	2022
Asset Class				
Alternative investments	**$ 267**	$ 257	**$ 266**	$ 248
Equity	**606**	603	**596**	599
Fixed income	**1,050**	1,047	**1,041**	993
Total long-term AUS	**1,923**	1,907	**1,903**	1,840
Liquidity products	**764**	682	**739**	673
Total AUS	**$ 2,687**	$ 2,589	**$ 2,642**	$ 2,513

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 $3.48 billion as of June 2023 and $3.33 billion as of December 2022. 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 average effective management fee (which excludes non-asset-based fees) earned on our firmwide AUS by asset class.

	Three Months Ended June		Six Months Ended June	
Effective fees (bps)	**2023**	2022	**2023**	2022
Alternative investments	**65**	62	**65**	63
Equity	**57**	57	**58**	58
Fixed income	**17**	18	**18**	17
Liquidity products	**15**	15	**15**	12
Total average effective fee	**31**	31	**31**	31

In the table above, our average effective management fee for liquidity products increased during the first half of 2023 compared to the first half of 2022, primarily reflecting higher management fee waivers in 2022.

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 June 2023			
Average AUS			
Corporate equity	**$ 29**	**$ 69**	**$ 98**
Credit	**43**	**2**	**45**
Real estate	**12**	**8**	**20**
Hedge funds and other	**42**	**23**	**65**
Funds and discretionary accounts	**$ 126**	**$ 102**	**$ 228**
Advisory accounts			**39**
Total average AUS for alternative investments			**$ 267**
Effective Fees (bps)			
Corporate equity	**124**	**59**	**78**
Credit	**78**	**43**	**77**
Real estate	**88**	**43**	**69**
Hedge funds and other	**69**	**52**	**63**
Funds and discretionary accounts	**86**	**56**	**73**
Advisory accounts			**16**
Total average effective fee			**65**
Three Months Ended June 2022			
Average AUS			
Corporate equity	$ 26	$ 58	$ 84
Credit	40	2	42
Real estate	10	8	18
Hedge funds and other	47	23	70
Funds and discretionary accounts	$ 123	$ 91	$ 214
Advisory accounts			43
Total average AUS for alternative investments			$ 257
Effective Fees (bps)			
Corporate equity	128	60	81
Credit	75	50	74
Real estate	98	49	76
Hedge funds and other	63	46	57
Funds and discretionary accounts	84	55	72
Advisory accounts			16
Total average effective fee			62
Six Months Ended June 2023			
Average AUS			
Corporate equity	**$ 28**	**$ 69**	**$ 97**
Credit	**43**	**2**	**45**
Real estate	**12**	**8**	**20**
Hedge funds and other	**42**	**22**	**64**
Funds and discretionary accounts	**$ 125**	**$ 101**	**$ 226**
Advisory accounts			**40**
Total average AUS for alternative investments			**$ 266**
Effective Fees (bps)			
Corporate equity	**129**	**61**	**81**
Credit	**79**	**50**	**78**
Real estate	**83**	**46**	**67**
Hedge funds and other	**67**	**54**	**62**
Funds and discretionary accounts	**86**	**58**	**74**
Advisory accounts			**16**
Total average effective fee			**65**
Six Months Ended June 2022			
Average AUS			
Corporate equity	$ 26	$ 59	$ 85
Credit	33	2	35
Real estate	9	8	17
Hedge funds and other	47	22	69
Funds and discretionary accounts	$ 115	$ 91	$ 206
Advisory accounts			42
Total average AUS for alternative investments			$ 248
Effective Fees (bps)			
Corporate equity	130	58	80
Credit	84	56	82
Real estate	98	51	76
Hedge funds and other	63	49	58
Funds and discretionary accounts	87	55	73
Advisory accounts			16
Total average effective fee			63

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 business which 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.

$ in billions	AUS	Non-fee-earning alternative assets	Total alternative assets
As of June 2023			
Corporate equity	**$ 98**	**$ 79**	**$ 177**
Credit	**45**	**75**	**120**
Real estate	**20**	**33**	**53**
Hedge funds and other	**65**	**2**	**67**
Funds and discretionary accounts	**228**	**189**	**417**
Advisory accounts	**39**	**1**	**40**
Total alternative investments	**$ 267**	**$ 190**	**$ 457**
As of June 2022			
Corporate equity	$ 84	$ 83	$ 167
Credit	43	79	122
Real estate	17	37	54
Hedge funds and other	68	2	70
Funds and discretionary accounts	212	201	413
Advisory accounts	42	–	42
Total alternative investments	$ 254	$ 201	$ 455

In the table above:

- Corporate equity primarily includes private equity.
- Total alternative assets included uncalled capital that is available for future investing of $56 billion as of June 2023 and $49 billion as of June 2022.
- Non-fee-earning alternative assets 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 assets may not be comparable to similar calculations used by other companies.
- Non-fee-earning alternative assets 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 second quarter of 2023.

$ in billions		As of June 2023
Included in AUS	$	134
Included in non-fee-earning alternative assets		70
Third-party commitments raised	**$**	**204**

In the table above, commitments included in non-fee-earning alternative assets included approximately $52 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 Asset & Wealth Management that we hold on our balance sheet by asset type.

	As of			
$ in billions		**June 2023**		December 2022
Equity securities	$	**13.5**	$	14.7
Loans		**16.1**		19.0
Debt securities		**12.1**		12.3
CIE investments and other		**11.5**		12.6
Total	$	**53.2**	$	58.6

The table below presents further information about our alternative investments in Asset & Wealth Management that we hold on our balance sheet.

	As of			
$ in billions		**June 2023**		December 2022
Client co-invest	$	**22.8**	$	23.0
Firmwide initiatives		**6.6**		5.9
Historical principal investments:				
Equity securities		**4.5**		5.6
Loans		**5.8**		8.4
Debt securities		**4.6**		5.0
CIE investments and other		**8.9**		10.7
Total historical principal investments		**23.8**		29.7
Total	$	**53.2**	$	58.6

In the table above:

- Client co-invest primarily includes our investments in funds that we raise and manage or where we have invested alongside the third-party investors.
- Firmwide initiatives primarily includes our investments related to the Community Reinvestment Act and our sponsored initiatives, such as *One Million Black Women*.
- Historical principal investments includes our remaining balance sheet alternative investments portfolio that we plan to reduce. Our target is to reduce this portfolio to less than $15 billion by the end of 2024 and to completely exit this portfolio over the medium term (three to five year time horizon from year-end 2022).

The table below presents the rollforward of our alternative investments categorized as historical principal investments for the six months ended June 2023.

$ in billions		Historical principal investments
Beginning balance	$	29.7
Additions		1.2
Dispositions		(5.6)
Net mark-downs		(1.5)
Ending balance	**$**	**23.8**

In the table above, dispositions included approximately $1.0 billion of investments that were transferred out of historical principal investments, primarily to Global Banking & Markets.

The table below presents the commercial real estate investments in Asset & Wealth Management that we hold on our balance sheet.

$ in billions		As of June 2023
Equity securities	$	4.2
Loans		3.3
Debt securities		0.7
CIE investments and other, net of financings		4.1
Total	$	12.3

In the table above:

- Office-related investments included in equity securities were $0.4 billion, in loans were $0.4 billion, in debt securities were $0.1 billion, and in CIE investments and other, net of financings, were $0.8 billion.
- Commercial real estate investments consisted of approximately 50% of historical principal investments, which we intend to exit over the medium term (three to five year time horizon from year-end 2022).

Equity Securities. The table below presents the concentration of equity securities within our alternative investments by region and industry.

$ in billions	As of June 2023	As of December 2022
Equity securities	**$13.5**	$14.7
Region		
Americas	**69%**	67%
EMEA	**15%**	15%
Asia	**16%**	18%
Total	**100%**	100%
Industry		
Consumer & Retail	**6%**	6%
Financial Institutions	**11%**	10%
Healthcare	**6%**	9%
Industrials	**7%**	7%
Natural Resources & Utilities	**14%**	14%
Real Estate	**31%**	30%
Technology, Media & Telecommunications	**24%**	23%
Other	**1%**	1%
Total	**100%**	100%

In the table above:

- Equity securities included $12.6 billion as of June 2023 and $13.0 billion as of December 2022 of private equity positions, and $0.9 billion as of June 2023 and $1.7 billion as of December 2022 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 June 2023 were 13% for multifamily (9% as of December 2022), 3% for office (5% as of December 2022), 8% for mixed use (8% as of December 2022) and 7% for other real estate equity securities (8% as of December 2022).

The table below presents the concentration of equity securities within our alternative investments by vintage.

	Vintage
As of June 2023	
2016 or earlier	**27%**
2017 - 2019	**27%**
2020 - thereafter	**46%**
Total	**100%**
As of December 2022	
2015 or earlier	26%
2016 - 2018	26%
2019 - thereafter	48%
Total	100%

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.

$ in billions	As of June 2023	As of December 2022
Loans	**$16.1**	$19.0
Debt securities	**12.1**	12.3
Total	**$28.2**	$31.3
Accounting Classification		
Debt securities at fair value	**43%**	39%
Loans at amortized cost	**46%**	49%
Loans at fair value	**4%**	6%
Loans held for sale	**7%**	6 %
Total	**100%**	100%
Region		
Americas	**50%**	51%
EMEA	**37%**	35%
Asia	**13%**	14%
Total	**100%**	100%
Industry		
Consumer & Retail	**11%**	10%
Financial Institutions	**6%**	7%
Healthcare	**14%**	13%
Industrials	**17%**	16%
Natural Resources & Utilities	**2%**	2%
Real Estate	**15%**	20%
Technology, Media & Telecommunications	**28%**	25%
Other	**7%**	7%
Total	**100%**	100%

CIE Investments and Other. CIE investments and other included assets held by CIEs of $10.2 billion as of June 2023 and $11.8 billion as of December 2022, which were funded with liabilities of approximately $6.0 billion as of June 2023 and $6.3 billion as of December 2022. 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 June 2023	As of December 2022
CIE assets, net of financings	**$4.2**	$5.5
Region		
Americas	**62%**	65%
EMEA	**27%**	25%
Asia	**11%**	10%
Total	**100%**	100%
Asset Class		
Hospitality	**5%**	4%
Industrials	**18%**	15%
Multifamily	**18%**	23%
Office	**19%**	22%
Retail	**4%**	3%
Senior Housing	**17%**	14%
Student Housing	**9%**	7%
Other	**10%**	12%
Total	**100%**	100%

In the table above, certain CIE investments included within the other asset class were reclassified to the industrials asset class. Prior period amounts have been conformed to the current presentation.

The table below presents the concentration of CIE assets, net of financings, within our alternative investments by vintage.

	Vintage
As of June 2023	
2016 or earlier	**12%**
2017 - 2019	**55%**
2020 - thereafter	**33%**
Total	**100%**
As of December 2022	
2015 or earlier	5%
2016 - 2018	45%
2019 - thereafter	50%
Total	100%

Platform Solutions

Platform Solutions includes our consumer platforms, such as partnerships offering credit cards and point-of-sale financing, and transaction banking and other platform businesses.

Platform Solutions generates revenues from the following:

Consumer platforms. Our Consumer platforms business issues credit cards and provides point-of-sale financing through GreenSky to consumers to finance the purchases of goods or services. Consumer platforms revenues primarily includes net interest income earned on credit card lending and point-of-sale financing activities. In April 2023, we announced that we are initiating a process to explore the potential sale of GreenSky. We also accept deposits from Apple Card customers.

Transaction banking and other. We provide transaction banking and other services, including cash management services, such as deposit-taking and payment solutions for corporate and institutional clients. Transaction banking revenues include net interest income attributed to transaction banking deposits.

The table below presents our Platform Solutions assets.

	As of	
$ in millions	**June 2023**	December 2022
Cash and cash equivalents	**$ 25,186**	$ 20,557
Collateralized agreements	**5,463**	10,278
Customer and other receivables	**5**	2
Trading assets	**10,962**	8,597
Loans	**19,083**	15,300
Other assets	**2,069**	2,556
Total	**$ 62,768**	$ 57,290

The table below presents details about our Platform Solutions loans.

	As of	
$ in millions	**June 2023**	December 2022
Installment	**$ 4,874**	$ 1,852
Credit cards	**16,879**	15,820
Other	**58**	–
Loans, gross	**21,811**	17,672
Allowance for loan losses	**(2,728)**	(2,372)
Total loans	**$ 19,083**	$ 15,300

The average Platform Solutions gross loans were $20.36 billion for the three months ended June 2023, $11.27 billion for the three months ended June 2022, $19.32 billion for the six months ended June 2023 and $10.25 billion for the six months ended June 2022.

The table below presents our Platform Solutions operating results.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
Consumer platforms	**$ 577**	$ 252	**$ 1,067**	$ 453
Transaction banking and other	**82**	91	**156**	158
Net revenues	**659**	343	**1,223**	611
Provision for credit losses	**544**	310	**809**	477
Operating expenses	**987**	399	**1,592**	733
Pre-tax earnings/(loss)	**(872)**	(366)	**(1,178)**	(599)
Provision/(benefit) for taxes	**(205)**	(61)	**(263)**	(97)
Net earnings/(loss)	**(667)**	(305)	**(915)**	(502)
Preferred stock dividends	**5**	3	**10**	5
Net earnings/(loss) to common	**$ (672)**	$ (308)	**$ (925)**	$ (507)
Average common equity	**$ 4,022**	$ 3,671	**$ 3,965**	$ 3,176
Return on average common equity	**(66.8)%**	(33.6)%	**(46.7)%**	(31.9)%

Our target is to achieve an efficiency ratio of less than 100% in 2023 and achieve pre-tax profitability by the end of 2025 for Platform Solutions.

Operating Environment. The operating environment for Platform Solutions is mainly impacted by the economic environment in the U.S., which, during the second quarter of 2023, was generally characterized by improved inflationary measures, a continued low rate of unemployment and a decline in the pace of growth in consumer spending compared with the first quarter of 2023.

In the future, if economic conditions deteriorate, it may lead to a decrease in consumer spending or a deterioration in consumer credit, and net revenues and provision for credit losses in Platform Solutions would likely be negatively impacted.

Three Months Ended June 2023 versus June 2022. Net revenues in Platform Solutions were $659 million for the second quarter of 2023, 92% higher than the second quarter of 2022, reflecting significantly higher net revenues in Consumer platforms.

The increase in Consumer platforms net revenues primarily reflected significantly higher average credit card balances and higher average point-of-sale loan balances due to the inclusion of GreenSky. Transaction banking and other net revenues were lower, reflecting lower deposit spreads, partially offset by higher average deposit balances.

Provision for credit losses was $544 million for the second quarter of 2023, compared with $310 million for the second quarter of 2022. Provisions for the second quarter of 2023 primarily reflected net charge-offs related to the credit card portfolio and growth in the point-of-sale loan portfolio. Provisions for the second quarter of 2022 reflected growth in the credit card portfolio.

Operating expenses were $987 million for the second quarter of 2023, 147% higher than the second quarter of 2022, largely due to an impairment of goodwill of $504 million related to Consumer platforms. Pre-tax loss was $872 million for the second quarter of 2023, compared with a pre-tax loss of $366 million for the second quarter of 2022.

Six Months Ended June 2023 versus June 2022. Net revenues in Platform Solutions were $1.22 billion for the first half of 2023, 100% higher than the first half of 2022, reflecting significantly higher net revenues in Consumer platforms.

The increase in Consumer platforms net revenues primarily reflected significantly higher average credit card balances and higher average point-of-sale loan balances due to the inclusion of GreenSky. Transaction banking and other net revenues were essentially unchanged.

Provision for credit losses was $809 million for the first half of 2023, compared with $477 million for the first half of 2022. Provisions for the first half of 2023 primarily reflected net charge-offs related to the credit card portfolio and growth in the point-of-sale loan portfolio, partially offset by reserve releases based on actual repayment experience. Provisions for the first half of 2022 primarily reflected growth in the credit card portfolio.

Operating expenses were $1.59 billion for the first half of 2023, 117% higher than the first half of 2022, primarily due to an impairment of goodwill of $504 million related to Consumer platforms. Pre-tax loss was $1.18 billion for the first half of 2023, compared with a pre-tax loss of $599 million for the first half of 2022.

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 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.

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 Firmwide Risk Appetite 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 Firmwide Risk Appetite 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 Comprehensive Capital Analysis and Review (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 June 2023, total assets in our consolidated balance sheets were $1.57 trillion, an increase of $129.59 billion from December 2022, primarily reflecting increases in trading assets of $99.08 billion (primarily due to increases in equity securities and government obligations, reflecting the impact of our and our clients' activities), cash and cash equivalents of $29.11 billion (primarily reflecting our activity), and customer and other receivables of $21.83 billion (primarily reflecting client activity), partially offset by a decrease in collateralized agreements of $25.86 billion (primarily reflecting the impact of our activities).

As of June 2023, total liabilities in our consolidated balance sheets were $1.45 trillion, an increase of $130.28 billion from December 2022, reflecting an increase in collateralized financings of $129.41 billion (primarily reflecting our and our clients' activities), and deposits of $12.19 billion (due to increases in consumer deposits and brokered certificates of deposit, partially offset by a decrease in private bank deposits), partially offset by a decrease in borrowings of $7.23 billion (driven by maturities).

Our total securities sold under agreements to repurchase (repurchase agreements), accounted for as collateralized financings, were $222.98 billion as of June 2023 and $110.35 billion as of December 2022, which were 10% higher as of June 2023 and 15% lower as of December 2022 than the average daily amount of repurchase agreements over the respective quarters. As of June 2023, the increase in our repurchase agreements relative to the average daily amount of repurchase agreements during the quarter resulted from higher levels of our and our clients' activities at the end of the period.

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.

The table below presents information about our balance sheet and leverage ratios.

$ in millions	As of June 2023	As of December 2022
Total assets	**$ 1,571,386**	$ 1,441,799
Unsecured long-term borrowings	**$ 230,813**	$ 247,138
Total shareholders' equity	**$ 116,493**	$ 117,189
Leverage ratio	**13.5x**	12.3x
Debt-to-equity ratio	**2.0x**	2.1x

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 June 2023	As of December 2022
Total shareholders' equity	**$ 116,493**	$ 117,189
Preferred stock	**(10,703)**	(10,703)
Common shareholders' equity	**105,790**	106,486
Goodwill	**(5,942)**	(6,374)
Identifiable intangible assets	**(1,921)**	(2,009)
Tangible common shareholders' equity	**$ 97,927**	$ 98,103
Book value per common share	**$ 309.33**	$ 303.55
Tangible book value per common share	**$ 286.34**	$ 279.66

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 342.0 million as of June 2023 and 350.8 million as of December 2022. 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.

	As of			
$ in millions	**June 2023**		December 2022	
Deposits	**$ 398,853**	**36%**	$ 386,665	40%
Collateralized financings	**284,429**	**26%**	155,022	16%
Unsecured short-term borrowings	**70,056**	**6%**	60,961	6%
Unsecured long-term borrowings	**230,813**	**21%**	247,138	26%
Total shareholders' equity	**116,493**	**11%**	117,189	12%
Total	**$1,100,644**	**100%**	$ 966,975	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 Goldman Sachs Bank USA (GS Bank USA), Goldman Sachs International Bank (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.

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. We had no outstanding borrowings from the Federal Home Loan Bank as of both June 2023 and December 2022. 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.

$ in millions	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
As of June 2023					
2024	$ –	$ –	$12,278	$11,388	$ 23,666
2025	$12,411	$12,058	$ 5,949	$ 7,389	37,807
2026	$ 6,561	$ 4,918	$ 3,457	$ 8,771	23,707
2027	$ 8,789	$ 3,339	$ 6,837	$14,269	33,234
2028	$10,807	$ 6,414	$ 3,127	$ 2,750	23,098
2029 - thereafter					89,301
Total					**$ 230,813**

The weighted average maturity of our unsecured long-term borrowings as of June 2023 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, semi-annual 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.

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 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 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 2023 CCAR submission, the FRB reduced our SCB from 6.3% to 5.5% for the period from October 1, 2023 through September 30, 2024. As a result, beginning on October 1, 2023, our Standardized CET1 capital ratio requirement will be 13.0%. See "Share Repurchase Program" for further information about common stock repurchases and dividends and "Consolidated Regulatory Capital" for further information about the global systemically important bank (G-SIB) surcharge. We published a summary of our annual DFAST results in June 2023. 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 2023. See "Available Information."

Goldman Sachs International (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 the capital usage of each of our businesses based on our attributed equity framework. This framework considers many factors, including our internal assessment of risks as well as the regulatory capital requirements related to our business activities. These regulatory capital requirements take into consideration our most binding capital constraints. Our most binding capital constraint is our CET1 capital ratio requirement under the Standardized Capital Rules. This requirement includes the SCB which is determined by the FRB based on its own annual stress test.

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.

During the second quarter of 2023, we returned a total of $1.61 billion to shareholders, including common stock repurchases of $750 million and common stock dividends of $864 million. The Board of Directors of Group Inc. (Board) approved an increase in our common stock dividend from $2.50 to $2.75 per share beginning in the third quarter of 2023. Based on the increase in our common stock dividend and 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. We intend to increase our stock repurchase levels in the third quarter of 2023 relative to the second quarter of 2023.

In February 2023, the Board approved a new share repurchase program authorizing repurchases of up to $30 billion (in aggregate value and inclusive of shares repurchased in 2023) of our common stock. 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.

The Inflation Reduction Act of 2022 enacted a one percent non-deductible excise tax (buyback 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 during the calendar year, including stock issued to employees. The buyback tax did not have a material impact on our financial condition, results of operations or cash flows for either the three or six months ended June 2023.

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.

We submitted our 2023 resolution plan in June 2023. See "Available Information" for information about the public portion of our resolution plan submission.

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 3.0% for 2023 and 2024. 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.

	As of	
	June 2023	December 2022
TLAC to RWAs	**22.0%**	21.5%
TLAC to leverage exposure	**9.5%**	9.5%
External long-term debt to RWAs	**9.0%**	8.5%
External long-term debt to leverage exposure	**4.5%**	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 G-SIB surcharge (Method 1). The G-SIB surcharge (Method 1) was 1.5% as of June 2023 and 1.0% as of December 2022.
- 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 G-SIB surcharge (Method 2). The G-SIB surcharge (Method 2) was 3.0% as of June 2023 and 2.5% as of December 2022.
- 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	
$ in millions	**June 2023**	December 2022
TLAC	**$ 280,336**	$ 297,100
External long-term debt	**$ 155,840**	$ 172,845
RWAs	**$ 683,540**	$ 679,450
Leverage exposure	**$ 1,955,040**	$ 1,867,358
TLAC to RWAs	**41.0%**	43.7%
TLAC to leverage exposure	**14.3%**	15.9%
External long-term debt to RWAs	**22.8%**	25.4%
External long-term debt to leverage exposure	**8.0%**	9.3%

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.
- 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. RWAs represent Advanced RWAs as of both June 2023 and December 2022.
- Leverage exposure consists of average adjusted total assets and certain off-balance sheet exposures.

See "Business — Regulation" in Part I, Item 1 of the 2022 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 $23.15 billion as of June 2023 and $22.21 billion as of December 2022, which exceeded the amount required by $18.17 billion as of June 2023 and $17.46 billion as of December 2022. 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 June 2023 and December 2022, 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	
	June 2023	December 2022
Risk-based capital requirements		
CET1 capital ratio	**8.8%**	8.7%
Tier 1 capital ratio	**10.7%**	10.7%
Total capital ratio	**13.4%**	13.3%

In the table above, the risk-based capital requirements incorporate capital guidance received from the PRA and could change in the future.

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

	As of	
$ in millions	**June 2023**	December 2022
Risk-based capital and risk-weighted assets		
CET1 capital	**$ 32,784**	$ 31,780
Tier 1 capital	**$ 38,284**	$ 40,080
Tier 2 capital	**$ 6,877**	$ 5,377
Total capital	**$ 45,161**	$ 45,457
RWAs	**$ 277,857**	$ 247,653
Risk-based capital ratios		
CET1 capital ratio	**11.8%**	12.8%
Tier 1 capital ratio	**13.8%**	16.2%
Total capital ratio	**16.3%**	18.4%

In the table above, the risk-based capital ratios as of June 2023 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 26 basis points to the CET1 capital ratio as of June 2023.

The table below presents GSI's leverage ratio requirement which became effective in January 2023 and the leverage ratio.

	As of June 2023
Leverage ratio requirement	**3.35%**
Leverage ratio	**5.1%**

In the table above, the leverage ratio as of June 2023 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 9 basis points to the leverage ratio as of June 2023.

GSI is a registered swap dealer with the CFTC and a registered security-based swap dealer with the SEC. As of both June 2023 and December 2022, 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 June 2023 and December 2022, 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 June 2023 and December 2022, 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 2022 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.

Basel III Reforms. In July 2023, the U.S. federal bank regulatory authorities proposed a rule implementing the Basel Committee's finalization of the post-crisis regulatory capital reforms. The proposal provides for a July 1, 2025 effective date, subject to a three-year transition period. The proposal includes the Fundamental Review of the Trading Book, which replaces the market risk rule, and introduces new standardized approaches for credit risk, operational risk and credit valuation adjustment (CVA) risk, which would replace the current models-based approaches. The Federal Reserve also proposed a rule to revise the G-SIB surcharge. The proposals are currently open for comment. We are currently evaluating the impact of the proposed rules, but expect that these rules, if adopted as proposed, could materially increase our regulatory capital requirements.

Other Matters

Replacement of Interbank Offered Rates (IBORs), including LIBOR. As of July 1, 2023, the publication of all LIBOR settings as representative rates has ceased. The FCA has allowed the publication and use of synthetic rates for certain GBP LIBOR settings in legacy GBP LIBOR-based contracts through March 2024 and for certain USD LIBOR settings in legacy USD LIBOR-based contracts through September 2024.

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 had to adhere to the IBOR Protocol or engage in bilateral amendments for the terms to be effective for derivative contracts. The FCA's formal announcement to cease all LIBOR settings fixed the spread adjustment for all LIBOR rates and, as of July 1, 2023, the fallbacks have been applied for all LIBOR settings. Rules adopted by the FRB under the Adjustable Interest Rate (LIBOR) Act provide different Secured Overnight Financing Rate (SOFR)-based rates 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.

We had facilitated an orderly transition from non-USD LIBORs to alternative risk-free reference rates and synthetic rates for us and our clients in connection with the cessation of non-USD LIBOR.

In connection with the cessation of USD LIBOR, all of our USD LIBOR-based derivative contracts have been transitioned to alternative risk-free reference rates. We have replaced our USD LIBOR-based unsecured benchmark debt and preferred stock with term SOFR plus the prescribed tenor spread in accordance with the FRB's final rule under the LIBOR Act. In addition, our legacy USD LIBOR-based loans have been transitioned to alternative risk-free reference rates in accordance with fallback provisions.

Stress in the Banking Sector. During the second quarter of 2023, the level of stress in the banking sector eased compared to the circumstances that arose in March 2023, which had led to the failure of certain regional banks in the U.S. and the combination of Switzerland's two largest banks. As a member of a consortium of banks that provided liquidity support to First Republic, we made a deposit of $2.5 billion with First Republic in March 2023. Following the FDIC's seizure and sale of First Republic in May 2023, this deposit was fully repaid to us.

In May 2023, the FDIC released a proposed rule that would impose special assessments to recover the losses to the deposit insurance fund resulting from the receiverships of Silicon Valley Bank and Signature Bank. The FDIC stated that it currently estimates those assessed losses to total $15.8 billion and that the amount of the special assessments would be adjusted as the loss estimate changes. Under the proposed rule, the assessment base would be an insured depository institution's estimated uninsured deposits as of December 2022, excluding the first $5 billion of uninsured deposits. The special assessments would be collected at an annual rate of approximately 12.5 basis points per year over eight quarters beginning in 2024 and through 2025. If the rule is adopted as currently proposed, the estimated cost of this special assessment for us would be approximately $400 million (pre-tax) and such expense would be recognized entirely in the quarter in which the rule is adopted.

The events in the first quarter of 2023 placed heightened focus on the impact that rising interest rates have had on the market values of available-for-sale and held-to-maturity securities portfolios of banks. As of June 2023, the carrying value of our available-for-sale securities portfolio was $50.11 billion, substantially all of which consisted of U.S. government obligations. As of June 2023, the pre-tax net unrealized losses included in accumulated other comprehensive income/(loss) and our regulatory capital ratios relating to these securities were $3.00 billion. As of June 2023, the carrying value of our held-to-maturity securities portfolio was $59.08 billion, substantially all of which was comprised of U.S. government obligations. The pre-tax net unrealized losses on these securities were $1.70 billion. If the unrealized losses on held-to-maturity securities had been recognized as a reduction to our regulatory capital, the after-tax impact would have been a reduction of approximately 0.2 percentage point to our regulatory capital ratios as of June 2023. See Note 8 for further information about available-for-sale and held-to-maturity securities.

Our liquidity position during the second quarter of 2023 remained strong, as our GCLA averaged $409.65 billion for the quarter. Our deposits were $398.85 billion, compared with $375.53 billion as of March 2023. As of June 2023, approximately $211.21 billion of deposits were insured by the FDIC and $25.89 billion were insured by non-U.S. insurance programs. See Note 13 for further information about deposits.

Any future systemic spread of concerns regarding the financial stability or solvency of banks could negatively impact our liquidity, results of operations and financial condition.

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	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.

Risk Management

Risks are inherent in our businesses and include liquidity, market, credit, operational, model, legal, compliance, conduct, regulatory and reputational risks. 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 2022 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, model risk and climate risk, from our independent risk oversight and control functions, including the chief risk officer, and on compliance risk and conduct risk from the chief compliance officer, on legal and regulatory enforcement matters from the chief legal officer, and on other matters impacting our reputation from the chair and vice-chairs of 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.

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 control assessment, (ii) risk appetite, limit and threshold setting, (iii) risk metrics, reporting and monitoring, and (iv) risk decision-making.

- **Risk Identification and Control Assessment.** We believe the identification of our risks and related control assessment 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 control 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. This approach also encompasses our control assessment, led by our second line of defense, to review and challenge the control environment to ensure it supports our strategic business plan.

  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 Risk Appetite Committee, through delegated authority from the Firmwide Enterprise Risk Committee, is responsible for approving our risk limits and thresholds policy, subject to the overall limits approved by the Risk Committee of the Board, and monitoring these limits.

  The Firmwide Risk Appetite 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 Firmwide Risk Appetite Committee, Market Risk sets limits at certain product and desk levels, and Credit Risk sets limits for individual counterparties and their subsidiaries, industries and countries. Limits are reviewed regularly and amended on a permanent or temporary basis to reflect changes to our strategic business plan, as well as changing market conditions, business conditions or risk tolerance.

- **Risk Metrics, 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 metrics, 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.

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 and thresholds policy, through delegated authority to the Firmwide Risk Appetite Committee. This committee also reviews new significant strategic business initiatives to determine whether they are consistent with our risk appetite and risk management capabilities. Additionally, the Firmwide Enterprise Risk Committee performs enhanced reviews of significant risk events, the top residual and emerging risks, and the overall risk and control environment in each of our business units in order to propose uplifts, identify elements that are common to all business units and analyze the consolidated residual risks that we face. 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 (unless otherwise noted):

- **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 cybersecurity matters, report into the Firmwide Operational Risk and Resilience Committee. This committee is co-chaired by our chief administrative officer for EMEA 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.

- **Firmwide Risk Appetite Committee.** The Firmwide Risk Appetite 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 and thresholds, at firmwide, business and product levels. In addition, this committee is responsible for overseeing our financial risks and reviews the results of stress tests and scenario analyses. To assist the Firmwide Risk Appetite Committee in carrying out its mandate, a number of other risk committees with dedicated oversight for stress testing, model risks, Volcker Rule compliance, as well as our investments or other capital commitments that may give rise to financial risk, report into the Firmwide Risk Appetite Committee. This committee is chaired by our chief risk officer, who is appointed as chair by the chairs of the Firmwide Enterprise Risk Committee. The Firmwide Capital Committee and Firmwide Commitments Committee report to the Firmwide Risk Appetite 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 chair of the Firmwide Risk Appetite 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 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 Global Banking & Markets, who are appointed as chairs by the chair of the Firmwide Risk Appetite Committee.

- **Firmwide Reputational Risk Committee.** The Firmwide Reputational Risk Committee is responsible for assessing reputational risks arising from opportunities that have been identified as having potential heightened reputational risk, including transactions identified pursuant to the criteria established by the Firmwide Reputational Risk Committee and as determined by committee leadership. This committee is also responsible for overseeing client-related business standards and addressing client-related reputational risk. 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 head of Conflicts Resolution, 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. The Firmwide Suitability Committee reports to the Firmwide Reputational Risk Committee.

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 the head of Net Zero Transition Solutions in Global Banking & Markets, who are appointed as chairs by the chair of the Firmwide Reputational Risk 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.

Liquidity Risk, which is independent of our revenue-producing units and Treasury, and reports to our chief risk officer, has primary responsibility for identifying, 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.

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 borrowings 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 June 2023, Group Inc. had $38.22 billion of equity and subordinated indebtedness invested in GS&Co., its principal U.S. registered broker-dealer; $48.01 billion invested in GSI, a regulated U.K. broker-dealer; $2.24 billion invested in GSJCL, a regulated Japanese broker-dealer; $53.85 billion invested in GS Bank USA, a regulated New York State-chartered bank; and $4.55 billion invested in GSIB, a regulated U.K. bank. Group Inc. also provides financing, directly or indirectly, in the form of: $127.89 billion of unsubordinated loans (including secured loans of $43.45 billion) and $32.99 billion of collateral and cash deposits to these entities as of June 2023. In addition, as of June 2023, 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.

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 in a scenario where access to sources of intraday liquidity may become constrained. The intraday liquidity model considers a variety of factors, including historical settlement activity.

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.

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 June 2023 and December 2022 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.

	Average for the Three Months Ended	
$ in millions	June 2023	March 2023
Denomination		
U.S. dollar	**$ 290,232**	$ 282,391
Non-U.S. dollar	**119,417**	116,512
Total	**$ 409,649**	$ 398,903
Asset Class		
Overnight cash deposits	**$ 238,560**	$ 237,520
U.S. government obligations	**138,231**	122,488
U.S. agency obligations	**12,835**	12,405
Non-U.S. government obligations	**20,023**	26,490
Total	**$ 409,649**	$ 398,903
Entity Type		
Group Inc. and Funding IHC	**$ 72,470**	$ 67,859
Major broker-dealer subsidiaries	**114,777**	110,535
Major bank subsidiaries	**222,402**	220,509
Total	**$ 409,649**	$ 398,903

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 $277.04 billion for the three months ended June 2023 and $285.88 billion for the three months ended March 2023. 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.

	Average for the Three Months Ended	
$ in millions	June 2023	March 2023
Total HQLA	**$405,552**	$397,009
Eligible HQLA	**$330,507**	$314,700
Net cash outflows	**$262,258**	$252,547
LCR	**126%**	125%

In the table above, our average quarterly LCR represents the average of our daily LCRs during the quarter.

Additionally, we are subject to a minimum Net Stable Funding Ratio (NSFR) under the NSFR rule approved by the U.S. federal bank regulatory agencies. The NSFR rule requires large U.S. banking organizations to maintain available stable funding (ASF) above their required stable funding (RSF) over a one-year time horizon. Total ASF excludes ASF held by subsidiaries that is in excess of their minimum requirement and is subject to transfer restrictions. We are required to maintain a minimum NSFR of 100%. We expect that fluctuations in client activity, business mix and the market environment will impact our NSFR.

The table below presents information about our average daily NSFR.

	Average for the Three Months Ended	
$ in millions	June 2023	March 2023
Total ASF	**$621,274**	$605,515
Total RSF	**$547,907**	$533,753
NSFR	**113%**	114%

In the table above, our average quarterly NSFR represents the average of our daily NSFRs during the quarter.

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 June 2023, GS Bank USA's LCR exceeded the minimum requirement. The NSFR requirement described above also applies to GS Bank USA. As of June 2023, 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 June 2023 exceeded the minimum requirement. GSI and GSIB are subject to the applicable NSFR requirement in the U.K. As of June 2023, 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 June 2023 exceeded the minimum requirement. GSBE is subject to the applicable NSFR requirement in the E.U. As of June 2023, 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 2022 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 June 2023				
	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.

The table below presents the unsecured credit ratings and outlook of GS Bank USA, GSIB, GSBE, GS&Co. and GSI.

	As of June 2023		
	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.

Six Months Ended June 2023. Our cash and cash equivalents increased by $29.11 billion to $270.93 billion at the end of the second quarter of 2023, primarily due to net cash provided by operating activities, partially offset by net cash used for financing activities and investing activities. The net cash provided by operating activities primarily reflected cash inflows from collateralized transactions (reflecting both an increase in collateralized financings and a decrease in collateralized agreements), partially offset by cash outflows from trading assets and customer and other receivables and payables, net (reflecting both an increase in customer and other receivables and a decrease in customer and other payables). The net cash used for financing activities primarily reflected cash outflows from net repayments of unsecured long-term borrowings, partially offset by cash inflows from deposits (due to increases in consumer deposits and brokered certificates of deposit, partially offset by a decrease in private bank deposits). The net cash used for investing activities primarily reflected net purchases of investments (primarily U.S. government obligations accounted for as held-to-maturity and available-for-sale securities).

Six Months Ended June 2022. Our cash and cash equivalents increased by $27.57 billion to $288.61 billion at the end of the second quarter of 2022, due to net cash provided by financing and operating activities, partially offset by net cash used for investing activities and the effect of exchange rate changes on cash and cash equivalents. The net cash provided by financing activities primarily reflected cash inflows from deposits (reflecting increases in transaction banking, brokered certificates of deposit and deposit sweep program balances, and a decrease in private bank 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 collateralized transactions (reflecting an increase in collateralized agreements and a decrease in collateralized financings) and trading assets. The net cash used for investing activities primarily reflected purchases of investments (primarily due to an increase in U.S. government obligations accounted for as held-to-maturity) and an increase in net lending activities (reflecting increases across the portfolio). The decrease in net cash and cash equivalents as a result of changes in foreign exchange rates was due to the U.S. dollar strengthening during the first half of 2022.

Market Risk Management

Overview

Market risk is the risk of an adverse impact to our earnings due to changes in market conditions. Our assets and liabilities that give rise to market risk primarily include positions held for market making for our clients and for our investing and financing activities, and these positions change based on client demands and our investment opportunities. 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, Treasury and Market Risk discuss market information, positions and estimated loss scenarios on an ongoing basis. Managers in revenue-producing units and Treasury 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), Earnings-at-Risk (EaR) and other 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, EaR and other 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 those related to 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.

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 not accounted for at fair value, such as held-to-maturity securities and loans, deposits and unsecured borrowings that are accounted for at amortized cost;
- Available-for-sale securities for which the related unrealized fair value gains and losses are included in accumulated other comprehensive income/(loss);
- 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.

Earnings-at-Risk. We manage our interest rate risk using the EaR metric. EaR measures the estimated impact of changes in interest rates to our net revenues and preferred stock dividends over a defined time horizon. EaR complements the VaR metric, which measures the impact of interest rate changes that have an immediate impact on the fair values of our assets and liabilities (i.e., mark-to-market changes). Our exposure to interest rate risk occurs due to a variety of factors, including, but not limited to:

- Differences in maturity or repricing dates of assets, liabilities, preferred stock and certain off-balance sheet instruments.
- Differences in the amounts of assets, liabilities, preferred stock and certain off-balance sheet instruments with the same maturity or repricing dates.
- Certain interest rate sensitive fees.

Treasury manages the aggregated interest rate risk from all businesses through our investment securities portfolio and interest rate derivatives. We measure EaR over a one-year time horizon following a 100-basis point instantaneous parallel shock in both short- and long-term interest rates. This sensitivity is calculated relative to a baseline market scenario, which takes into consideration, among other things, the market's expectation of forward rates, as well as our expectation of future business activity. This scenario includes contractual elements of assets, liabilities, preferred stock, and certain off-balance sheet instruments, such as rates of interest, principal repayment schedules, maturity and reset dates, and any interest rate ceilings or floors, as well as assumptions with respect to our balance sheet size and composition, deposit repricing and prepayment behavior. We manage EaR with a goal to reduce potential volatility resulting from changes in interest rates so it remains within our EaR risk appetite. Our EaR scenario is regularly evaluated and updated, if necessary, to reflect changes in our business plans, market conditions and other macroeconomic factors. While management uses the best information available to estimate EaR, actual results may differ materially as a result of, among other things, changes in the economic environment or assumptions used in the process.

Risk, which is independent of our revenue-producing units, and Treasury, have primary responsibility for assessing and monitoring EaR through firmwide oversight, including oversight of EaR stress testing and assumptions, and the establishment of our EaR risk appetite.

Stress Testing. Stress testing is a method of determining the effect of various hypothetical stress scenarios. In addition to EaR, we use other stress tests 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, EaR 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.

Limits are monitored by Treasury and Risk. 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 (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.

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.

During the first quarter of 2023, we added the currency exposure on certain debt and equity positions to VaR and removed certain debt and equity positions (and related hedges) from VaR as our management believes that the risk of these positions is more appropriately measured and monitored using 10% sensitivity measures. Prior period amounts for average daily VaR, period end VaR and high and low VaR have been conformed to the current presentation. The impact of such changes to prior period total VaR was not material. Substantially all positions in VaR are included in Global Banking & Markets.

The table below presents our average daily VaR.

	Three Months Ended			Six Months Ended June	
$ in millions	**June 2023**	March 2023	June 2022	**2023**	2022
Categories					
Interest rates	**$ 118**	$ 92	$ 102	**$ 105**	$ 88
Equity prices	**31**	28	42	**30**	38
Currency rates	**25**	32	26	**29**	27
Commodity prices	**16**	22	63	**19**	56
Diversification effect	**(73)**	(73)	(109)	**(74)**	(99)
Total	**$ 117**	$ 101	$ 124	**$ 109**	$ 110

Our average daily VaR increased to $117 million for the three months ended June 2023 from $101 million for the three months ended March 2023, primarily due to higher levels of volatility. The total increase was primarily driven by an increase in the interest rates category, partially offset by decreases in the currency rates and commodity prices categories.

Our average daily VaR decreased to $117 million for the three months ended June 2023 from $124 million for the three months ended June 2022, due to lower levels of volatility, partially offset by increased exposures. The total decrease was primarily driven by decreases in the commodity prices and equity prices categories, partially offset by a decrease in the diversification effect and an increase in the interest rates category.

Our average daily VaR decreased to $109 million for the six months ended June 2023 from $110 million for the six months ended June 2022, due to lower levels of volatility, partially offset by increased exposures. The total decrease was primarily driven by decreases in the commodity prices and equity prices categories, partially offset by a decrease in the diversification effect and an increase in the interest rates category.

The table below presents our period-end VaR.

	As of		
	June	March	June
$ in millions	**2023**	2023	2022
Categories			
Interest rates	**$ 105**	$ 123	$ 131
Equity prices	**26**	32	48
Currency rates	**19**	28	20
Commodity prices	**18**	19	59
Diversification effect	**(69)**	(85)	(108)
Total	**$ 99**	$ 117	$ 150

Our period-end VaR decreased to $99 million as of June 2023 from $117 million as of March 2023, primarily due to lower levels of volatility. The total decrease was primarily driven by decreases in the interest rates, currency rates and equity prices categories, partially offset by a decrease in the diversification effect.

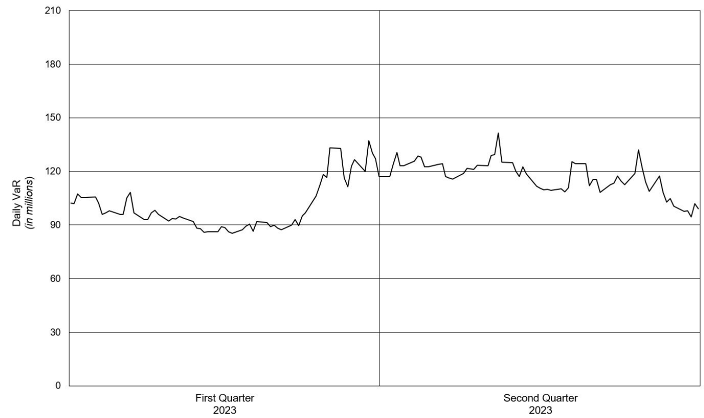
Our period-end VaR decreased to $99 million as of June 2023 from $150 million as of June 2022, primarily due to lower levels of volatility. The total decrease was primarily driven by decreases in the commodity prices, interest rates and equity prices categories, partially offset by a decrease in the diversification effect.

During the six months ended June 2023, the firmwide VaR risk limit was not exceeded and there were no permanent changes to the firmwide VaR risk limit. However, the firmwide VaR risk limit was temporarily changed on four occasions as a result of changes in the market environment. During 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.

The table below presents our high and low VaR.

	Three Months Ended					
	June 2023		March 2023		June 2022	
$ in millions	**High**	**Low**	High	Low	High	Low
Categories						
Interest rates	**$ 141**	**$ 97**	$ 148	$ 70	$ 131	$ 83
Equity prices	**$ 42**	**$ 22**	$ 38	$ 22	$ 59	$ 32
Currency rates	**$ 36**	**$ 17**	$ 47	$ 20	$ 35	$ 18
Commodity prices	**$ 21**	**$ 11**	$ 29	$ 17	$ 74	$ 51
Firmwide						
VaR	**$ 142**	**$ 95**	$ 137	$ 85	$ 150	$ 110

The chart below presents our daily VaR for the six months ended June 2023.



The table below presents, by number of business days, the frequency distribution of our daily net revenues for positions included in VaR.

	Three Months Ended June		Six Months Ended June	
$ in millions	**2023**	2022	**2023**	2022
>$100	**12**	28	**34**	55
$75 – $100	**11**	9	**19**	19
$50 – $75	**14**	5	**28**	12
$25 – $50	**9**	7	**15**	13
$0 – $25	**6**	8	**10**	12
$(25) – $0	**9**	2	**14**	6
$(50) – $(25)	**1**	1	**2**	3
$(75) – $(50)	**–**	2	**1**	2
$(100) – $(75)	**–**	–	**–**	–
<$(100)	**–**	–	**1**	2
Total	**62**	62	**124**	124

In the table above, the frequency distribution of daily net revenues reflects the impact of the change in VaR described above. Prior period amounts have been conformed to the current presentation.

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 both the three months ended June 2023 and June 2022. There was one VaR exception during the six months ended June 2023 and two VaR exceptions during the six months ended June 2022.

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 or accounted for at the lower of cost or fair value, that are not included in VaR.

	As of		
$ in millions	**June 2023**	March 2023	June 2022
Equity	**$ 1,527**	$ 1,570	$ 1,491
Debt	**2,382**	2,775	2,510
Total	**$ 3,909**	$ 4,345	$ 4,001

In the table above:

- The 10% sensitivity measures for equity and debt positions reflect the impact of the change in VaR described above. Prior period amounts have been conformed to the current presentation.
- Substantially all positions in 10% sensitivity measures are included in Asset & Wealth Management.
- The market risk of these positions is determined by estimating the potential reduction in net revenues of a 10% decline in the value of the underlying positions.
- Equity positions relate to private and public equity securities, which primarily include investments in corporate, real estate and infrastructure assets.
- Debt positions include mezzanine and senior debt, and corporate and real estate loans.
- Funded equity and debt positions are included in our consolidated balance sheets in investments and loans, and the related hedges are included in our consolidated balance sheets in derivatives. See Note 8 to the consolidated financial statements for further information about investments, Note 9 to the consolidated financial statements for further information about loans and Note 7 to the consolidated financial statements for further information about derivatives.
- 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 $1 million as of both June 2023 and March 2023. 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 $39 million as of both June 2023 and March 2023. 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.

Earnings-at-Risk. The table below presents the impact of a parallel shift in rates on our net revenues and preferred stock dividends over the next 12 months relative to the baseline scenario.

	As of	
$ in millions	**June 2023**	March 2023
+100 basis points parallel shift in rates	**$ 239**	$ 221
-100 basis points parallel shift in rates	**$ (226)**	$ (219)

In the table above, the EaR metric utilized various assumptions, including, among other things, balance sheet size and composition, deposit repricing and prepayment behavior, all of which have inherent uncertainties. The EaR metric does not represent a forecast of our net revenues and preferred stock dividends. As of June 2023, we expect our EaR sensitivity to scale approximately linearly with the size of an instantaneous parallel shock in interest rates of up to +/-200 basis points.

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 and unrealized gains/(losses) on available-for-sale securities in the consolidated statements of comprehensive income.

The table below presents certain assets and liabilities accounted for at fair value or accounted for at the lower of cost or fair value 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 and financings	VaR
Customer and other receivables	10% Sensitivity Measures
Trading assets and liabilities	VaR Credit Spread Sensitivity 10% Sensitivity Measures
Investments	VaR 10% Sensitivity Measures
Loans	VaR 10% Sensitivity Measures
Other assets and liabilities	VaR
Deposits	VaR Credit Spread Sensitivity
Unsecured borrowings	VaR Credit Spread Sensitivity

In addition to the above, we measure the interest rate risk for all positions within our consolidated balance sheets using the EaR metric.

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. Beginning in the first quarter of 2023, we also take into consideration collateral received or other credit support arrangements when determining an internal credit rating for collateralized loans, as management believes that this methodology better reflects the credit quality of the underlying loans and lending commitments. Prior period amounts have been conformed to reflect the current methodology. 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 value, FICO credit scores and other risk factors.

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.

Credit Exposures

As of June 2023, our aggregate credit exposure increased compared with December 2022, primarily reflecting increases in cash deposits with central banks and loans and lending commitments, partially offset by a decrease in 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 2022, primarily reflecting an increase in investment-grade credit exposure related to cash deposits with central banks. 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.

	As of	
$ in millions	**June 2023**	December 2022
Cash and Cash Equivalents	**$256,089**	$224,889
Industry		
Financial Institutions	**12%**	6%
Sovereign	**88%**	94%
Total	**100%**	100%
Region		
Americas	**56%**	77%
EMEA	**35%**	19%
Asia	**9%**	4%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**62%**	89%
AA	**25%**	5%
A	**13%**	6%
Total	**100%**	100%

The table above excludes cash segregated for regulatory and other purposes of $14.84 billion as of June 2023 and $16.94 billion as of December 2022.

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 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.

	As of	
$ in millions	**June 2023**	December 2022
OTC derivative assets	**$45,358**	$53,399
Collateral (not netted under U.S. GAAP)	**(15,053)**	(15,823)
Net credit exposure	**$30,305**	$37,576
Industry		
Consumer & Retail	**4%**	3%
Diversified Industrials	**12%**	8%
Financial Institutions	**20%**	20%
Funds	**22%**	19%
Healthcare	**1%**	1%
Municipalities & Nonprofit	**4%**	2%
Natural Resources & Utilities	**20%**	34%
Sovereign	**12%**	7%
Technology, Media & Telecommunications	**5%**	4%
Other (including Special Purpose Vehicles)	**–**	2%
Total	**100%**	100%
Region		
Americas	**43%**	49%
EMEA	**47%**	43%
Asia	**10%**	8%
Total	**100%**	100%

Our credit exposure (before any potential recoveries) to OTC derivative counterparties that defaulted during the six months ended June 2023 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.

The table below presents the distribution of our net credit exposure from OTC derivatives by tenor.

$ in millions	Investment-Grade	Non-Investment-Grade / Unrated	Total
As of June 2023			
Less than 1 year	**$ 21,790**	**$ 7,003**	**$ 28,793**
1 – 5 years	**23,631**	**6,445**	**30,076**
Greater than 5 years	**54,290**	**4,235**	**58,525**
Total	**99,711**	**17,683**	**117,394**
Netting	**(78,794)**	**(8,295)**	**(87,089)**
Net credit exposure	**$ 20,917**	**$ 9,388**	**$ 30,305**
As of December 2022			
Less than 1 year	$ 23,112	$ 8,812	$ 31,924
1 – 5 years	26,627	8,355	34,982
Greater than 5 years	58,354	4,342	62,696
Total	108,093	21,509	129,602
Netting	(83,531)	(8,495)	(92,026)
Net credit exposure	$ 24,562	$ 13,014	$ 37,576

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.

	Investment-Grade				
$ in millions	AAA	AA	A	BBB	Total
As of June 2023					
Less than 1 year	**$ 1,132**	**$ 3,080**	**$ 9,705**	**$ 7,873**	**$ 21,790**
1 – 5 years	**1,421**	**5,671**	**8,618**	**7,921**	**23,631**
Greater than 5 years	**5,904**	**14,346**	**17,198**	**16,842**	**54,290**
Total	**8,457**	**23,097**	**35,521**	**32,636**	**99,711**
Netting	**(5,363)**	**(20,970)**	**(29,397)**	**(23,064)**	**(78,794)**
Net credit exposure	**$ 3,094**	**$ 2,127**	**$ 6,124**	**$ 9,572**	**$ 20,917**
As of December 2022					
Less than 1 year	$ 521	$ 2,113	$ 10,516	$ 9,962	$ 23,112
1 – 5 years	1,684	5,383	9,057	10,503	26,627
Greater than 5 years	5,594	16,063	21,060	15,637	58,354
Total	7,799	23,559	40,633	36,102	108,093
Netting	(5,025)	(20,582)	(31,956)	(25,968)	(83,531)
Net credit exposure	$ 2,774	$ 2,977	$ 8,677	$ 10,134	$ 24,562

	Non-Investment-Grade / Unrated		
$ in millions	BB or lower	Unrated	Total
As of June 2023			
Less than 1 year	**$ 6,547**	**$ 456**	**$ 7,003**
1 – 5 years	**6,260**	**185**	**6,445**
Greater than 5 years	**4,170**	**65**	**4,235**
Total	**16,977**	**706**	**17,683**
Netting	**(8,260)**	**(35)**	**(8,295)**
Net credit exposure	**$ 8,717**	**$ 671**	**$ 9,388**
As of December 2022			
Less than 1 year	$ 8,245	$ 567	$ 8,812
1 – 5 years	8,150	205	8,355
Greater than 5 years	4,232	110	4,342
Total	20,627	882	21,509
Netting	(8,436)	(59)	(8,495)
Net credit exposure	$ 12,191	$ 823	$ 13,014

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. As described above, beginning in the first quarter of 2023, we take into consideration collateral received or other credit support arrangements when determining an internal credit rating for collateralized loans. Prior period amounts have been conformed to reflect the current methodology. The impact to December 2022 was to increase loans and lending commitments classified as investment-grade and decrease loans and lending commitments classified as non-investment-grade by $29.6 billion (loans of $25.0 billion and lending commitments of $4.6 billion). The impact of this change was in real estate (warehouse loans) and other collateralized loans and lending commitments.

The table below presents our loans and lending commitments.

$ in millions	Loans	Lending Commitments	Total
As of June 2023			
Corporate	**$ 38,245**	**$ 148,005**	**$ 186,250**
Commercial real estate	**28,064**	**3,879**	**31,943**
Residential real estate	**23,736**	**2,558**	**26,294**
Securities-based	**15,707**	**780**	**16,487**
Other collateralized	**53,887**	**15,050**	**68,937**
Consumer:			
Installment	**5,134**	**2,496**	**7,630**
Credit cards	**16,879**	**69,538**	**86,417**
Other	**1,713**	**969**	**2,682**
Total	**$ 183,365**	**$ 243,275**	**$ 426,640**
Allowance for loan losses	**$ (5,232)**	**$ (777)**	**$ (6,009)**
As of December 2022			
Corporate	$ 40,135	$ 139,718	$ 179,853
Commercial real estate	28,879	4,271	33,150
Residential real estate	23,035	3,192	26,227
Securities-based	16,671	508	17,179
Other collateralized	51,702	14,407	66,109
Consumer:			
Installment	6,326	1,882	8,208
Credit cards	15,820	62,216	78,036
Other	2,261	944	3,205
Total	$ 184,829	$ 227,138	$ 411,967
Allowance for loan losses	$ (5,543)	$ (774)	$ (6,317)

In the table above, lending commitments excluded $4.66 billion as of June 2023 and $4.85 billion as of December 2022 related 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.

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 are secured (typically by a senior lien on the assets of the borrower) or unsecured, depending on the loan purpose, the risk profile of the borrower and other factors.

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.

$ in millions	Loans	Lending Commitments	Total
As of June 2023			
Corporate	**$38,245**	**$148,005**	**$186,250**
Industry			
Consumer & Retail	**10%**	**13%**	**13%**
Diversified Industrials	**18%**	**18%**	**18%**
Financial Institutions	**7%**	**8%**	**8%**
Funds	**3%**	**4%**	**4%**
Healthcare	**10%**	**10%**	**10%**
Natural Resources & Utilities	**9%**	**18%**	**16%**
Real Estate	**12%**	**5%**	**6%**
Technology, Media & Telecommunications	**26%**	**19%**	**20%**
Other (including Special Purpose Vehicles)	**5%**	**5%**	**5%**
Total	**100%**	**100%**	**100%**
Region			
Americas	**60%**	**78%**	**74%**
EMEA	**31%**	**21%**	**23%**
Asia	**9%**	**1%**	**3%**
Total	**100%**	**100%**	**100%**
Credit Quality (Credit Rating Equivalent)			
AAA	**–**	**1%**	**1%**
AA	**1%**	**5%**	**4%**
A	**5%**	**19%**	**16%**
BBB	**20%**	**39%**	**35%**
BB or lower	**74%**	**36%**	**44%**
Total	**100%**	**100%**	**100%**
As of December 2022			
Corporate	$40,135	$139,718	$179,853
Industry			
Consumer & Retail	10%	13%	12%
Diversified Industrials	18%	18%	18%
Financial Institutions	7%	8%	8%
Funds	3%	4%	4%
Healthcare	10%	12%	12%
Natural Resources & Utilities	9%	18%	16%
Real Estate	11%	5%	7%
Technology, Media & Telecommunications	26%	20%	21%
Other (including Special Purpose Vehicles)	6%	2%	2%
Total	100%	100%	100%
Region			
Americas	57%	77%	73%
EMEA	34%	21%	24%
Asia	9%	2%	3%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
AAA	–	2%	1%
AA	1%	5%	4%
A	5%	21%	18%
BBB	19%	38%	34%
BB or lower	75%	34%	43%
Total	100%	100%	100%

Commercial Real Estate. Commercial real estate includes originated loans and lending commitments that are directly or indirectly secured by hotels, retail stores, multifamily housing complexes and commercial and industrial properties. Commercial real estate 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.

$ in millions	Loans	Lending Commitments	Total
As of June 2023			
Commercial Real Estate	**$28,064**	**$3,879**	**$31,943**
Region			
Americas	**79%**	**65%**	**77%**
EMEA	**17%**	**33%**	**19%**
Asia	**4%**	**2%**	**4%**
Total	**100%**	**100%**	**100%**
Credit Quality (Credit Rating Equivalent)			
Investment-grade	**42%**	**39%**	**42%**
Non-investment-grade	**57%**	**61%**	**57%**
Other metrics	**1%**	**–**	**1%**
Total	**100%**	**100%**	**100%**
As of December 2022			
Commercial Real Estate	$28,879	$4,271	$33,150
Region			
Americas	79%	74%	78%
EMEA	16%	17%	16%
Asia	5%	9%	6%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	42%	35%	41%
Non-investment-grade	58%	64%	59%
Unrated	–	1%	–
Total	100%	100%	100%

In the table above:

- The concentration of loans and lending commitments by asset class as of June 2023 was 36% for warehouse and other indirect, 14% for industrials, 11% for multifamily, 10% for office, 10% for hospitality, 7% for mixed use and 12% for other asset classes.
- The net charge-off ratio for commercial real estate loans was 0.3% for the six months ended June 2023. The net charge-off ratio is calculated by dividing annualized net charge-offs by average gross loans accounted for at amortized cost.

In addition, we also have credit exposure to commercial real estate loans held for securitization of $547 million as of June 2023 and $119 million as of December 2022. Such loans are included in trading assets in our consolidated balance sheets.

Residential Real Estate. Residential real estate loans and lending commitments are primarily extended to wealth management clients and to clients who warehouse assets that are directly or indirectly secured by residential real estate. In addition, residential real estate 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.

$ in millions	Loans	Lending Commitments	Total
As of June 2023			
Residential Real Estate	**$23,736**	**$2,558**	**$26,294**
Region			
Americas	**95%**	**97%**	**95%**
EMEA	**4%**	**3%**	**4%**
Asia	**1%**	**–**	**1%**
Total	**100%**	**100%**	**100%**
Credit Quality (Credit Rating Equivalent)			
Investment-grade	**54%**	**58%**	**54%**
Non-investment-grade	**22%**	**31%**	**23%**
Other metrics	**24%**	**9%**	**23%**
Unrated	**–**	**2%**	**–**
Total	**100%**	**100%**	**100%**
As of December 2022			
Residential Real Estate	$23,035	$3,192	$26,227
Region			
Americas	96%	93%	95%
EMEA	3%	7%	4%
Asia	1%	–	1%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	52%	63%	53%
Non-investment-grade	25%	36%	26%
Other metrics	23%	1%	21%
Total	100%	100%	100%

In the table above:

- Credit exposure included loans and lending commitments of $14.00 billion as of June 2023 and $14.62 billion as of December 2022 which are extended to clients who warehouse assets that are directly or indirectly secured by residential real estate.
- Other metrics category consists of loans where we use other key metrics to assess the borrower's credit quality, such as loan-to-value ratio, delinquency status, collateral value, expected cash flows and other risk factors.

In addition, we also have credit exposure to residential real estate loans held for securitization of $6.86 billion as of June 2023 and $8.07 billion as of December 2022. Such loans are included in trading assets in our consolidated balance sheets.

Securities-Based. Securities-based includes loans and lending commitments that are secured by stocks, bonds, mutual funds, and exchange-traded funds. These loans and commitments are primarily extended to our wealth management clients and used for purposes other than purchasing, carrying or trading margin stocks. Securities-based loans require borrowers to post additional collateral based on changes in the underlying collateral's fair value.

The table below presents our credit exposure from securities-based loans and lending commitments, and the concentration by region, internally determined public rating agency equivalents and other credit metrics.

$ in millions	Loans	Lending Commitments	Total
As of June 2023			
Securities-based	**$15,707**	**$780**	**$16,487**
Region			
Americas	**78%**	**99%**	**79%**
EMEA	**21%**	**1%**	**20%**
Asia	**1%**	**–**	**1%**
Total	**100%**	**100%**	**100%**
Credit Quality (Credit Rating Equivalent)			
Investment-grade	**77%**	**38%**	**75%**
Non-investment-grade	**4%**	**1%**	**4%**
Other metrics	**19%**	**61%**	**21%**
Total	**100%**	**100%**	**100%**
As of December 2022			
Securities-based	$16,671	$508	$17,179
Region			
Americas	83%	98%	83%
EMEA	15%	2%	15%
Asia	2%	–	2%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	77%	18%	76%
Non-investment-grade	5%	2%	4%
Other metrics	18%	80%	20%
Total	100%	100%	100%

In the table above, other metrics category consists of loans where we use other key metrics to assess the borrower's credit quality, such as collateral value, loan-to-value ratio and delinquency status.

Other Collateralized. Other collateralized includes loans and lending commitments that are backed by specific collateral (other than securities and real estate). Such loans and lending commitments are extended to clients who warehouse assets that are directly or indirectly secured by corporate loans, consumer loans and other assets. Other collateralized also includes loans and lending commitments to investment funds (managed by third parties) that are collateralized by capital commitments of the funds' investors or assets held by the fund, as well as other secured loans and lending commitments extended to our wealth management clients.

The table below presents our credit exposure from other collateralized loans and lending commitments, and the concentration by region, internally determined public rating agency equivalents and other credit metrics.

$ in millions	Loans	Lending Commitments	Total
As of June 2023			
Other Collateralized	**$53,887**	**$15,050**	**$68,937**
Region			
Americas	**86%**	**92%**	**87%**
EMEA	**12%**	**8%**	**11%**
Asia	**2%**	**–**	**2%**
Total	**100%**	**100%**	**100%**
Credit Quality (Credit Rating Equivalent)			
Investment-grade	**82%**	**79%**	**82%**
Non-investment-grade	**17%**	**19%**	**17%**
Other metrics	**1%**	**–**	**–**
Unrated	**–**	**2%**	**1%**
Total	**100%**	**100%**	**100%**
As of December 2022			
Other Collateralized	$51,702	$14,407	$66,109
Region			
Americas	86%	93%	87%
EMEA	12%	7%	11%
Asia	2%	–	2%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	83%	83%	83%
Non-investment-grade	16%	14%	16%
Other metrics	1%	–	–
Unrated	–	3%	1%
Total	100%	100%	100%

In the table above, credit exposure included loans and lending commitments extended to clients who warehouse assets of $20.05 billion as of June 2023 and $16.89 billion as of December 2022.

Installment and Credit Cards. 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 tables below present our credit exposure from originated installment and credit card funded loans, and the concentration by the five most concentrated U.S. states.

$ in millions	Installment
As of June 2023	
Loans, gross	**$5,134**
Texas	**8%**
California	**7%**
New Jersey	**6%**
Florida	**5%**
New York	**5%**
Other	**69%**
Total	**100%**
As of December 2022	
Loans, gross	$6,326
California	10%
Texas	9%
Florida	7%
New York	6%
Illinois	4%
Other	64%
Total	100%

$ in millions	Credit Cards
As of June 2023	
Loans, gross	**$16,879**
California	**16%**
Texas	**9%**
Florida	**8%**
New York	**8%**
Illinois	**4%**
Other	**55%**
Total	**100%**
As of December 2022	
Loans, gross	$15,820
California	16%
Texas	9%
New York	8%
Florida	8%
New Jersey	4%
Other	55%
Total	100%

In addition, we had credit exposure of $2.50 billion as of June 2023 and $1.88 billion as of December 2022 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 includes unsecured loans extended to wealth management clients and 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.

$ in millions	Loans	Lending Commitments	Total
As of June 2023			
Other	**$1,713**	**$969**	**$2,682**
Region			
Americas	**88%**	**100%**	**92%**
EMEA	**12%**	**–**	**8%**
Total	**100%**	**100%**	**100%**
Credit Quality (Credit Rating Equivalent)			
Investment-grade	**49%**	**85%**	**62%**
Non-investment-grade	**30%**	**15%**	**24%**
Other metrics	**21%**	**–**	**14%**
Total	**100%**	**100%**	**100%**
As of December 2022			
Other	$2,261	$944	$3,205
Region			
Americas	89%	99%	92%
EMEA	11%	1%	8%
Total	100%	100%	100%
Credit Quality (Credit Rating Equivalent)			
Investment-grade	47%	93%	60%
Non-investment-grade	26%	7%	21%
Other metrics	27%	–	19%
Total	100%	100%	100%

In the table above, other metrics 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 $1.46 billion as of June 2023 and $1.76 billion as of December 2022. 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.

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.

	As of	
$ in millions	**June 2023**	December 2022
Securities Financing Transactions	**$32,439**	$34,762
Industry		
Financial Institutions	**33%**	43%
Funds	**33%**	23%
Municipalities & Nonprofit	**5%**	5%
Sovereign	**27%**	28%
Other (including Special Purpose Vehicles)	**2%**	1%
Total	**100%**	100%
Region		
Americas	**38%**	47%
EMEA	**39%**	34%
Asia	**23%**	19%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**11%**	20%
AA	**30%**	31%
A	**38%**	31%
BBB	**10%**	8%
BB or lower	**10%**	10%
Unrated	**1%**	–
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.

	As of	
$ in millions	**June 2023**	December 2022
Other Credit Exposures	**$50,420**	$48,916
Industry		
Financial Institutions	**75%**	80%
Funds	**18%**	12%
Other (including Special Purpose Vehicles)	**7%**	8%
Total	**100%**	100%
Region		
Americas	**38%**	41%
EMEA	**52%**	49%
Asia	**10%**	10%
Total	**100%**	100%
Credit Quality (Credit Rating Equivalent)		
AAA	**4%**	7%
AA	**43%**	32%
A	**30%**	33%
BBB	**7%**	10%
BB or lower	**14%**	16%
Unrated	**2%**	2%
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.

Country Exposures. The Russian invasion of Ukraine has negatively affected the global economy and resulted in significant disruptions in financial markets and increased macroeconomic uncertainty. 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 receives regular briefings from our independent risk oversight and control functions on Russian and Ukrainian exposures, as well as other relevant risk metrics. We have significantly reduced our exposure to Russia and Ukraine and have curtailed our operations in Russia to those necessary to meet our legal and regulatory obligations. The overall direct financial impact to our net revenues for the first half of 2023 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 Russian or Ukrainian counterparties or borrowers and our total market exposure relating to Russian or Ukrainian issuers was not material as of June 2023. See "Risk Factors" in Part I, Item 1A of the 2022 Form 10-K for further information about our risks related to Russia's invasion of Ukraine.

Economic challenges persist for the Argentine government given uncertainty relating to its fiscal and economic policies due to upcoming elections. As of June 2023, our total credit exposure to Argentina was not material. Our total market exposure to Argentina as of June 2023 was $161 million, primarily to sovereign issuers. Such exposure consisted of $94 million related to debt, $(4) million related to credit derivatives and $71 million related to equities.

In addition, economic and/or political uncertainties in Ethiopia, Ghana, Lebanon, Pakistan, Sri Lanka and Venezuela 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 June 2023.

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 the operational resilience of our business.

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 and consultants 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 control 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.

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 cybersecurity risk, third-party risk and business resilience risk. We manage those risks as follows:

Information and Cybersecurity Risk. Information and cybersecurity 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 cybersecurity 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 2022 Form 10-K for further information about information and cybersecurity 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 cybersecurity, resilience and additional supply chain 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 2022 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. Our resilience framework defines the fundamental principles for business continuity planning (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 on a firmwide basis, and up-to-date, incorporating new information, including updated resilience capabilities as and when they become available. Our resilience assurance program encompasses testing of response and recovery strategies on a regular basis with the objective of minimizing and preventing significant operational disruptions. See "Business — Business Continuity and Information Security" in Part I, Item 1 of the 2022 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.

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 by Risk that, among other things, assesses regulatory capital policies and related interpretations, escalates certain interpretations to senior management and/or the appropriate risk committee, and performs calculation testing to corroborate alignment with applicable capital rules.

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. We have continued to make significant enhancements to our climate risk management framework, including steps to further integrate climate risk 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, in conjunction with senior management in both our revenue-producing units and our other independent risk oversight and control functions, 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 2022 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, and 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 Global Banking & Markets 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.

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 2022 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 and our Code of Business Conduct and Ethics governing our directors, officers and employees. 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) our DFAST results; (iv) the public portion of our resolution plan submission; (v) our Pillar 3 disclosure; (vi) our average daily LCR; (vii) our People Strategy Report; (viii) our Sustainability Report; and (ix) our Task Force on Climate-Related Financial Disclosures (TCFD) Report.

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).

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, liquidity and capital actions 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 2022 Form 10-K.

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 fees 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 platform solutions business, (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 products in our consumer platforms business, (x) our planned 2023 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 narrowing of our consumer business initiatives, (xvi) the objectives and effectiveness of our BCP, 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 Interbank Offered Rates and our transition to alternative risk-free reference rates, (xxvi) the effectiveness of our management of our human capital, including our diversity goals, (xxvii) our sustainability and carbon neutrality targets and goals, (xxviii) future inflation, (xxix) the impact of Russia's invasion of Ukraine and related sanctions and other developments on our business, results and financial position, (xxx) our ability to sell, and the terms of any proposed sales of Asset & Wealth Management historical principal investments and GreenSky and (xxxi) the timing of the profitability of Platform Solutions.

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, increases in market share and the narrowing of our consumer business initiatives 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 solutions business reaches scale and profitability are subject to the risks that the compensation and other costs to operate our businesses, including platform initiatives, may be greater than currently expected.

Statements about our Investment banking fees 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 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 fees, see "Risk Factors" in Part I, Item 1A of the 2022 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 platform solutions business, are subject to the risk that actual growth, savings and profitability 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 2023 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.

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, consumer behavior and demand, and other unforeseen events or conditions.

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.

Statements about the proposed sales of Asset & Wealth Management historical principal investments and GreenSky are subject to the risks that buyers may not bid on these assets or bid at levels, or with terms, that are unacceptable to us, and that the performance of these activities may deteriorate as a result of the announced sales.

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 June 2023 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 June 2023.

	Total Shares Purchased	Average Price Paid Per Share	Total Shares Purchased as Part of a Publicly Announced Program	Dollar Value of Remaining Authorized Repurchases *($ in millions)*
April	**1,177,051**	**$ 339.83**	**1,177,051**	**$ 27,054**
May	**1,061,555**	**$ 329.70**	**1,061,555**	**$ 26,704**
June	**–**	**$ –**	**–**	**$ 26,704**
Total	**2,238,606**		**2,238,606**	

In February 2023, our Board approved a new share repurchase program authorizing repurchases of up to $30 billion (in aggregate value and inclusive of shares repurchased in 2023) of our common stock. This program replaced our previous share repurchase program. 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 5. Other Information

Tenth Supplemental Indenture

Effective August 1, 2023, the initial underlier level for S&P 500 Daily Risk Control 5% USD Excess Return Index-Linked Notes due 2025 issued by GS Finance Corp. and guaranteed by The Goldman Sachs Group, Inc. was changed to whichever of the following two levels results in the highest cash settlement amount at maturity for noteholders: 243.72 or 158.20, all as provided in our Tenth Supplemental Indenture, which is filed as Exhibit 10.1 to this Form 10-Q.

Rule 10b5-1 Trading Plans

During the three months ended June 2023, no directors or executive officers entered into, modified or terminated, contracts, instructions or written plans for the sale or purchase of Group Inc.'s securities that were intended to satisfy the affirmative defense conditions of Rule 10b5-1.

Item 6. Exhibits

Exhibits

10.1 Tenth Supplemental Indenture, dated as of August 1, 2023, among GS Finance Corp., as issuer, The Goldman Sachs Group, Inc., as guarantor, and The Bank of New York Mellon, as trustee, with respect to the Senior Debt Indenture, dated as of October 10, 2008.

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 six months ended June 30, 2023 and June 30, 2022, (ii) the Consolidated Statements of Comprehensive Income for the three and six months ended June 30, 2023 and June 30, 2022, (iii) the Consolidated Balance Sheets as of June 30, 2023 and December 31, 2022, (iv) the Consolidated Statements of Changes in Shareholders' Equity for the three and six months ended June 30, 2023 and June 30, 2022, (v) the Consolidated Statements of Cash Flows for the six months ended June 30, 2023 and June 30, 2022, (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:		August 2, 2023

By:	/s/	Sheara J. Fredman
Name:		Sheara J. Fredman
Title:		Chief Accounting Officer (Principal Accounting Officer)
Date:		August 2, 2023

Exhibit 10.1

GS FINANCE CORP.

Issuer

and

THE GOLDMAN SACHS GROUP, INC.

Guarantor

to

THE BANK OF NEW YORK MELLON

Trustee

TENTH SUPPLEMENTAL INDENTURE

Dated as of August 1, 2023

S&P 500® Daily Risk Control 5% USD Excess Return Index-Linked Notes due 2025

Supplementing the Senior Debt Indenture,
dated as of October 10, 2008, among GS Finance Corp.,
The Goldman Sachs Group, Inc. and
The Bank of New York Mellon

TENTH SUPPLEMENTAL INDENTURE, dated as of August 1, 2023 (the "Tenth Supplemental Indenture"), among GS Finance Corp., a Delaware corporation (the "Company"), The Goldman Sachs Group, Inc., a Delaware corporation (the "Guarantor"), and The Bank of New York Mellon, a New York banking corporation, as Trustee (the "Trustee").

W I T N E S S E T H:

WHEREAS, the Company and the Guarantor have each heretofore made, executed and delivered to the Trustee a Senior Debt Indenture, dated as of October 10, 2008 (as amended to but excluding the date hereof, the "Indenture"), among the Company, the Guarantor and the Trustee, providing for the issuance from time to time of the Company's unsecured debentures, notes or other evidences of indebtedness to be issued in one or more series (the "Securities") and the guarantee thereof by the Guarantor, in each case as described therein;

WHEREAS, pursuant to the Indenture, the Company issued $8,892,000 in aggregate principal amount of its S&P 500® Daily Risk Control 5% USD Excess Return Index-Linked Notes due 2025, CUSIP No. 40057MLG2 (the "Notes") on July 29, 2022, which constitute a part of the single series of the debt securities entitled "Medium-Term Notes, Series F" issued by the Company and guaranteed by the Guarantor;

WHEREAS, the Notes constitute a separate Supplemental Obligation under Master Note No. 3, dated March 22, 2021 ("Master Note No. 3"), and have an associated Pricing Supplement (as defined in Master Note No. 3) that is incorporated into such Master Note No. 3 and that supplements the terms set forth in Master Note No. 3 with respect to such Supplemental Obligation, all as contemplated by Master Note No. 3;

WHEREAS, the Company and the Guarantor wish to change a provision that appears on the face of the Notes in a manner that would not adversely affect the interests of the Holders of the Notes;

WHEREAS, Section 9.01(10) of the Indenture provides that, without the consent of any Holders, the Company and the Guarantor, when authorized by their Board Resolutions, and the Trustee, at any time and from time to time, may enter into an indenture supplemental thereto to cure any ambiguity, to correct or supplement any provision of the Indenture which may be defective or inconsistent with any other provision in the Indenture, or to make any other provisions with respect to matters or questions arising under the Indenture, *provided* that such changes do not adversely affect the interests of the Holders of any Securities in any material respect;

WHEREAS, the Company and the Guarantor are executing and delivering to the Trustee this Tenth Supplemental Indenture in accordance with the provisions of Section 9.01(10) of the Indenture; and

WHEREAS, all acts and things necessary to make this Tenth Supplemental Indenture a valid, binding and legal agreement according to its terms have been done and performed, and the execution of this Tenth Supplemental Indenture has in all respects been duly authorized.

NOW, THEREFORE, in consideration of the premises contained herein and in the Indenture and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Company, the Guarantor and the Trustee hereby agree for the equal and proportionate benefit of the respective Holders of the Notes from time to time, as follows:

Section 1. Concurrently with the execution and delivery of this Tenth Supplemental Indenture, the Prospectus Information for each Note shall be amended and restated in its entirety such that the definition of the term "initial underlier level", which appears on the face of the Terms and Conditions section of the Pricing Supplement for the Notes, shall read in its entirety as set forth in Annex A hereto.

Section 2. Immediately following the execution and delivery of this Tenth Supplemental Indenture, each Outstanding Note may be exchanged pursuant to the Indenture for a new Note (including the Prospectus Information in the Pricing Supplement) having the same principal amount and in substantially the form set forth in Annex B hereto (it being understood that such form of new Note in Annex B is substantially identical to the form of the Outstanding Notes except that it includes the amended definition referenced in Section 1 above), provided that the failure to issue a new Note in exchange for any Outstanding Note shall not affect the validity of such Outstanding Note or the effect of this Tenth Supplemental Indenture with respect to such Outstanding Note.

Section 3. In case any provision in this Tenth Supplemental Indenture shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

Section 4. Nothing in this Tenth Supplemental Indenture, express or implied, shall give to any person, other than the parties hereto and their successors under the Indenture and the Holders of the Notes as provided herein, any benefit or any legal or equitable right, remedy or claim under this Tenth Supplemental Indenture or the Indenture.

Section 5. Unless otherwise defined in this Tenth Supplemental Indenture, all terms used in this Tenth Supplemental Indenture shall have the meanings assigned to them in the Indenture.

Section 6. THIS TENTH SUPPLEMENTAL INDENTURE SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAW OF THE STATE OF NEW YORK.

Section 7. This Tenth Supplemental Indenture amends and supplements the Indenture and shall be a part and subject to all the terms thereof. Except as amended and supplemented hereby, the Indenture and all documents executed in connection therewith shall continue in full force and effect and shall remain enforceable and binding in accordance with their respective terms.

Section 8. This Tenth Supplemental Indenture may be executed in any number of counterparts, each of which so executed shall be deemed to be an original, but all such counterparts shall together constitute but one and the same instrument.

Section 9. The parties hereto will execute and deliver such further instruments and do such further acts and things as may be reasonably required to carry out the intent and purpose of this Tenth Supplemental Indenture.

Section 10. All agreements of the Company, the Guarantor and the Trustee in this Tenth Supplemental Indenture shall bind their successors and assigns, whether so expressed or not.

Section 11. If any provision of this Tenth Supplemental Indenture limits, qualifies or conflicts with another provision which is required to be included in this Tenth Supplemental Indenture by the Trust Indenture Act of 1939, as amended, the required provision shall control.

Section 12. The recitals contained herein shall be taken as the statements of the Company and the Guarantor, and the Trustee does not assume any responsibility for their correctness. The Trustee makes no representations as to the validity or sufficiency of this Tenth Supplemental Indenture.

IN WITNESS WHEREOF, the parties hereto have caused this Tenth Supplemental Indenture to be duly executed as of the day and year first above written.

GS FINANCE CORP.

By /s/ Asifiqbal Karimkhan
Name: Asifiqbal Karimkhan
Title: Authorized Signatory

THE GOLDMAN SACHS GROUP, INC.

By /s/ Asifiqbal Karimkhan
Name: Asifiqbal Karimkhan
Title: Authorized Signatory

THE BANK OF NEW YORK MELLON,
as Trustee

By /s/ Francine Kincaid
Name: Francine Kincaid
Title: Vice President

Annex A

Amended Definition of “Initial underlier level”

Initial underlier level: whichever of the following two levels results in the highest cash settlement amount, based on the formulas set forth under “— Cash settlement amount” above: 243.72 or 158.20

Annex B

Form of Amended Prospectus Information Incorporated into Master Note No. 3

Filed Pursuant to Rule 424(b)(2)
Registration Statement No. 333-269296

GS Finance Corp.

$8,892,000

S&P 500® Daily Risk Control 5% USD Excess Return Index-Linked Notes due 2025

guaranteed by

The Goldman Sachs Group, Inc.

The notes do not bear interest. The amount that you will be paid on your notes on the stated maturity date (July 31, 2025) is based on the performance of the S&P 500® Daily Risk Control 5% USD Excess Return Index (Excess Return index) as measured from the trade date (July 26, 2022) to and including the determination date (July 28, 2025), using whichever of the following two initial Excess Return index levels results in the highest payout to you at maturity based on the formulas set forth below: 243.72 (the strike level) and 158.20 (the closing level of the initial Excess Return index level on the trade date).

The Excess Return index measures the return on a hypothetical investment in the S&P 500® Daily Risk Control 5% USD Total Return Index (Risk Control index or the index) borrowed at the Secured Overnight Financing Rate (SOFR) *plus* 0.02963%. **Any percentage increase in the Risk Control index will be offset by SOFR *plus* 0.02963%.**

The Risk Control index provides exposure to the S&P 500® Total Return Index (Total Return index), subject to a daily risk control strategy that increases or decreases exposure to the Total Return index to target 5% volatility of the Risk Control index, based on the greater of short-term realized volatility and long-term realized volatility of the Total Return index. The methodology used measures variations in the historical daily returns of the Total Return index and places greater significance on the returns of days that are closer to the calculation date such that days closer to the calculation date have the majority of the impact on the volatility calculation. See page S-15.

If realized volatility is less than 5%, the Risk Control index's exposure to the Total Return index will be greater than 100% (up to 150%) by hypothetically borrowing cash at SOFR *plus* 0.02963%. If realized volatility is greater than 5%, the Risk Control index's exposure to the Total Return index will be less than 100% (and could be 0%) by reallocating exposure from the Total Return index to a hypothetical cash position that accrues interest at SOFR *plus* 0.02963%. **Typically, a portion of the Risk Control index's exposure has been to the hypothetical cash position.**

The Risk Control index may decrease significantly more or increase significantly less than the Total Return index and there is no guarantee that the Risk Control index will achieve the 5% volatility target.

Prior to December 20, 2021, the Excess Return index measured the return on a hypothetical investment in the Risk Control index borrowed at the overnight U.S. dollar LIBOR rate (LIBOR). Any percentage increase in the Risk Control index was offset by LIBOR. Further, prior to such date, with respect to the Risk Control index, if realized volatility was less than 5%, the Risk Control index's exposure to the Total Return index would have been greater than 100% (up to 150%) by hypothetically borrowing cash at LIBOR. If realized volatility was greater than 5%, the Risk Control index's exposure to the Total Return index would have been less than 100% (and could have been 0%) by reallocating exposure from the Total Return index to a hypothetical cash position that accrued interest at LIBOR. As a result, extremely limited historical information regarding the performance of the Excess Return index and the Risk Control index subsequent to their discontinued use of LIBOR is available, which may make it difficult for you to make an informed decision with respect to an investment in the notes.

The return on your notes will be the greater of the returns described in the following two paragraphs, first calculating such potential returns using the strike level for the initial Excess Return index level and second calculating such potential returns using the closing level of the initial Excess Return index level on the trade date for the initial Excess Return index level.

If the final Excess Return index level on the determination date is greater than or equal to the initial Excess Return index level, the return on your notes will be positive or zero and will equal the index return *times* the upside participation rate of 1.37.

If the final Excess Return index level is less than the initial Excess Return index level, the return on your notes will be equal to the absolute value of the index return (e.g., if the index return is -5%, your return will be +5%), subject to the maximum downside settlement amount of $2,000 for each $1,000 face amount of your notes.

To determine your payment at maturity, we will calculate the index return, which is the percentage increase or decrease in the final Excess Return index level from the initial Excess Return index level. At maturity, for each $1,000 face amount of your notes, you will receive an amount in cash equal to:

- if the index return is *positive* or *zero* (the final Excess Return index level is *greater than* or *equal to* the initial Excess Return index level), the *sum* of (i) $1,000 *plus* (ii) the *product* of (a) $1,000 *times* (b) the upside participation rate *times* (c) the index return; or
- if the index return is *negative* (the final Excess Return index level is *less than* the initial Excess Return index level), the *sum* of (i) $1,000 *plus* (ii) the *product* of (a) $1,000 *times* (b) the absolute value of the index return, subject to the maximum downside settlement amount.

You should read the disclosure herein to better understand the terms and risks of your investment, including the credit risk of GS Finance Corp. and The Goldman Sachs Group, Inc. See page PS-8.

The estimated value of your notes on the date of this amendment is not less than the face amount of such notes. For a discussion of the estimated value and the price at which Goldman Sachs & Co. LLC would buy or sell your notes, if it makes a market in the notes, see the following page.

Original issue date:	July 29, 2022	**Original issue price:**	100% of the face amount
Underwriting discount:	2.78% of the face amount	**Net proceeds to the issuer:**	97.22% of the face amount

Neither the Securities and Exchange Commission nor any other regulatory body has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense. The notes are not bank deposits and are not insured by the Federal Deposit Insurance Corporation or any other governmental agency, nor are they obligations of, or guaranteed by, a bank.

Goldman Sachs & Co. LLC

Amendment No. 1 dated August 1, 2023 to Pricing Supplement No. 6,933 dated July 26, 2022.

The issue price, underwriting discount and net proceeds listed above relate to the notes we sell initially. We may decide to sell additional notes after the date of this pricing supplement, at issue prices and with underwriting discounts and net proceeds that differ from the amounts set forth above. The return (whether positive or negative) on your investment in notes will depend in part on the issue price you pay for such notes.

GS Finance Corp. may use this prospectus in the initial sale of the notes. In addition, Goldman Sachs & Co. LLC or any other affiliate of GS Finance Corp. may use this prospectus in a market-making transaction in a note after its initial sale. ***Unless GS Finance Corp. or its agent informs the purchaser otherwise in the confirmation of sale, this prospectus is being used in a market-making transaction.***

Estimated Value of Your Notes

The estimated value of your notes on the date of this amendment (as determined by reference to pricing models used by Goldman Sachs & Co. LLC (GS&Co.) and taking into account our credit spreads) is not less than the face amount of such notes. The value of your notes at any time will reflect many factors and cannot be predicted.

About Your Prospectus

The notes are part of the Medium-Term Notes, Series F program of GS Finance Corp. and are fully and unconditionally guaranteed by The Goldman Sachs Group, Inc. This prospectus includes this pricing supplement and the accompanying documents listed below. This pricing supplement constitutes a supplement to the documents listed below, does not set forth all of the terms of your notes and therefore should be read in conjunction with such documents:

- General terms supplement no. 8,999 dated February 13, 2023
- Prospectus supplement dated February 13, 2023
- Prospectus dated February 13, 2023

The information in this pricing supplement supersedes any conflicting information in the documents listed above. In addition, some of the terms or features described in the listed documents may not apply to your notes.

We refer to the notes we are offering by this pricing supplement as the “offered notes” or the “notes”. Each of the offered notes has the terms described below. Please note that in this pricing supplement, references to “GS Finance Corp.”, “we”, “our” and “us” mean only GS Finance Corp. and do not include its subsidiaries or affiliates, references to “The Goldman Sachs Group, Inc.”, our parent company, mean only The Goldman Sachs Group, Inc. and do not include its subsidiaries or affiliates and references to “Goldman Sachs” mean The Goldman Sachs Group, Inc. together with its consolidated subsidiaries and affiliates, including us. The notes will be issued under the senior debt indenture, dated as of October 10, 2008, as supplemented by the First Supplemental Indenture, dated as of February 20, 2015, each among us, as issuer, The Goldman Sachs Group, Inc., as guarantor, and The Bank of New York Mellon, as trustee. This indenture, as so supplemented and as further supplemented thereafter, is referred to as the “GSFC 2008 indenture” in the accompanying prospectus supplement.

The notes will be issued in book-entry form and represented by master note no. 3, dated March 22, 2021.

TERMS AND CONDITIONS

CUSIP / ISIN: 40057MLG2 / US40057MLG23

Company (Issuer): GS Finance Corp.

Guarantor: The Goldman Sachs Group, Inc.

Underlier: the S&P 500® Daily Risk Control 5% USD Excess Return Index (current Bloomberg symbol: "SPXT5UE Index"), or any successor underlier, as it may be modified, replaced or adjusted from time to time as provided herein

Face amount: $8,892,000 in the aggregate on the original issue date; the aggregate face amount may be increased if the company, at its sole option, decides to sell an additional amount on a date subsequent to the trade date.

Authorized denominations: $1,000 or any integral multiple of $1,000 in excess thereof

Principal amount: On the stated maturity date, the company will pay, for each $1,000 of the outstanding face amount, an amount in cash equal to the cash settlement amount.

Cash settlement amount:

- if the final underlier level is *greater than* or *equal to* the initial underlier level, the *sum* of (i) $1,000 *plus* (ii) the *product* of (a) $1,000 *times* (b) the upside participation rate *times* (c) the underlier return; or
- if the final underlier level is *less than* the initial underlier level, the *sum* of (i) $1,000 *plus* (ii) the *product* of (a) $1,000 *times* (b) the absolute underlier return, subject to the maximum downside settlement amount

Initial underlier level: whichever of the following two levels results in the highest cash settlement amount, based on the formulas set forth under "— Cash settlement amount" above: 243.72 or 158.20

Final underlier level: the closing level of the underlier on the determination date, subject to adjustment as provided in "— Consequences of a market disruption event or non-trading day" and "— Discontinuance or modification of the underlier" below

Upside participation rate: 137%

Underlier return: the *quotient* of (i) the final underlier level *minus* the initial underlier level *divided* by (ii) the initial underlier level, expressed as a percentage

Absolute underlier return: the absolute value of the underlier return, expressed as a percentage (e.g., a -5% underlier return will equal +5% absolute underlier return)

Maximum downside settlement amount: $2,000

Trade date: July 26, 2022

Original issue date: July 29, 2022

Determination date: July 28, 2025, unless the calculation agent determines that a market disruption event occurs or is continuing on such day or such day is not a trading day. In that event, the determination date will be the first following trading day on which the calculation agent determines that a market disruption event does not occur and is not continuing. However, the determination date will not be postponed to a date later than the originally scheduled stated maturity date or, if the originally scheduled stated maturity date is not a business day, later than the first business day after the originally scheduled stated maturity date. If a market disruption event occurs or is continuing on the day that is the last possible determination date or such last possible day is not a trading day, that day will nevertheless be the determination date.

Stated maturity date: July 31, 2025, unless that day is not a business day, in which case the stated maturity date will be postponed to the next following business day. The stated maturity date will also be postponed if the determination date is postponed as described under "— Determination date" above. In such a case, the stated maturity date will be postponed by the same number of business day(s) from but excluding the originally scheduled determination date to and including the actual determination date.

Closing level: for any given trading day, the official closing level of the underlier or any successor underlier published by the underlier sponsor on such trading day

Trading day: a day on which the respective principal securities markets for all of the underlier stocks are open for trading, the underlier sponsor is open for business and the underlier is calculated and published by the underlier sponsor

Successor underlier: any substitute underlier approved by the calculation agent as a successor underlier as provided under "— Discontinuance or modification of the underlier" below

Underlier sponsor: at any time, the person or entity, including any successor sponsor, that determines and publishes the underlier as then in effect. The notes are not sponsored, endorsed, sold or promoted by the underlier sponsor or any of its affiliates and the underlier sponsor and its affiliates make no representation regarding the advisability of investing in the notes.

Underlier stocks: at any time, the stocks that comprise the underlier as then in effect, after giving effect to any additions, deletions or substitutions

Market disruption event: With respect to any given trading day, any of the following will be a market disruption event with respect to the underlier:

- a suspension, absence or material limitation of trading in underlier stocks constituting 20% or more, by weight, of the underlier on their respective primary markets, in each case for more than two consecutive hours of trading or during the one-half hour before the close of trading in that market, as determined by the calculation agent in its sole discretion,
- a suspension, absence or material limitation of trading in option or futures contracts relating to the underlier or to underlier stocks constituting 20% or more, by weight, of the underlier in the respective primary markets for those contracts, in each case for more than two consecutive hours of trading or during the one-half hour before the close of trading in that market, as determined by the calculation agent in its sole discretion, or
- underlier stocks constituting 20% or more, by weight, of the underlier, or option or futures contracts, if available, relating to the underlier or to underlier stocks constituting 20% or more, by weight, of the underlier do not trade on what were the respective primary markets for those underlier stocks or contracts, as determined by the calculation agent in its sole discretion,

and, in the case of any of these events, the calculation agent determines in its sole discretion that such event could materially interfere with the ability of the company or any of its affiliates or a similarly situated person to unwind all or a material portion of a hedge that could be effected with respect to this note.

The following events will not be market disruption events:

- a limitation on the hours or numbers of days of trading, but only if the limitation results from an announced change in the regular business hours of the relevant market, and
- a decision to permanently discontinue trading in option or futures contracts relating to the underlier or to any underlier stock.

For this purpose, an "absence of trading" in the primary securities market on which an underlier stock is traded, or on which option or futures contracts relating to the underlier or an underlier stock are traded, will not include any time when that market is itself closed for trading under ordinary circumstances. In contrast, a suspension or limitation of trading in an underlier stock or in option or futures contracts, if available, relating to the underlier or an underlier stock in the primary market for that stock or those contracts, by reason of:

- a price change exceeding limits set by that market,
- an imbalance of orders relating to that underlier stock or those contracts, or
- a disparity in bid and ask quotes relating to that underlier stock or those contracts,

will constitute a suspension or material limitation of trading in that stock or those contracts in that market.

Consequences of a market disruption event or a non-trading day: If a market disruption event occurs or is continuing on a day that would otherwise be the determination date or such day is not a trading day, then the determination date will be postponed as described under "— Determination date" above.

If the calculation agent determines that the closing level of the underlier that must be used to determine the cash settlement amount is not available on the last possible determination date because of a market disruption event, a non-trading day or for any other reason (other than as described under "— Discontinuance or modification of the underlier" below), the calculation agent will nevertheless determine the closing level of the underlier based on its assessment, made in its sole discretion, of the level of the underlier on that day.

Discontinuance or modification of the underlier: If the underlier sponsor discontinues publication of the underlier and the underlier sponsor or any other person or entity publishes a substitute underlier that the calculation agent determines is comparable to the underlier and approves as a successor underlier, or if the calculation agent designates a substitute underlier, then the calculation agent will determine the amount payable on the stated maturity date by reference to such successor underlier.

If the calculation agent determines that the publication of the underlier is discontinued and there is no successor underlier, the calculation agent will determine the amount payable on the stated maturity date by a computation methodology that the calculation agent determines will as closely as reasonably possible replicate the underlier.

If the calculation agent determines that (i) the underlier, the underlier stocks or the method of calculating the underlier is changed at any time in any respect — including any addition, deletion or substitution and any reweighting or rebalancing of the underlier or the underlier stocks and whether the change is made by the underlier sponsor under its existing policies or following a modification of those policies, is due to the publication of a successor underlier, is due to events affecting one or more of the underlier stocks or their issuers or is due to any other reason — and is not otherwise reflected in the level of the underlier by the underlier sponsor pursuant to the then-current underlier methodology of the underlier or (ii) there has been a split or reverse split of the underlier, then the calculation agent will be permitted (but not required) to make such adjustments in the underlier or the method of its calculation as it believes are appropriate to ensure that the final underlier level, used to determine the amount payable on the stated maturity date, is equitable.

All determinations and adjustments to be made by the calculation agent with respect to the underlier may be made by the calculation agent in its sole discretion. The calculation agent is not obligated to make any such adjustments.

Calculation agent: Goldman Sachs & Co. LLC ("GS&Co.")

Overdue principal rate: the effective Federal Funds rate

HYPOTHETICAL EXAMPLES

The following examples are provided for purposes of illustration only. They should not be taken as an indication or prediction of future investment results and merely are intended to illustrate the impact that the various hypothetical underlier levels on the determination date could have on the cash settlement amount at maturity assuming all other variables remain constant.

The examples below are based on a range of final underlier levels that are entirely hypothetical; the underlier level on any day throughout the life of the notes, including the final underlier level on the determination date, cannot be predicted. The underlier has been highly volatile in the past — meaning that the underlier level has changed considerably in relatively short periods — and its performance cannot be predicted for any future period.

The information in the following examples reflects hypothetical rates of return on the offered notes assuming that they are purchased on the original issue date at the face amount and held to the stated maturity date. If you sell your notes in a secondary market prior to the stated maturity date, your return will depend upon the market value of your notes at the time of sale, which may be affected by a number of factors that are not reflected in the examples below, such as interest rates, the volatility of the underlier, the creditworthiness of GS Finance Corp., as issuer, and the creditworthiness of The Goldman Sachs Group, Inc., as guarantor. In addition, the estimated value of your notes at any time (as determined by reference to pricing models used by GS&Co.) will reflect many factors and cannot be predicted. For more information on the estimated value of your notes, see “Additional Risk Factors Specific to Your Notes — The Estimated Value of Your Notes At Any Time (as Determined By Reference to Pricing Models Used By GS&Co.) Will Reflect Many Factors and Cannot Be Predicted” on page PS-8 of this pricing supplement. The information in the examples also reflects the key terms and assumptions in the box below.

Key Terms and Assumptions	
Face amount	$1,000
Upside participation rate	137%
Maximum downside settlement amount	$2,000
Neither a market disruption event nor a non-trading day occurs on the originally scheduled determination date	
No change in or affecting any of the underlier stocks or the method by which the underlier sponsor calculates the underlier	
Notes purchased on original issue date at the face amount and held to the stated maturity date	

For these reasons, the actual performance of the underlier over the life of your notes, as well as the amount payable at maturity may bear little relation to the hypothetical examples shown below or to the historical underlier levels shown elsewhere in this pricing supplement. For information about the historical levels of the underlier during recent periods, see “The Underlier — Historical Closing Levels of the Underlier” below. Before investing in the offered notes, you should consult publicly available information to determine the levels of the underlier between the date of this pricing supplement and the date of your purchase of the offered notes.

Also, the hypothetical examples shown below do not take into account the effects of applicable taxes. Because of the U.S. tax treatment applicable to your notes, tax liabilities could affect the after-tax rate of return on your notes to a comparatively greater extent than the after-tax return on the underlier stocks.

The levels in the left column of the table below represent hypothetical final underlier levels and are expressed as percentages of the initial underlier level (the initial underlier level being whichever of the two initial underlier levels results in the highest cash settlement amount, based on the formulas set forth under “Terms and Conditions — Cash settlement amount” above). The amounts in the right column represent the hypothetical cash settlement amounts, based on the corresponding hypothetical final underlier level, and are expressed as percentages of the face amount of a note (rounded to the nearest one-thousandth of a percent). Thus, a hypothetical cash settlement amount of 100.000% means that the value of the cash payment that we would deliver for each $1,000 of the outstanding face amount of the offered notes on the stated maturity date would equal 100.000% of the face amount of a note, based on the corresponding hypothetical final underlier level and the assumptions noted above.

Hypothetical Final Underlier Level (as Percentage of Initial Underlier Level)	**Hypothetical Cash Settlement Amount (as Percentage of Face Amount)**
200.0000%	237.000%
175.0000%	202.750%
150.0000%	168.500%
130.0000%	141.100%
120.0000%	127.400%
117.3787%	**123.809%**
76.1900%	123.810%
75.0000%	125.000%
70.0000%	130.000%
50.0000%	150.000%
25.0000%	175.000%
0.0000%	**200.000%**

If, for example, the final underlier level were determined to be 0.000% of the initial underlier level, the cash settlement amount that we would deliver on your notes at maturity would be capped at the maximum downside settlement amount (expressed as a percentage of the face amount), or 200.000% of the face amount of your notes, as shown in the table above.

The cash settlement amounts shown above are entirely hypothetical; they are based on market prices for the underlier stocks that may not be achieved on the determination date and on assumptions that may prove to be erroneous. The actual market value of your notes on the stated maturity date or at any other time, including any time you may wish to sell your notes, may bear little relation to the hypothetical cash settlement amounts shown above, and these amounts should not be viewed as an indication of the financial return on an investment in the offered notes. The hypothetical cash settlement amounts on notes held to the stated maturity date in the examples above assume you purchased your notes at their face amount and have not been adjusted to reflect the actual issue price you pay for your notes. The return on your investment (whether positive or negative) in your notes will be affected by the amount you pay for your notes. If you purchase your notes for a price other than the face amount, the return on your investment will differ from, and may be significantly lower than, the hypothetical returns suggested by the above examples. Please read “Additional Risk Factors Specific to Your Notes — The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors” on page PS-9.

Payments on the notes are economically equivalent to the amounts that would be paid on a combination of other instruments. For example, payments on the notes are economically equivalent to a combination of an interest-bearing bond bought by the holder and one or more options entered into between the holder and us (with one or more implicit option premiums paid over time). The discussion in this paragraph does not modify or affect the terms of the notes or the U.S. federal income tax treatment of the notes, as described elsewhere in this pricing supplement.

We cannot predict the actual final underlier level or what the market value of your notes will be on any particular trading day, nor can we predict the relationship between the underlier level and the market value of your notes at any time prior to the stated maturity date. The actual amount that you will receive at maturity and the rate of return on the offered notes will depend on the actual final underlier level determined by the calculation agent as described above. Moreover, the assumptions on which the hypothetical returns are based may turn out to be inaccurate. Consequently, the amount of cash to be paid in respect of your notes on the stated maturity date may be very different from the information reflected in the examples above.

ADDITIONAL RISK FACTORS SPECIFIC TO YOUR NOTES

An investment in your notes is subject to the risks described below, as well as the risks and considerations described in the accompanying prospectus, in the accompanying prospectus supplement, and under "Additional Risk Factors Specific to the Notes" in the accompanying general terms supplement no. 8,999. You should carefully review these risks and considerations as well as the terms of the notes described herein and in the accompanying prospectus, the accompanying prospectus supplement, and the accompanying general terms supplement no. 8,999. Your notes are a riskier investment than ordinary debt securities. Also, your notes are not equivalent to investing directly in the underlier stocks, i.e., the stocks comprising the underlier to which your notes are linked. You should carefully consider whether the offered notes are appropriate given your particular circumstances.

Risks Related to Structure, Valuation and Secondary Market Sales

The Estimated Value of Your Notes At Any Time (as Determined By Reference to Pricing Models Used By GS&Co.) Will Reflect Many Factors and Cannot Be Predicted

The estimated value of your notes on the date of this amendment, as determined by reference to GS&Co.'s pricing models and taking into account our credit spreads, is not less than the face amount of your notes. Thereafter, the estimated value of your notes as determined by reference to these models could be lower than the face amount of your notes and will be affected by changes in market conditions, the creditworthiness of GS Finance Corp., as issuer, the creditworthiness of The Goldman Sachs Group, Inc., as guarantor, and other relevant factors. If GS&Co. buys or sells your notes (if it makes a market, which it is not obligated to do) it will do so at prices that reflect the estimated value determined by reference to such pricing models at that time. The price at which GS&Co. will buy or sell your notes at any time also will reflect its then current bid and ask spread for similar sized trades of structured notes.

In estimating the value of your notes on the date of this amendment, GS&Co.'s pricing models consider certain variables, including principally our credit spreads, interest rates (forecasted, current and historical rates), volatility, price-sensitivity analysis and the time to maturity of the notes. These pricing models are proprietary and rely in part on certain assumptions about future events, which may prove to be incorrect. As a result, the actual value you would receive if you sold your notes in the secondary market, if any, to others may differ, perhaps materially, from the estimated value of your notes determined by reference to our models due to, among other things, any differences in pricing models or assumptions used by others. See "—The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors" below.

In addition to the factors discussed above, the value and quoted price of your notes at any time will reflect many factors and cannot be predicted. If GS&Co. makes a market in the notes, the price quoted by GS&Co. would reflect any changes in market conditions and other relevant factors, including any deterioration in our creditworthiness or perceived creditworthiness or the creditworthiness or perceived creditworthiness of The Goldman Sachs Group, Inc. These changes may adversely affect the value of your notes, including the price you may receive for your notes in any market making transaction. To the extent that GS&Co. makes a market in the notes, the quoted price will reflect the estimated value determined by reference to GS&Co.'s pricing models at that time, plus or minus its then current bid and ask spread for similar sized trades of structured notes.

Furthermore, if you sell your notes, you will likely be charged a commission for secondary market transactions, or the price will likely reflect a dealer discount. This commission or discount will further reduce the proceeds you would receive for your notes in a secondary market sale.

There is no assurance that GS&Co. or any other party will be willing to purchase your notes at any price and, in this regard, GS&Co. is not obligated to make a market in the notes. See "Additional Risk Factors Specific to the Notes — Your Notes May Not Have an Active Trading Market" on page S-7 of the accompanying general terms supplement no. 8,999.

The Notes Are Subject to the Credit Risk of the Issuer and the Guarantor

Although the return on the notes will be based on the performance of the underlier, the payment of any amount due on the notes is subject to the credit risk of GS Finance Corp., as issuer of the notes, and the credit risk of The Goldman Sachs Group, Inc. as guarantor of the notes. The notes are our unsecured obligations. Investors are dependent on our ability to pay all amounts due on the notes, and therefore investors are subject to our credit risk and to changes in the market's view of our creditworthiness. Similarly, investors are dependent on the ability of The Goldman Sachs Group, Inc., as guarantor of the notes, to pay all amounts due on the notes, and therefore are also subject to its credit risk and to changes in the market's view of its creditworthiness. See "Description of the Notes We May Offer — Information About Our Medium-Term Notes, Series F Program — How the Notes Rank Against Other Debt" on page S-5 of the accompanying prospectus supplement and "Description of Debt Securities We May Offer — Guarantee by The Goldman Sachs Group, Inc." on page 67 of the accompanying prospectus.

The Amount Payable on Your Notes Is Not Linked to the Level of the Underlier at Any Time Other Than the Determination Date

The final underlier level will be based on the closing level of the underlier on the determination date (subject to adjustment as described elsewhere in this pricing supplement). Although the actual level of the underlier on the stated maturity date or at other times during the life of your notes may be higher or lower than the final underlier level, you will not benefit from the closing level of the underlier at any time other than on the determination date.

Also, the market price of your notes prior to the stated maturity date may be significantly lower than the purchase price you pay for your notes. Consequently, if you sell your notes before the stated maturity date, you may receive far less than the amount of your investment in the notes.

The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors

When we refer to the market value of your notes, we mean the value that you could receive for your notes if you chose to sell them in the open market before the stated maturity date. A number of factors, many of which are beyond our control, will influence the market value of your notes, including:

- the level of the underlier;
- the volatility – i.e., the frequency and magnitude of changes – in the closing level of the underlier;
- the dividend rates of the underlier stocks;
- economic, financial, regulatory, political, military, public health and other events that affect stock markets generally and the underlier stocks, and which may affect the closing level of the underlier;
- interest rates and yield rates in the market;
- the time remaining until your notes mature; and
- our creditworthiness and the creditworthiness of The Goldman Sachs Group, Inc., whether actual or perceived, and including actual or anticipated upgrades or downgrades in our credit ratings or the credit ratings of The Goldman Sachs Group, Inc. or changes in other credit measures.

Without limiting the foregoing, the market value of your notes may be negatively impacted by increasing interest rates. Such adverse impact of increasing interest rates could be significantly enhanced in notes with longer-dated maturities, the market values of which are generally more sensitive to increasing interest rates.

These factors may influence the market value of your notes if you sell your notes before maturity, including the price you may receive for your notes in any market making transaction. If you sell your notes prior to maturity, you may receive less than the face amount of your notes. You cannot predict the future performance of the underlier based on its historical performance.

The Potential for the Value of Your Notes to Increase Will Be Limited

Your ability to participate in any change in the value of the underlier over the life of your notes will be limited because of the maximum downside settlement amount. The maximum downside settlement amount will limit the cash settlement amount you may receive for each of your notes at maturity, if the final underlier level is less than the initial underlier level.

Your Notes Do Not Bear Interest

You will not receive any interest payments on your notes. As a result, even if the cash settlement amount payable for your notes on the stated maturity date exceeds the face amount of your notes, the overall return you earn on your notes may be less than you would have earned by investing in a non-indexed debt security of comparable maturity that bears interest at a prevailing market rate.

You Have No Shareholder Rights or Rights to Receive Any Underlier Stock

Investing in your notes will not make you a holder of any of the underlier stocks. Neither you nor any other holder or owner of your notes will have any rights with respect to the underlier stocks, including any voting rights, any right to receive dividends or other distributions, any rights to make a claim against the underlier stocks or any other rights of a holder of the underlier stocks. Your notes will be paid in cash and you will have no right to receive delivery of any underlier stocks.

We May Sell an Additional Aggregate Face Amount of the Notes at a Different Issue Price

At our sole option, we may decide to sell an additional aggregate face amount of the notes subsequent to the date of this pricing supplement. The issue price of the notes in the subsequent sale may differ substantially (higher or lower) from the original issue price you paid as provided on the cover of this pricing supplement.

If You Purchase Your Notes at a Premium to Face Amount, the Return on Your Investment Will Be Lower Than the Return on Notes Purchased at Face Amount and the Impact of Certain Key Terms of the Notes Will Be Negatively Affected

The cash settlement amount will not be adjusted based on the issue price you pay for the notes. If you purchase notes at a price that differs from the face amount of the notes, then the return on your investment in such notes held to the stated maturity date will differ from, and may be substantially less than, the return on notes purchased at face amount. If you purchase your notes at a premium to face amount and hold them to the stated maturity date, the return on your investment in the notes will be lower than it would have been had you purchased the notes at face amount or a discount to face amount.

Additional Risks Related to the Underlier

Notwithstanding That the Title of the Index Includes the Phrase "Risk Control," the Underlier May Decrease Significantly More or Increase Significantly Less Than the Total Return Index

The underlier, through the Risk Control index, is intended to provide investors with exposure to the Total Return index subject to a risk control strategy that dynamically increases or decreases the exposure to the Total Return index in an attempt to achieve a 5% volatility target. The Risk Control index's exposure to the Total Return index can be greater than, less than or equal to 100%. The performance of the underlier is not taken into account when implementing the risk control strategy and could result in leveraged exposure to the Total Return index in a falling stock market or deleveraged exposure to the Total Return index in a rising stock market. Additionally, the underlier is the excess return version of the Risk Control index. As an excess return underlier, the underlier is designed to measure the return on a hypothetical investment in the Risk Control index that is made with hypothetically borrowed funds. Borrowing costs for these funds are assessed at a rate of SOFR *plus* 0.02963%. Any positive performance of the Risk Control index will be offset by such hypothetical borrowing costs. Therefore, although the title of the underlier includes the phrase "Risk Control," the underlier may decrease significantly more or increase significantly less than the Total Return index and your notes are not necessarily less risky than, and will not necessarily have better returns than, notes linked to the Total Return index. See "Comparative Performance of the Excess Return Index, the Risk Control Index and the Total Return Index" below for a comparison of the historical performance of the underlier relative to the Risk Control index and the Total Return index.

The Return on Your Notes is Based on an Underlier That Reflects Excess Return; There Are Borrowing Costs at the Underlier Level

The underlier is the excess return version of the Risk Control index, meaning that it is designed to measure the return on a hypothetical investment in the Risk Control index that is made with hypothetically borrowed funds. Borrowing costs for these funds are assessed at a rate of SOFR *plus* 0.02963%. Such costs will reduce any positive performance of the Risk Control index (and, thereby, the underlier) and will increase any negative performance of the Risk Control index (and, thereby, the underlier). Because the return of the underlier is equal to the return of the Risk Control index minus borrowing costs, the return of the underlier will always be less than the return of the Risk Control index. See "Comparative Performance of the Excess Return Index, the Risk Control Index and the Total Return index" below for a comparison of the historical performance of the underlier relative to the Risk Control index and the Total Return index.

There Is No Assurance that Calculating Realized Volatility as the Greater of Short-Term Volatility and Long- Term Volatility Is the Best Way to Measure Realized Volatility

With regard to the Risk Control index, "realized volatility" is a measurement of variations in the historical daily returns of the Total Return index from the day that is two Risk Control index calculation days before the inception date (September 10, 2009) of the Risk Control index to the day that is two Risk Control index calculation days before the current Risk Control index calculation day. As a result, the measurement period for realized volatility will always have the same start date and will continue to get longer with each new Risk Control Index calculation day. Realized volatility is calculated as the greater of short-term volatility and long-term volatility. When the volatility of the Total Return index increases (or decreases), short-term volatility will increase (or decrease) more quickly than long-term volatility. Because realized volatility is the greater of short-term volatility and long-term volatility, realized volatility will increase quickly when volatility increases, which will quickly reduce exposure to the Total Return index. Conversely, because realized volatility is the greater of short-term volatility and long-term volatility, realized volatility will decrease slowly when volatility decreases, which in turn will gradually increase exposure to the Total Return index. There is no assurance that calculating realized volatility as the greater of short-term volatility and long-term volatility or using a measurement period with a set start date that continues to get longer with each new Risk Control index calculation day is the best way to measure realized volatility. It is possible that exclusively relying on short-term volatility or long-term volatility or on the lesser of short-term volatility and long-term volatility is a more reliable way to measure realized volatility.

The Underlier Will Not Reflect the Most Current Volatility of the Total Return Index

The Risk Control index is rebalanced using a leverage factor at the close of each Risk Control index calculation day in order to adjust its exposure to the Total Return index based on the applicable realized volatility. Although the Risk Control index is rebalanced at the close of each Risk Control index calculation day, because of how the leverage factor is calculated, there is a lag of two Risk Control index calculation days between the calculation of the leverage factor and the rebalancing of the Risk Control index in accordance with that leverage factor. Therefore, on any given Risk Control index calculation day, the leverage factor that determines the Risk Control index's exposure to the Total Return index for such Risk Control index calculation day will be based on the realized volatility of the Total Return index from two Risk Control index calculation days prior. Due to this two-day lag and the fact that realized volatility can fluctuate significantly during this period, and even during a single day, the Risk Control index will not be rebalanced to reflect (and therefore the underlier will not reflect) the realized volatility of the Total Return index as of the rebalancing day and will not have an actual volatility of 5%. As a result, if there is a rapid and severe decline in the level of the Total Return index, due to the two-day lag, the Risk Control index may not rebalance into the hypothetical cash position until the underlier has declined by a substantial amount.

There Is No Guarantee that the Underlier Will Achieve the 5% Volatility Target

The exposure of the Risk Control index (and therefore the underlier) to the Total Return index is subject to a maximum leverage factor of 150%, which may limit the ability of the Risk Control index (and therefore the underlier) to fully achieve a volatility target of 5% if achieving such volatility target would require a leverage factor in excess of 150%. Therefore, there is no guarantee that the Risk Control index (and therefore the underlier) will achieve the 5% volatility target.

You May be Exposed to Borrowing Costs at the Risk Control Underlier Level

The exposure of the Risk Control index to the Total Return index can be greater than, less than or equal to 100%. Exposure in excess of 100% (i.e., leverage) is achieved by hypothetically borrowing cash at a rate of SOFR *plus* 0.02963% for the exposure above 100%. As leverage increases, borrowing costs increase.

The cost of borrowing is ignored when determining leverage above 100% (subject to a maximum leverage factor of 150%), even if a prudent investor would choose not to borrow money to invest in the Total Return index at such time. The cost of borrowing may exceed the returns from the Total Return index if the return of the Total Return index decreases or if the rate of the SOFR *plus* 0.02963% increases (or both).

Controlled Volatility Does Not Mean the Underlier Will Have Lower Volatility than the Total Return Index

The underlier, through the Risk Control index, employs a risk-control strategy that uses mathematical equations to target 5% volatility. The strategy does not have a goal of achieving lower volatility than the Total Return index. In fact, if the realized volatility of the Total Return index is less than the volatility target of 5%, the exposure to the Total Return index will be increased in an attempt to raise the volatility of the Risk Control index to 5%. Any time the exposure to the Total Return index is greater than 100%, the Risk Control index would be more volatile than the Total Return index.

Low Volatility Does Not Necessarily Mean the Risk Control Index Will Outperform the Total Return Index or that the Underlier Will Have Positive Performance

The underlier, through the Risk Control index, employs a risk-control strategy that uses mathematical equations to target 5% volatility. Even if the Risk Control index achieves its 5% volatility target, there is no guarantee that the Risk Control index will outperform the Total Return index or that the underlier return will be positive. For example, if the performance of the Total Return index remains stable or steadily decreases over time, the 5% volatility target will not cause the Risk Control index to outperform the Total Return index or result in a positive Risk Control index return. Moreover, the underlier return will be less than the Risk Control index return due to its excess return feature and the borrowing costs thereof. See "Comparative Performance of the Excess Return Index, the Risk Control Index and the Total Return index" below for a comparison of the historical performance of the underlier relative to the Risk Control index and the Total Return index.

There May Be Overexposure to the Total Return Index in Falling Stock Markets or Underexposure in Rising Stock Markets

The underlier, through the Risk Control index, is designed to achieve a volatility target of 5% regardless of the direction of price movements in the market. Therefore, in rising stock markets if realized volatility is higher than the volatility target, some of the Risk Control index's exposure (and therefore the underlier's exposure) will be moved from the Total Return index to the hypothetical cash position, and the Risk Control index (and therefore the underlier) will experience lower returns than if the full exposure was maintained in the Total Return index. In contrast, if realized volatility is less than the volatility target in a falling stock market, the Risk Control index (and therefore the underlier) will be exposed to more than 100% of the losses in the Total Return index and the Risk Control index (and therefore the underlier) will experience lower returns than the Total Return index. The hypothetical cash position has represented a very significant portion of the Risk Control index in the past. Any rebalancing into a hypothetical cash position will limit your return on the notes.

The Exposure to the Total Return Underlier May Be Rebalanced into a Hypothetical Cash Position on Any or All Days During the Term of the Notes

The underlier, through the Risk Control index, has a daily rebalancing feature which can result in a rebalancing between the exposure to the Total Return index and the hypothetical cash position. This could have the effect of reducing the exposure of the Total Return index to less than 100% in an attempt to reduce the volatility to 5%. The minimum leverage factor is 0%. Therefore, there is no guarantee that the Risk Control index will not be rebalanced so that the hypothetical cash position represents a significant portion of the Risk Control index (up to 100% of the underlier). Any rebalancing into a hypothetical cash position will limit your return on the notes.

Typically, a portion of the Risk Control index's exposure has been to the hypothetical cash position.

On December 20, 2021, Each of the Underlier and the Risk Control Index Discontinued Its Use of Overnight U.S. Dollar LIBOR For All Purposes and Replaced Such Rate

On December 20, 2021, the underlier discontinued use of overnight U.S. dollar LIBOR for all purposes and replaced such rate with SOFR *plus* 0.02963%. Therefore, beginning on such date, the Underlier measures the return on a hypothetical investment in the Risk Control index that is made with hypothetically borrowed funds at costs assessed at a rate of SOFR *plus* 0.02963%. Further, from such date, if the Risk Control index increases its exposure to the Total Return index to more than 100% to achieve the 5% volatility target, such exposure will be achieved by hypothetically borrowing cash at a rate of SOFR *plus* 0.02963%. If the Risk Control index decreases its exposure to the Total Return index to less than 100% to achieve the 5% volatility target, such exposure will be achieved by hypothetically selling some of the exposure to the Total Return index, which results in a hypothetical cash position that accrues interest at SOFR *plus* 0.02963%.

Replacement of overnight U.S. dollar LIBOR with SOFR *plus* 0.02963% could potentially result in higher borrowing costs being deducted from the return of the Risk Control Index. See "The Underlier" below. As discussed above under "— The Return on Your Notes is Based on an Underlier That Reflects Excess Return and Will Be Reduced By Borrowing Costs at the Underlier Level", increases in the borrowing costs will offset any positive performance of the Risk Control index (and, thereby, the underlier) and will increase any negative performance of the Risk Control index (and, thereby, the underlier). As a result, the use of SOFR *plus* 0.02963% may adversely affect the performance of the underlier and the Risk Control Index and could reduce the amount payable in respect of your Notes.

Historical information regarding the performance of the underlier and the Risk Control index as of any date, or for any period, prior to December 20, 2021 was during a period in which the underlier and the Risk Control index used overnight U.S. dollar LIBOR instead of SOFR *plus* 0.02963%. Extremely limited historical information regarding the performance of the underlier and the Risk Control index subsequent to their discontinued use of overnight U.S. dollar LIBOR is available, which may make it difficult for you to make an informed decision with respect to the notes.

The Historical Levels of SOFR Are Not an Indication of the Future Levels of SOFR

In the past, the level of SOFR has experienced significant fluctuations. You should note that historical levels, fluctuations and trends of SOFR are not necessarily indicative of future levels. Any historical upward or downward trend in SOFR is not an indication that SOFR is more or less likely to increase or decrease at any time, and you should not take the historical levels of SOFR as an indication of its future performance.

Certain Risks Related to SOFR

On June 22, 2017, the Alternative Reference Rates Committee ("ARRC") convened by the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York identified SOFR, a broad U.S. treasuries repurchase financing rate to be published by the Federal Reserve Bank of New York, as the rate that, in the consensus view of the ARRC, represented best practice for use in certain new U.S. dollar derivatives and other financial contracts. SOFR is a broad measure of the cost of borrowing cash overnight collateralized by U.S. treasury securities and has been published by the Federal Reserve Bank of New York since April 2018. The Federal

Reserve Bank of New York has also published historical indicative Secured Overnight Financing Rates going back to 2014. Investors should not rely on any historical changes or trends in SOFR as an indicator of future changes in SOFR.

Because SOFR is published by the Federal Reserve Bank of New York based on data received from other sources, we have no control over its determination, calculation or publication. The Federal Reserve Bank of New York notes on its publication page for SOFR that use of SOFR is subject to important limitations and disclaimers, including that the Federal Reserve Bank of New York may alter the methods of calculation, publication schedule, rate revision practices or availability of SOFR at any time without notice. There can be no guarantee, particularly given its relatively recent introduction, that SOFR will not be discontinued or fundamentally altered in a manner that is materially adverse to the interests of investors in the notes. If the manner in which SOFR is calculated is changed, that change may result in a reduction of the levels of the underlier and the Risk Control Index and, therefore, the amount payable on your notes and the trading prices of such notes. In addition, the Federal Reserve Bank of New York may withdraw, modify or amend published SOFR data in its sole discretion and without notice.

Additionally, daily changes in SOFR have, on occasion, been more volatile than daily changes in other benchmark or market rates. The return on and value of your notes may fluctuate more than if the underlier and the Risk Control Index used a less volatile rate. In addition, the volatility of SOFR has reflected the underlying volatility of the overnight U.S. Treasury repo market. The Federal Reserve Bank of New York has at times conducted operations in the overnight U.S. Treasury repo market in order to help maintain the federal funds rate within a target range. There can be no assurance that the Federal Reserve Bank of New York will continue to conduct such operations in the future, and the duration and extent of any such operations is inherently uncertain. The effect of any such operations, or of the cessation of such operations to the extent they are commenced, is uncertain and could be materially adverse to the levels of the underlier and the Risk Control Index and, therefore, the amount payable on your notes.

Except to the Extent The Goldman Sachs Group, Inc. Is One of the Companies Whose Common Stock Comprises the Underlier, There Is No Affiliation Between the Underlier Stock Issuers or the Underlier Sponsor and Us

The common stock of The Goldman Sachs Group, Inc. is one of the underlier stocks comprising the Underlier. We are not otherwise affiliated with the issuers of the underlier stocks or the underlier sponsor. As we have told you above, however, we or our affiliates may currently or from time to time in the future own securities of, or engage in business with the underlier sponsor or the underlier stock issuers. Neither we nor any of our affiliates have participated in the preparation of any publicly available information or made any "due diligence" investigation or inquiry with respect to the underlier or any of the other underlier stock issuers. You, as an investor in your notes, should make your own investigation into the underlier and the underlier stock issuers. See "The Underlier" below for additional information about the underlier.

Neither the underlier sponsor nor any of the other underlier stock issuers are involved in the offering of your notes in any way and none of them have any obligation of any sort with respect to your notes. Thus, neither the underlier sponsor nor any of the other underlier stock issuers have any obligation to take your interests into consideration for any reason, including in taking any corporate actions that might affect the market value of your notes.

The Policies of the Underlier Sponsor and Changes That Affect the Underlier or the Underlier Stocks Could Affect the Payment Amount on Your Notes and Their Market Value

The policies of the underlier sponsor concerning the calculation of the level of the underlier, additions, deletions or substitutions of underlier stocks and the manner in which changes affecting the underlier stocks or their issuers, such as stock dividends, reorganizations or mergers, are reflected in the level of the underlier could affect the level of the underlier and, therefore, the cash settlement amount on your notes on the stated maturity date and the market value of your notes before that date. The amount payable on your notes and their market value could also be affected if the underlier sponsor changes these policies, for example, by changing the manner in which it calculates the level of the underlier or if the underlier sponsor discontinues or suspends calculation or publication of the level of the underlier, in which case it may become difficult to determine the market value of your notes. If events such as these occur, or if the closing level of the underlier is not available on the determination date because of a market disruption event or for any other reason, the calculation agent - which initially will be GS&Co., our affiliate - may determine the closing level of the underlier - and thus the amount payable on your notes - in a manner it considers appropriate, in its sole discretion. We describe the discretion that the calculation agent will have in determining the closing level of the underlier on the determination date and the amount payable on your notes more fully under "Terms and Conditions - Discontinuance or modification of the underlier" above.

Risks Related to Tax

Your Notes Will Be Treated as Debt Instruments Subject to Special Rules Governing Contingent Payment Debt Instruments for U.S. Federal Income Tax Purposes

The notes will be treated as debt instruments subject to special rules governing contingent payment debt instruments for U.S. federal income tax purposes. If you are a U.S. individual or taxable entity, you generally will be required to pay taxes on ordinary income from the notes over their term based on the comparable yield for the notes, even though you will not receive any payments from us until maturity. This comparable yield is determined solely to calculate the amount on which you will be taxed prior to maturity and is neither a prediction nor a guarantee of what the actual yield will be. In addition, any gain you may recognize on the sale, exchange or maturity of the notes will be taxed as ordinary interest income. If you are a secondary purchaser of the notes, the tax consequences to you may be different. Please see "Supplemental Discussion of U.S. Federal Income Tax Consequences" below for a more detailed discussion. Please also consult your tax advisor concerning the U.S. federal income tax and any other applicable tax consequences to you of owning your notes in your particular circumstances.

Foreign Account Tax Compliance Act (FATCA) Withholding May Apply to Payments on Your Notes, Including as a Result of the Failure of the Bank or Broker Through Which You Hold the Notes to Provide Information to Tax Authorities

Please see the discussion under “United States Taxation — Taxation of Debt Securities — Foreign Account Tax Compliance Act (FATCA) Withholding” in the accompanying prospectus for a description of the applicability of FATCA to payments made on your notes.

THE UNDERLIER

The S&P 500® Daily Risk Control 5% USD Excess Return Index (the "Excess Return index"):

- is an equity index, and therefore cannot be invested in directly;
- does not file reports with the SEC because it is not an issuer;
- has a launch date of September 10, 2009, with a base value of 100 as of its base date, February 5, 1990; and
- is sponsored by S&P Dow Jones Indices LLC ("S&P").

The Excess Return index is the excess return version of the S&P 500® Daily Risk Control 5% USD Total Return Index (the "Risk Control index"), meaning that the Excess Return index is designed to measure the return on a hypothetical investment in the Risk Control index borrowed at a rate of the Secured Overnight Financing Rate (SOFR) *plus* 0.02963%. Any percentage increase in the Risk Control index will be offset by a rate of SOFR *plus* 0.02963%.

Prior to December 20, 2021, the Excess Return index measured the return on a hypothetical investment in the Risk Control index borrowed at the overnight U.S. dollar LIBOR rate.

The Risk Control index is intended to provide investors with exposure to the S&P 500® Total Return Index (the "Total Return index") subject to a risk control strategy that dynamically increases or decreases the exposure to the Total Return index in an attempt to achieve a 5% volatility target. The Risk Control index's exposure to the Total Return index can be greater than, less than or equal to 100%. Exposure in excess of 100% is achieved by hypothetically borrowing cash at a rate of SOFR *plus* 0.02963%. Exposure of less than 100% is achieved by hypothetically selling some of the exposure to the Total Return index, which results in a hypothetical cash position that accrues interest at the rate of SOFR *plus* 0.02963%. Notwithstanding that the title of each of the Excess Return index and the Risk Control index includes the phrase "Risk Control", the Excess Return index and the Risk Control index may decrease significantly more or increase significantly less than the Total Return index.

Prior to December 20, 2021, the Risk Control index's exposure in excess of 100% was achieved by hypothetically borrowing cash at a rate of overnight U.S. dollar LIBOR. Exposure of less than 100% was achieved by hypothetically selling some of the exposure to the Total Return index, which resulted in a hypothetical cash position that accrued interest at the overnight U.S. dollar LIBOR rate.

As a result, extremely limited historical information regarding the performance of the Excess Return Index and the Risk Control index subsequent to their discontinued use of overnight U.S. dollar LIBOR is available, which may make it difficult for you to make an informed decision with respect to an investment in the notes.

The Total Return index is a total return-based calculation of the S&P 500® Index. The S&P 500® Index includes a representative sample of 500 leading companies in leading industries of the U.S. economy.

The Excess Return index, the Risk Control index, the Total Return index and the S&P 500® Index are calculated, maintained and published by S&P Dow Jones Indices LLC ("S&P"). Additional information about the Excess Return index, the Risk Control index, the Total Return index, and the S&P 500® Index (including sector weights) is available on the following websites: spglobal.com/spdji/en/indices/strategy/sp-500-daily-risk-control-5-index, spglobal.com/spdji/en/indices/equity/sp-500 and spglobal.com. We are not incorporating by reference the websites or any material they include in this pricing supplement.

S&P 500® Daily Risk Control 5% USD Excess Return Index

The Excess Return index is the excess return version of the Risk Control index. The Excess Return index is designed to measure the return on a hypothetical investment in the Risk Control index that is made with borrowed funds. Borrowing costs are assessed at a rate of SOFR *plus* 0.02963%. Such costs will reduce any positive index return and will increase any negative index return. The level of the Excess Return index on an index calculation day ("T") is equal to the *product* of (a) the level of the Excess Return index on the previous index calculation day ("T – 1") *multiplied by* (b) (i) the return of the Risk Control index on the Excess Return index calculation day ("T") *minus* (ii) the borrowing costs.

S&P 500® Daily Risk Control 5% USD Total Return Index

The Risk Control index is designed to measure the return on a hypothetical investment in the Total Return index that dynamically increases or decreases its exposure to the Total Return index in an attempt to achieve a 5%

volatility target (the “volatility target”). While the Risk Control index is designed to achieve a stable level of volatility, there can be no assurance that the Risk Control index will achieve this goal.

The return on the Risk Control index consists of two components: (1) the exposure to the Total Return index, which may be greater than (but not greater than 150%), less than (as low as zero) or equal to 100% of the daily return of the Total Return index, and (2) an interest cost or gain. An exposure greater than 100% of the daily return of the Total Return index is a leveraged position where the exposure to the Total Return index is increased by hypothetically borrowing cash (and paying interest on such cash as described below) and investing such cash in the Total Return index. An exposure less than 100% of the daily return of the Total Return index is a deleveraged position where the exposure to the Total Return index is decreased by hypothetically selling some of the exposure, which results in a hypothetical cash position that accrues interest. An exposure equal to 100% of the daily return of the Total Return index has the same daily return as the Total Return index. Interest cost accrues on the amount of any hypothetical borrowed cash and interest gain accrues on the amount of any hypothetical cash position. The rate of SOFR *plus* 0.02963% is used to calculate the interest cost or gain. The Excess Return index sponsor may use other successor interest rates if SOFR is unavailable, and a 360-day year is assumed for the interest calculations in accordance with U.S. banking practices.

Each Risk Control index calculation day (“T”), the Excess Return index sponsor calculates the “leverage factor”, which determines whether the exposure to the Total Return index should be greater than, less than or equal to 100% of the daily return of the Total Return index for the following Risk Control index calculation day (“T + 1”). The leverage factor is a ratio of the target volatility level (of 5%) to the “realized volatility” (as defined below) for the second preceding Risk Control index calculation day (“T - 2”), subject to a maximum leverage factor of 150% and a minimum leverage factor of 0%. For example, if on the second preceding Risk Control index calculation day the realized volatility were equal to 4%, on the Risk Control index calculation day the leverage factor would be equal to 125% (5% divided by 4%) and on the following Risk Control index calculation day the Risk Control index would be exposed to 125% of the daily return of the Total Return index.

Although the Risk Control index is rebalanced at the close of each Risk Control index calculation day, because of how the leverage factor is calculated, there is a lag of two Risk Control index calculation days between the calculation of the leverage factor and the rebalancing of the Risk Control index in accordance with that leverage factor. Therefore, on any given Risk Control index calculation day, the leverage factor that determined the Risk Control index’s exposure to the Total Return index for such Risk Control index calculation day was based on the realized volatility of the Total Return index from two Risk Control index calculation days prior.

“Realized volatility” is a measurement of variations in the historical daily returns of the Total Return index. Realized volatility is calculated as the greater of short-term volatility and long-term volatility. Both short-term volatility and long-term volatility are calculated based on the historical daily returns over the same time period (from the day that is two Risk Control index calculation days before the inception date (September 10, 2009) of the Risk Control index to the day that is two Risk Control index calculation days before the current Risk Control index calculation day) and both apply and gradually increase a discount that gradually reduces the significance of a given historical daily return as it moves farther into the past. However, short-term volatility applies a larger discount than does long-term volatility. The discount for short-term volatility is slightly more than double the discount for long-term volatility. As a result, the 10 most recent Risk Control index calculation days account for approximately 50% of the weighting when determining short-term volatility, while the 23 most recent Risk Control index calculation days account for approximately 50% of the weighting when determining long-term volatility. **The short-term realized volatility calculation and the long-term realized volatility calculations differ only in that the long-term volatility calculation places 50% of the calculation weighting on an additional 13 days.**

When the volatility of the Total Return index increases (or decreases), short-term volatility will increase (or decrease) more quickly than long-term volatility. Because realized volatility is the greater of short-term volatility and long-term volatility, realized volatility will increase quickly when volatility increases, which will quickly reduce exposure to the Total Return index. Conversely, because realized volatility is the greater of short-term volatility and long-term volatility, realized volatility will decrease slowly when volatility decreases, which in turn will gradually increase exposure to the Total Return index.

If realized volatility is less than the volatility target, the leverage factor will be greater than one and the exposure to the daily return of the Total Return index will be greater than 100%. As a result, interest costs will be incurred for the exposure greater than 100% at the rate of SOFR *plus* 0.02963%. For example, if the realized volatility is 4%, the leverage factor will be 125% (i.e., 5 divided by 4 = 125%). In this case, the Risk Control index would be exposed to

125% of the daily return of the Total Return index, and interest cost will be assessed for the 25% exposure above 100%. If realized volatility is greater than the volatility target, the leverage factor will be less than one and the exposure to the daily return of the Total Return index will be less than 100%. As a result, exposure will be moved to the cash position, which will accrue interest at the rate of SOFR *plus* 0.02963%. For example, if the realized volatility is 6%, the leverage factor will be approximately 83% (i.e., 5 divided by 6 = approximately 83%). In this case, the Risk Control index would be exposed to approximately 83% of the daily return of the Total Return index, plus the interest gain on the 17% of exposure that is moved to the cash position. If realized volatility is equal to the volatility target, the leverage factor will be equal to one and exposure to the daily return of the Total Return index will be equal to 100% and there will be no interest cost or gain.

Typically, a portion of the Risk Control index's exposure has been to the hypothetical cash position.

Total Return Index

The Total Return index is a total return-based calculation of the S&P 500® Index. The total return construction reflects both movements in stock prices and the reinvestment of dividend income. The Total Return index represents the total return earned in a portfolio that tracks the S&P 500® Index and reinvests dividend income in the overall index, not in the specific stock paying the dividend.

The total return construction builds the Total Return index from the price return version of the S&P 500® Index but accounts for daily total dividend returns. The first step is to calculate the total dividend paid on a given day and convert that figure into price index points. A total daily dividend amount is calculated as the aggregate of (a) the number of shares of each stock in the S&P 500® Index *times* (b) the dividend per share paid for such stock. This calculation is performed for each trading day. The dividend per share for a stock is generally zero except for four times a year when it goes ex-dividend for the quarterly dividend payment. Some stocks included in the S&P 500® Index do not pay dividends and this amount always remains zero. Ordinary cash dividends are applied on the ex-dividend date in calculating the total return index. The Total Return index reflects both ordinary and special cash dividends. "Special dividends" are those dividends that are outside of the normal payment pattern established historically by the issuing company. These may be described by the company as "special," "extra," "year-end" or "return of capital." Whether a dividend is funded from operating earnings or from other sources of cash does not affect the determination of whether it is ordinary or special. S&P Dow Jones Indices will generally consider the third consecutive instance of a non-ordinary dividend (in terms of timing, not amount) to be ordinary for index calculation purposes as a third consecutive instance will now be considered to be part of the normal payment pattern established by the company. As discussed under "The S&P 500® Index" below, special dividends are treated as corporate actions with offsetting price and divisor adjustments.

The total daily dividend amount calculated above is converted to index points by dividing such amount by the divisor for the price return version of the S&P 500® Index. The daily total return for the Total Return index is then determined by calculating (a) the *sum* of (i) the level of the price return version of the S&P 500® Index on that day *plus* (ii) the index points reflecting the total daily dividend amount on such day *divided by* (b) the level of the price return version of the S&P 500® Index for the previous day *minus* (c) one. The daily total return is used to update the Total Return index level from one day to the next by calculating the *product* of (a) the level of the Total Return index from the previous day *times* (b) the *sum* of (i) one *plus* (ii) the daily total return for the given day.

S&P 500® Index

The S&P 500® Index:

- is an equity index, and therefore cannot be invested in directly;
- does not file reports with the SEC because it is not an issuer;
- was first launched on March 4, 1957 based on an initial value of 10 from 1941-1943; and
- is sponsored by S&P Dow Jones Indices LLC ("S&P").

The S&P 500® Index includes a representative sample of 500 companies in leading industries of the U.S. economy. The 500 companies are not the 500 largest companies listed on the NYSE and not all 500 companies are listed on the NYSE. S&P chooses companies for inclusion in the S&P 500® Index with an aim of achieving a distribution by broad industry groupings that approximates the distribution of these groupings in the common stock population of the U.S. domiciled equity market. Although the S&P 500® Index contains 500 constituent companies, at any one time it may contain greater than 500 constituent trading lines since some companies included in the S&P 500®

Index prior to July 31, 2017 may be represented by multiple share class lines in the S&P 500® Index. The S&P 500® Index is calculated, maintained and published by S&P and is part of the S&P Dow Jones Indices family of indices.

S&P intends for the S&P 500® Index to provide a performance benchmark for the large-cap U.S. domiciled equity markets. Constituent changes are made on an as-needed basis and there is no schedule for constituent reviews. Index additions and deletions are announced with at least three business days advance notice. Less than three business days' notice may be given at the discretion of the S&P Index Committee. Relevant criteria for additions to the S&P 500® Index that are employed by S&P include: the company proposed for addition should have an unadjusted company market capitalization of $12.7 billion or more and a security level float-adjusted market capitalization of at least 50% of such threshold (for spin-offs, eligibility is determined using when-issued prices, if available); the float-adjusted liquidity ratio of the stock (defined as the annual dollar value traded divided by the float-adjusted market capitalization) should be greater than or equal to 0.75 at the time of the addition to the S&P 500® Index and the stock should trade a minimum of 250,000 shares in each of the six months leading up to the evaluation date (current constituents have no minimum requirement), where the annual dollar value traded is calculated as the average closing price multiplied by the historical volume over the 365 calendar days prior to the evaluation date (reduced to the available trading period for IPOs, spin-offs or public companies considered to be U.S. domiciled for index purposes that do not have 365 calendar days of trading history on a U.S. exchange); the company must be a U.S. company (characterized as a Form 10-K filer with its U.S. portion of fixed assets and revenues constituting a plurality of the total and with a primary listing of the common stock on the NYSE, NYSE Arca, NYSE American (formerly NYSE MKT), Nasdaq Global Select Market, Nasdaq Select Market, Nasdaq Capital Market, Cboe BZX (formerly Bats BZX), Cboe BYX (formerly Bats BYX), Cboe EDGA (formerly Bats EDGA) or Cboe EDGX (formerly Bats EDGX) (each, an "eligible exchange")); the proposed constituent has an investable weight factor ("IWF") of 10% or more; the inclusion of the company will contribute to sector balance in the S&P 500® Index relative to sector balance in the market in the relevant market capitalization range; financial viability (the sum of the most recent four consecutive quarters' Generally Accepted Accounting Principles (GAAP) earnings (net income excluding discontinued operations) should be positive as should the most recent quarter); and, for IPOs, the company must be traded on an eligible exchange for at least twelve months (for former SPACs, S&P considers the de-SPAC transaction to be an event equivalent to an IPO, and 12 months of trading post the de-SPAC event are required before a former SPAC can be considered for inclusion in the S&P 500® Index; spin-offs or in-specie distributions from existing constituents do not need to be traded on an eligible exchange for twelve months prior to their inclusion in the S&P 500® Index). In addition, constituents of the S&P MidCap 400® Index and the S&P SmallCap 600® Index can be added to the S&P 500® Index provided they meet the unadjusted company level market capitalization eligibility criteria for the S&P 500® Index. Migrations from the S&P MidCap 400® Index or the S&P SmallCap 600® Index do not need to meet the financial viability, liquidity, or 50% of the S&P 500® Index's unadjusted company level minimum market capitalization threshold criteria. Further, constituents of the S&P Total Market Index Ex S&P Composite 1500 (which includes all eligible U.S. common equities except for those included in the S&P 500® Index, the S&P MidCap 400® Index and the S&P SmallCap 600® Index) that acquire a constituent of the S&P 500® Index, the S&P MidCap 400® Index or the S&P SmallCap 600® Index that do not fully meet all of the eligibility criteria may still be added to the S&P 500® Index at the discretion of the Index Committee if the merger consideration includes the acquiring company issuing stock to target company shareholders, and the Index Committee determines that the addition could minimize turnover and enhance the representativeness of the S&P 500® Index as a market benchmark. Certain types of organizational structures and securities are always excluded, including, but not limited to, business development companies (BDCs), limited partnerships, master limited partnerships, limited liability companies (LLCs), OTC bulletin board issues, closed-end funds, ETFs, ETNs, royalty trusts, tracking stocks, special purpose acquisition companies (SPACs), preferred stock and convertible preferred stock, unit trusts, equity warrants, convertible bonds, investment trusts, rights and American depositary receipts (ADRs). Stocks are deleted from the S&P 500® Index when they are involved in mergers, acquisitions or significant restructurings such that they no longer meet the inclusion criteria, and when they substantially violate one or more of the addition criteria. Stocks that are delisted or moved to the pink sheets or the bulletin board are removed, and those that experience a trading halt may be retained or removed in S&P's discretion. S&P evaluates additions and deletions with a view to maintaining S&P 500® Index continuity.

For constituents included in the S&P 500® Index prior to July 31, 2017, all publicly listed multiple share class lines are included separately in the S&P 500® Index, subject to, in the case of any such share class line, that share class line satisfying the liquidity and float criteria discussed above and subject to certain exceptions. It is possible that one listed share class line of a company may be included in the S&P 500® Index while a second listed share class line of the same company is excluded. For companies that issue a second publicly traded share class to index share class holders, the newly issued share class line is considered for inclusion if the event is mandatory and the market capitalization of the distributed class is not considered to be de minimis.

As of July 31, 2017, companies with multiple share class lines are no longer eligible for inclusion in the S&P 500® Index. Only common shares are considered when determining whether a company has a multiple share class structure. Constituents of the S&P 500® Index prior to July 31, 2017 with multiple share class lines will be grandfathered in and continue to be included in the S&P 500® Index. If an S&P 500® Index constituent reorganizes into a multiple share class line structure, that company will be reviewed for continued inclusion in the S&P 500® Index at the discretion of the S&P Index Committee.

Calculation of the S&P 500® Index

The S&P 500® Index is calculated using a base-weighted aggregative methodology. The value of the S&P 500® Index on any day for which an index value is published is determined by a fraction, the numerator of which is the aggregate of the market price of each stock in the S&P 500® Index *times* the number of shares of such stock included in the S&P 500® Index, and the denominator of which is the divisor, which is described more fully below. The "market value" of any index stock is the *product* of the market price per share of that stock *times* the number of the then-outstanding shares of such index stock that are then included in the S&P 500® Index.

The S&P 500® Index is also sometimes called a "base-weighted aggregative index" because of its use of a divisor. The "divisor" is a value calculated by S&P that is intended to maintain conformity in index values over time and is adjusted for all changes in the index stocks' share capital after the "base date" as described below. The level of the S&P 500® Index reflects the total market value of all index stocks relative to the S&P 500® Index's base date of 1941-43.

In addition, the S&P 500® Index is float-adjusted, meaning that the share counts used in calculating the S&P 500® Index reflect only those shares available to investors rather than all of a company's outstanding shares. S&P seeks to exclude shares held by long-term, strategic shareholders concerned with the control of a company, a group that generally includes the following: officers and directors and related individuals whose holdings are publicly disclosed, private equity, venture capital, special equity firms, asset managers and insurance companies with board of director representation, publicly traded companies that hold shares in another company, holders of restricted shares (except for shares held as part of a lock-up agreement), company-sponsored employee share plans/trusts, defined contribution plans/savings, investment plans, foundations or family trusts associated with the company, government entities at all levels (except government retirement or pension funds), sovereign wealth funds and any individual person listed as a 5% or greater stakeholder in a company as reported in regulatory filings (collectively, "strategic holders"). To this end, S&P excludes all share-holdings (other than depositary banks, pension funds (including government pension and retirement funds), mutual funds, exchange traded fund providers, investment funds, asset managers that do not have direct board of director representation (including stakeholders who may have the right to appoint a board of director member but choose not to do so, stakeholders who have exercised a right to appoint a board of director "observer" even if that observer is employed by the stakeholder and stakeholders who have exercised a right to appoint an independent director who is not employed by the stakeholder), investment funds of insurance companies and independent foundations not associated with the company) with a position greater than 5% of the outstanding shares of a company from the float-adjusted share count to be used in S&P 500® Index calculations.

The exclusion is accomplished by calculating an IWF for each stock that is part of the numerator of the float-adjusted index fraction described above:

IWF = (available float shares)/(total shares outstanding)

where available float shares is defined as total shares outstanding less shares held by strategic holders. In most cases, an IWF is reported to the nearest one percentage point. For companies with multiple share class lines, a separate IWF is calculated for each share class line.

Maintenance of the S&P 500® Index

In order to keep the S&P 500® Index comparable over time S&P engages in an index maintenance process. The S&P 500® Index maintenance process involves changing the constituents as discussed above, and also involves maintaining quality assurance processes and procedures, adjusting the number of shares used to calculate the S&P 500® Index, monitoring and completing the adjustments for company additions and deletions, adjusting for stock splits and stock dividends and adjusting for other corporate actions. In addition to its daily governance of indices and maintenance of the S&P 500® Index methodology, at least once within any 12 month period, the S&P Index Committee reviews the S&P 500® Index methodology to ensure the S&P 500® Index continues to achieve the stated objective, and that the data and methodology remain effective. The S&P Index Committee may at times consult with investors, market participants, security issuers included in or potentially included in the S&P 500® Index, or investment and financial experts.

Divisor Adjustments

The two types of adjustments primarily used by S&P are divisor adjustments and adjustments to the number of shares (including float adjustments) used to calculate the S&P 500® Index. Set forth below under “Adjustments for Corporate Actions” is a table of certain corporate events and their resulting effect on the divisor and the share count. If a corporate event requires an adjustment to the divisor, that event has the effect of altering the market value of the affected index stock and consequently of altering the aggregate market value of the index stocks following the event. In order that the level of the S&P 500® Index not be affected by the altered market value (which could be an increase or decrease) of the affected index stock, S&P generally derives a new divisor by dividing the post-event market value of the index stocks by the pre-event index value, which has the effect of reducing the S&P 500® Index’s post-event value to the pre-event level.

Changes to the Number of Shares of a Constituent

The index maintenance process also involves tracking the changes in the number of shares included for each of the index companies. Changes as a result of mandatory events, such as mergers or acquisition driven share/IWF changes, stock splits and mandatory distributions are not subject to a minimum threshold for implementation and are implemented when the transaction occurs. At S&P’s discretion, however, de minimis merger and acquisition changes may be accumulated and implemented with the updates made with the quarterly share updates as described below. Material share/IWF changes resulting from certain non-mandatory corporate actions follow the accelerated implementation rule. Non-material share/IWF changes are implemented quarterly.

Accelerated Implementation Rule

1. Public offerings. Public offerings of new company-issued shares and/or existing shares offered by selling shareholders, including block sales and spot secondaries, will be eligible for accelerated implementation treatment if the size of the event meets the materiality threshold criteria:

(a) at least US $150 million, and

(b) at least 5% of the pre-event total shares.

In addition to the materiality threshold, public offerings must satisfy the following conditions:

- be underwritten.
- have a publicly available prospectus, offering document, or prospectus summary filed with the relevant authorities.
- have a publicly available confirmation from an official source that the offering has been completed.

For public offerings that involve a concurrent combination of new company shares and existing shares offered by selling shareholders, both events are implemented if either of the public offerings represent at least 5% of total shares and $150 million. Any concurrent share repurchase by the affected company will also be included in the implementation.

2. Dutch Auctions, self-tender offer buybacks, and split-off exchange offers. These nonmandatory corporate action types will be eligible for accelerated implementation treatment regardless of size once the final results are publicly announced and verified by S&P.

For companies with multiple share class lines, the criteria specified above apply to each individual multiple share class line rather than total company shares.

Exception to the Accelerated Implementation Rule

For non-mandatory corporate actions subject to the accelerated implementation rule with a size of at least US $1 billion, S&P will apply the share change, and any resulting IWF change, using the latest share and ownership information publicly available at the time of the announcement, even if the offering size is below the 5% threshold. This exception ensures that very large events are recognized in a timely manner using the latest available information.

Any non-fully paid or non-fully settled offering such as forward sales agreements are not eligible for accelerated implementation. Share updates resulting from completion of subscription receipts terms or the settlement of forward sale agreements are updated at a future quarterly share rebalancing.

All non-mandatory events not covered by the accelerated implementation rule (including but not limited to private placements, acquisition of private companies, and conversion of non-index share lines) will be implemented quarterly coinciding with the third Friday of the third month in each calendar quarter. In addition, events that were not implemented under the accelerated implementation rule but were found to have been eligible, (e.g. due to lack of publicly available information at the time of the event) are implemented as part of a quarterly rebalancing.

Announcement Policy

For accelerated implementation, S&P will generally provide two (2) business days' notice for all non-U.S. listed stocks and U.S. listed depositary receipts, and one (1) business days' notice for all non-depositary receipt U.S. listed stocks.

IWF Updates

Accelerated implementation for events less than $1 billion will include an adjustment to the company's IWF only to the extent that such an IWF change helps the new float share total mimic the shares available in the offering. To minimize unnecessary turnover, these IWF changes do not need to meet any minimum threshold requirement for implementation. Any IWF change resulting in an IWF of 0.96 or greater is rounded up to 1.00 at the next annual IWF review.

IWF changes will only be made at the quarterly review if the change represents at least 5% of total current shares outstanding and is related to a single corporate action that did not qualify for the accelerated implementation rule, regardless of whether there is an associated share change.

Quarterly share change events resulting from the conversion of derivative securities, acquisitions of private companies, or acquisitions of non-index companies that do not trade on a major exchange are considered to be available to investors unless there is explicit information stating that the new owner is a strategic holder.

Other than the situations described above, please note that IWF changes are only made at the annual IWF review.

Rebalancing Guidelines – Share/IWF Reference Date & Freeze Period

A reference date, after the market close five weeks prior to the third Friday in March, June, September, and December, is the cutoff for publicly available information used for quarterly shares outstanding and IWF changes. All shares outstanding and ownership information contained in public filings and/or official sources dated on or before the reference date are included in that quarter's update. In addition, there is a freeze period on a quarterly basis for any changes that result from the accelerated implementation rules.

Pro-forma files for float-adjusted market capitalization indices are generally released after the market close on the first Friday, two weeks prior to the rebalancing effective date. Pro-forma files for capped and alternatively weighted indices are generally released after the market close on the second Friday, one week prior to the rebalancing effective date. For illustration purposes, if rebalancing pro-forma files are scheduled to be released on Friday, March 5, the share/IWF freeze period will begin after the close of trading on Tuesday, March 9 and will end after the close of trading the following Friday, March 19 (i.e. the third Friday of the rebalancing month).

During the share/IWF freeze period, shares and IWFs are not changed and the accelerated implementation rule is suspended, except for mandatory corporate action events (such as merger activity, stock splits, and rights offerings). The suspension includes all changes that qualify for accelerated implementation and would typically be announced or effective during the share/IWF freeze period. At the end of the freeze period all suspended changes will be announced on the third Friday of the rebalancing month and implemented five business days after the quarterly rebalancing effective date.

Adjustments for Corporate Actions

There is a large range of corporate actions that may affect companies included in the S&P 500® Index. Certain corporate actions require S&P to recalculate the share count or the float adjustment or to make an adjustment to the divisor to prevent the value of the S&P 500® Index from changing as a result of the corporate action. This helps ensure that the movement of the S&P 500® Index does not reflect the corporate actions of individual companies in the S&P 500® Index.

Spin-Offs

As a general policy, a spin-off security is added to the S&P 500® Index on the ex-date at a price of zero (with no divisor adjustment) and will remain in the S&P 500® Index for at least one trading day. The spin-off security will remain in the S&P 500® Index if it meets all eligibility criteria. If the spin-off security is determined ineligible to remain in the S&P 500® Index, it will generally be removed after at least one day of regular way trading (with a divisor adjustment). The weight of the spin-off being deleted is reinvested across all the index components proportionately such that the relative weights of all index components are unchanged. The net change in index market capitalization will cause a divisor change.

Companies that are spun off from a constituent of the S&P 500® Index do not need to meet the eligibility criteria for new constituents, but they should be considered U.S. domiciled for index purposes. At the discretion of the Index Committee, a spin-off company may be retained in the S&P 500® Index if the Index Committee determines it has a total market capitalization representative of the S&P 500® Index. If the spin-off company's estimated market capitalization is below the minimum unadjusted company market capitalization for the S&P 500® Index but there are other constituent companies in the S&P 500® Index that have a significantly lower total market capitalization than the spin-off company, the Index Committee may decide to retain the spin-off company in the S&P 500® Index.

Several additional types of corporate actions, and their related treatment, are listed in the table below.

Corporate Action	**Treatment**
Company addition/deletion	Addition Companies are added at the float market capitalization weight. The net change to the index market capitalization causes a divisor adjustment. Deletion The weights of all stocks in the index will proportionally change. Relative weights will stay the same. The index divisor will change due to the net change in the index market capitalization
Change in shares outstanding	Increasing (decreasing) the shares outstanding increases (decreases) the market capitalization of the index. The change to the index market capitalization causes a divisor adjustment.
Split/reverse split	Shares outstanding are adjusted by split ratio. Stock price is adjusted by split ratio. There is no change to the index market capitalization and no divisor adjustment.
Change in IWF	Increasing (decreasing) the IWF increases (decreases) the market capitalization of the index. A net change to the index market capitalization causes a divisor adjustment.
Ordinary dividend	When a company pays an ordinary cash dividend, the index does not make any adjustments to the price or shares of the stock. As a result there are no divisor adjustments to the index.
Special dividend	The stock price is adjusted by the amount of the dividend. The net change to the index market capitalization causes a divisor adjustment
Rights offering	All rights offerings that are in the money on the ex-date are applied under the assumption the rights are fully subscribed. The stock price is adjusted by the value of the rights and the shares outstanding are increased by the rights ratio. The net change in market capitalization causes a divisor adjustment.

Any company that is removed from the S&P 500® Index, the S&P MidCap 400® Index or the S&P SmallCap 600® Index must wait a minimum of one year from its removal date before being reconsidered as a replacement candidate for the S&P 500® Index.

Recalculation Policy

S&P reserves the right to recalculate and republish the S&P 500® Index at its discretion in the event one of the following issues has occurred: (1) incorrect or revised closing price of one or more constituent securities; (2) missed or misapplied corporate action; (3) incorrect application of an index methodology; (4) late announcement of a corporate action; or (5) incorrect calculation or data entry error. The decision to recalculate the S&P 500® Index is made at the discretion of the index manager and/or index committee, as further discussed below. The potential market impact or disruption resulting from a recalculation is considered when making any such decision. In the event of an incorrect closing price, a missed or misapplied corporate action, a late announcement of a corporate action, or an incorrect calculation or data entry error that is discovered within two trading days of its occurrence, generally the S&P 500® Index is recalculated. In the event any such event is discovered beyond the two trading day period, the index committee shall decide whether the S&P 500® Index should be recalculated. In the event of an incorrect application of the methodology that results in the incorrect composition and/or weighting of index constituents, the index committee shall determine whether or not to recalculate the S&P 500® Index following specified guidelines. In the event that the S&P 500® Index is recalculated, it shall be done within a reasonable timeframe following the detection and review of the issue.

Calculations and Pricing Disruptions

Closing levels for the S&P 500® Index are calculated by S&P based on the closing price of the individual constituents of the S&P 500® Index as set by their primary exchange. Closing prices are received by S&P from one of its third party vendors and verified by comparing them with prices from an alternative vendor. The vendors receive the closing price from the primary exchanges. Real-time intraday prices are calculated similarly without a second verification. Official end-of-day calculations are based on each stock's primary market closing price. Prices used for the calculation of real time index values are based on the "Consolidated Tape". The Consolidated Tape is an aggregation of trades for each constituent over all regional exchanges and trading venues and includes the primary exchange. If there is a failure or interruption on one or more exchanges, real-time calculations will continue as long as the "Consolidated Tape" is operational.

If an interruption is not resolved prior to the market close, official closing prices will be determined by following the hierarchy set out in NYSE Rule 123C. A notice is published on the S&P website at spglobal.com indicating any changes to the prices used in S&P 500® Index calculations. In extreme circumstances, S&P may decide to delay index adjustments or not publish the S&P 500® Index. Real-time indices are not restated.

Unexpected Exchange Closures

An unexpected market/exchange closure occurs when a market/exchange fully or partially fails to open or trading is temporarily halted. This can apply to a single exchange or to a market as a whole, when all of the primary exchanges are closed and/or not trading. Unexpected market/exchange closures are usually due to unforeseen circumstances, such as natural disasters, inclement weather, outages, or other events.

To a large degree, S&P is dependent on the exchanges to provide guidance in the event of an unexpected exchange closure. S&P's decision making is dependent on exchange guidance regarding pricing and mandatory corporate actions.

NYSE Rule 123C provides closing contingency procedures for determining an official closing price for listed securities if the exchange is unable to conduct a closing transaction in one or more securities due to a system or technical issue.

3:00 PM ET is the deadline for an exchange to determine its plan of action regarding an outage scenario. As such, S&P also uses 3:00 PM ET as the cutoff.

If all major exchanges fail to open or unexpectedly halt trading intraday due to unforeseen circumstances, S&P will take the following actions:

Market Disruption Prior to Open of Trading:

(i) If all exchanges indicate that trading will not open for a given day, S&P will treat the day as an unscheduled market holiday. The decision will be communicated to clients as soon as possible through the normal channels. Indices containing multiple markets will be calculated as normal, provided that at least one market is open that day. Indices which only contain closed markets will not be calculated.

(ii) If exchanges indicate that trading, although delayed, will open for a given day, S&P will begin index calculation when the exchanges open.

Market Disruption Intraday:

(i) If exchanges indicate that trading will not resume for a given day, the S&P 500® Index level will be calculated using prices determined by the exchanges based on NYSE Rule 123C. Intraday S&P 500® Index values will continue to use the last traded composite price until the primary exchange publishes official closing prices.

License Agreement between S&P and GS Finance Corp.

The S&P 500® Daily Risk Control 5% USD Excess Return Index, the S&P 500® Daily Risk Control 5% USD Total Return Index, the S&P 500® Total Return Index and the S&P 500® Index are products of S&P Dow Jones Indices LLC, and have been licensed for use by GS Finance Corp. ("Goldman"). Standard & Poor's® and S&P® are registered trademarks of Standard & Poor's Financial Services LLC; Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC ("Dow Jones") and these trademarks have been licensed for use by S&P Dow Jones Indices LLC and sublicensed for certain purposes by Goldman. Goldman's notes are not sponsored, endorsed, sold or promoted by S&P Dow Jones Indices LLC, Dow Jones, Standard & Poor's Financial Services LLC or any of their respective affiliates (collectively, "S&P Dow Jones Indices"). S&P Dow Jones Indices makes no representation or warranty, express or implied, to the owners of the notes or any member of the public regarding the advisability of investing in securities generally or in the notes particularly or the ability of the S&P 500® Daily Risk Control 5% USD Excess Return Index, the S&P 500® Daily Risk Control 5% USD Total Return Index, the S&P 500® Total Return Index or the S&P 500® Index to track general market performance. S&P Dow Jones Indices' only relationship to Goldman with respect to the S&P 500® Daily Risk Control 5% USD Excess Return Index, the S&P 500® Daily Risk Control 5% USD Total Return Index, the S&P 500® Total Return Index and the S&P 500® Index is the licensing of these indices and certain trademarks, service marks and/or trade names of S&P Dow Jones Indices and/or its licensors. The S&P 500® Daily Risk Control 5% USD Excess Return Index, the S&P 500® Daily Risk

Control 5% USD Total Return Index, the S&P 500® Total Return Index and the S&P 500® Index are determined, composed and calculated by S&P Dow Jones Indices without regard to Goldman or the notes. S&P Dow Jones Indices have no obligation to take the needs of Goldman or the owners of the notes into consideration in determining, composing or calculating the S&P 500® Daily Risk Control 5% USD Excess Return Index, the S&P 500® Daily Risk Control 5% USD Total Return Index, the S&P 500® Total Return Index or the S&P 500® Index. S&P Dow Jones Indices are not responsible for and have not participated in the determination of the prices, and amount of the notes or the timing of the issuance or sale of the notes or in the determination or calculation of the equation by which the notes are to be converted into cash. S&P Dow Jones Indices have no obligation or liability in connection with the administration, marketing or trading of the notes. There is no assurance that investment products based on the S&P 500® Daily Risk Control 5% USD Excess Return Index, the S&P 500® Daily Risk Control 5% USD Total Return Index, the S&P 500® Total Return Index or the S&P 500® Index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor. Inclusion of a security within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, nor is it considered to be investment advice.

S&P DOW JONES INDICES DOES NOT GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS AND/OR THE COMPLETENESS OF THE S&P 500® DAILY RISK CONTROL 5% USD EXCESS RETURN INDEX, THE S&P 500® DAILY RISK CONTROL 5% USD TOTAL RETURN INDEX, THE S&P 500® TOTAL RETURN INDEX OR THE S&P 500® INDEX OR ANY DATA RELATED THERETO OR ANY COMMUNICATION, INCLUDING BUT NOT LIMITED TO ORAL OR WRITTEN COMMUNICATION (INCLUDING ELECTRONIC COMMUNICATIONS) WITH RESPECT THERETO. S&P DOW JONES INDICES SHALL NOT BE SUBJECT TO ANY DAMAGES OR LIABILITY FOR ANY ERRORS, OMISSIONS, OR DELAYS THEREIN. S&P DOW JONES INDICES MAKE NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIMS ALL WARRANTIES, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE OR AS TO RESULTS TO BE OBTAINED BY GOLDMAN, OWNERS OF THE notes, OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE S&P 500® DAILY RISK CONTROL 5% USD EXCESS RETURN INDEX, THE S&P 500® DAILY RISK CONTROL 5% USD TOTAL RETURN INDEX, THE S&P 500® TOTAL RETURN INDEX OR S&P 500® INDEX OR WITH RESPECT TO ANY DATA RELATED THERETO. WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT WHATSOEVER SHALL S&P DOW JONES INDICES BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS, TRADING LOSSES, LOST TIME OR GOODWILL, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE. THERE ARE NO THIRD PARTY BENEFICIARIES OF ANY AGREEMENTS OR ARRANGEMENTS BETWEEN S&P DOW JONES INDICES AND GOLDMAN, OTHER THAN THE LICENSORS OF S&P DOW JONES INDICES

Historical Closing Levels of the Excess Return Index

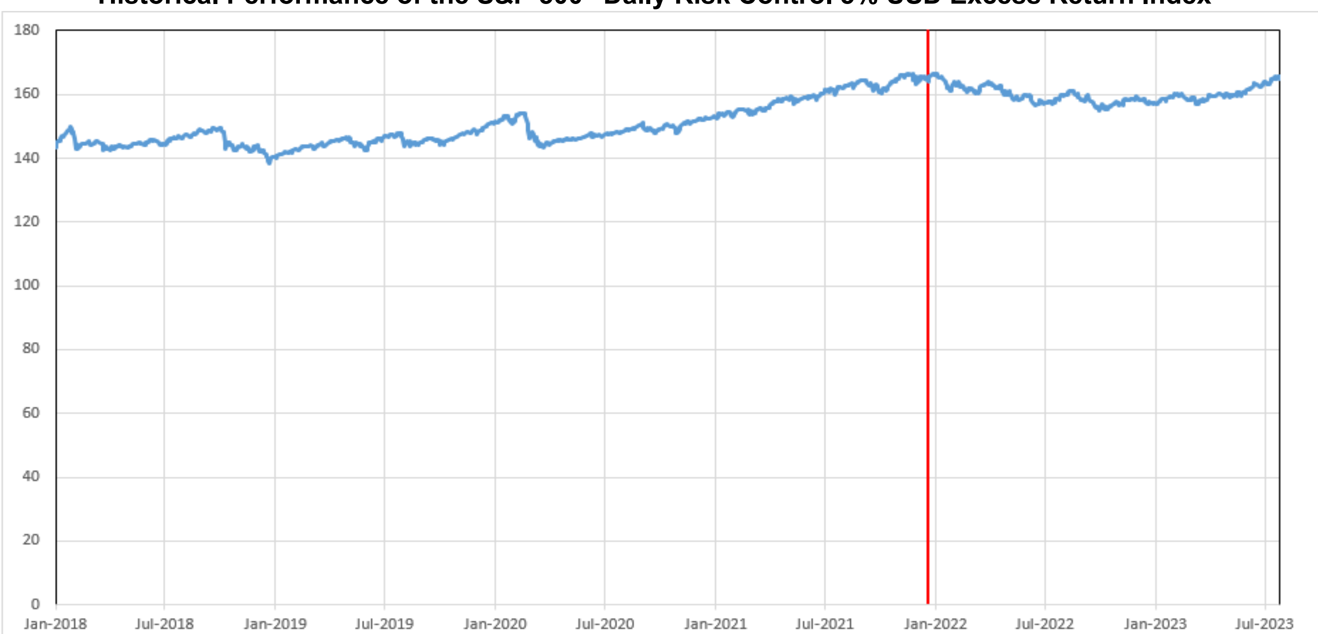
The closing level of the Excess Return index has fluctuated in the past and may, in the future, experience significant fluctuations. **In particular, the Excess Return index has recently experienced extreme and unusual volatility.** Any historical upward or downward trend in the closing level of the Excess Return index during the period shown below is not an indication that the Excess Return index is more or less likely to increase or decrease at any time during the life of your notes.

You should not take the historical levels of the Excess Return index as an indication of the future performance of the Excess Return index, including because of the recent volatility described above. We cannot give you any assurance that the future performance of the Excess Return index or the Excess Return index stocks will result in your receiving an amount greater than the outstanding face amount of your notes on the stated maturity date.

Neither we nor any of our affiliates make any representation to you as to the performance of the Excess Return index. Before investing in the offered notes, you should consult publicly available information to determine the levels of the Excess Return index between the date of this pricing supplement and the date of your purchase of the offered notes **and, given the recent volatility described above, you should pay particular attention to recent levels of the Excess Return index**. The actual performance of the Excess Return index over the life of the offered notes, as well as the cash settlement amount, may bear little relation to the historical closing levels shown below.

The graph below shows the daily historical closing levels of the Excess Return index from January 1, 2018 through July 27, 2023. As a result, the following graph does not reflect the global financial crisis which began in 2008, which had a materially negative impact on the price of most equity securities and, as a result, the level of most equity indices. We obtained the closing levels in the graph below from Bloomberg Financial Services, without independent verification.

Historical Performance of the S&P 500® Daily Risk Control 5% USD Excess Return Index*

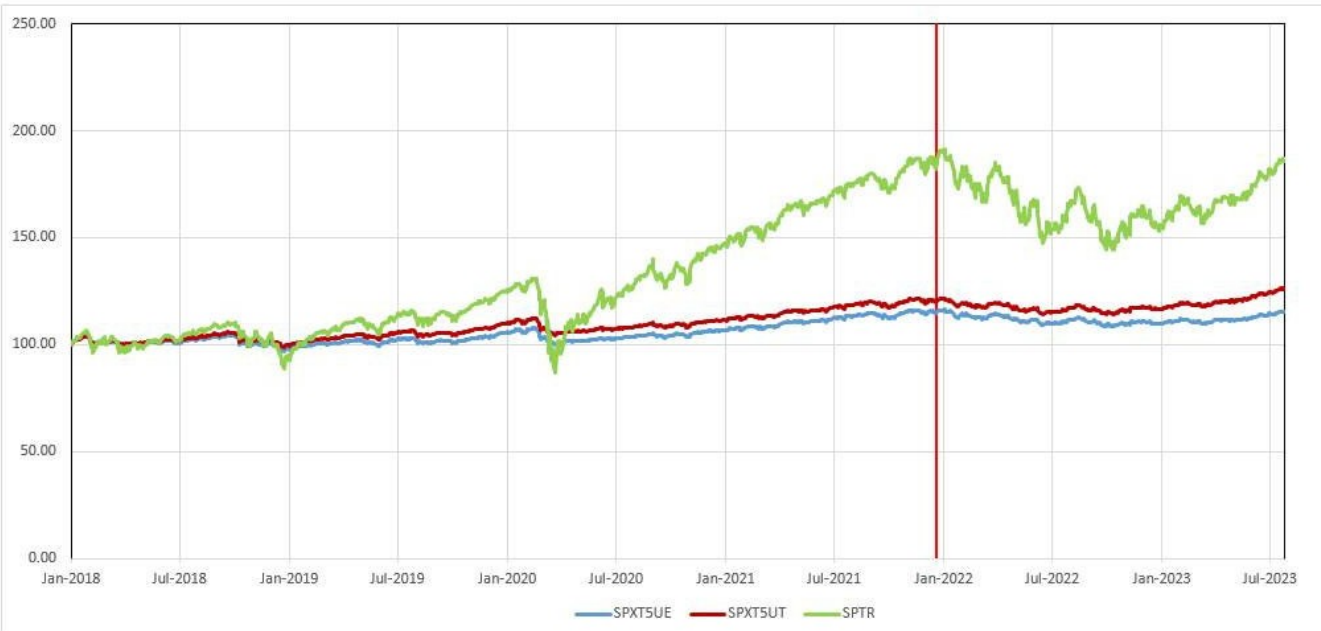


* Index data reflects the Excess Return index's use of overnight U.S. dollar LIBOR prior to December 20, 2021. The Excess Return index discontinued use of overnight U.S. dollar LIBOR for all purposes on December 20, 2021 and replaced such rate with SOFR *plus* 0.02963%. Therefore, extremely limited information regarding the performance of the Excess Return index subsequent to its discontinued use of overnight U.S. dollar LIBOR is available, which may make it difficult for you to make an informed decision with respect to an investment in the notes. In the graph, closing levels to the left of the vertical solid line marker reflect the historical closing levels of the underlier before the Excess Return index discontinued use of overnight U.S. dollar LIBOR on December 20, 2021. Closing levels to the right of the vertical solid line marker reflect the historical closing levels of the underlier after the Excess Return index discontinued use of overnight U.S. dollar LIBOR on December 20, 2021.

Comparative Performance of the Excess Return Index, the Risk Control Index and the Total Return Index

The graph below shows the performance of the Excess Return index, the Risk Control index and the Total Return index from January 1, 2018 through July 27, 2023. For comparative purposes, each of the Excess Return index, the Risk Control index and the Total Return index has been adjusted to have a closing level of 100.00 on January 1, 2018 by dividing the closing level of that underlier on each day by the closing level of that Risk Control index on January 1, 2018 and multiplying by 100.00. We obtained the closing levels used to determine the adjusted closing levels in the graph below from Bloomberg Financial Services, without independent verification. You should not take the historical performance of the Excess Return index, the Risk Control index or the Total Return index as an indication of the future performance of such underlier.

Historical Performance of the Excess Return Index (SPXT5UE Index), the Risk Control Index (SPXT5UT Index) and the Total Return Index (SPTR Index)*



* Underlier data reflects the Excess Return index and the Risk Control index's use of overnight U.S. dollar LIBOR prior to December 20, 2021. Each of the Excess Return index and the Risk Control index discontinued use of overnight U.S. dollar LIBOR for all purposes on December 20, 2021 and replaced such rate with SOFR *plus* 0.02963%. Therefore, extremely limited information regarding the performances of the Excess Return index and the Risk Control index subsequent to their discontinued use of overnight U.S. dollar LIBOR is available, which may make it difficult for you to make an informed decision with respect to an investment in the notes. In the graph, closing levels to the left of the vertical solid line marker reflect the historical closing levels of the underlier before the Excess Return index and the Risk Control index discontinued use of overnight U.S. dollar LIBOR on December 20, 2021. Closing levels to the right of the vertical solid line marker reflect the historical closing levels of the Excess Return index and the Risk Control index after the Excess Return index and the Risk Control index discontinued use of overnight U.S. dollar LIBOR on December 20, 2021.

The graph above illustrates the historical performance of the Excess Return index relative to the Risk Control index and the Total Return index over the time period shown and provides an indication of how the relative performance of the daily returns of the Excess Return index has historically been relative to the Risk Control index and the Total Return index. The Excess Return index will always underperform the Risk Control index.

SUPPLEMENTAL DISCUSSION OF U.S. FEDERAL INCOME TAX CONSEQUENCES

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus supplement.

The following section is the opinion of Sidley Austin LLP, counsel to GS Finance Corp. and The Goldman Sachs Group, Inc. It applies to you only if you hold your notes as a capital asset for tax purposes. This section does not apply to you if you are a member of a class of holders subject to special rules, such as:

- a dealer in securities or currencies;
- a trader in securities that elects to use a mark-to-market method of accounting for your securities holdings;
- a bank;
- a regulated investment company;
- a life insurance company;
- a tax-exempt organization;
- a partnership;
- an accrual method taxpayer subject to special tax accounting rules as a result of its use of financial statements;
- a person that owns the notes as a hedge or that is hedged against interest rate risks;
- a person that owns the notes as part of a straddle or conversion transaction for tax purposes; or
- a United States holder (as defined below) whose functional currency for tax purposes is not the U.S. dollar.

This section is based on the U.S. Internal Revenue Code of 1986, as amended, its legislative history, existing and proposed regulations under the Internal Revenue Code, published rulings and court decisions, all as currently in effect. These laws are subject to change, possibly on a retroactive basis.

You should consult your tax advisor concerning the U.S. federal income tax and other tax consequences of your investment in the notes, including the application of state, local or other tax laws and the possible effects of changes in federal or other tax laws.

United States Holders

This subsection describes the tax consequences to a United States holder. You are a United States holder if you are a beneficial owner of the notes and you are:

- a citizen or resident of the United States;
- a domestic corporation;
- an estate whose income is subject to U.S. federal income tax regardless of its source; or
- a trust if a United States court can exercise primary supervision over the trust’s administration and one or more United States persons are authorized to control all substantial decisions of the trust.

If you are not a United States holder, this section does not apply to you and you should refer to “— Non-United States Holders” below.

Your notes will be treated as debt instruments subject to special rules governing contingent payment debt instruments for U.S. federal income tax purposes. Under those rules, the amount of interest you are required to take into account for each accrual period will be determined by constructing a projected payment schedule for your notes and applying rules similar to those for accruing original issue discount on a hypothetical noncontingent debt instrument with that projected payment schedule. This method is applied by first determining the yield at which we would issue a noncontingent fixed rate debt instrument with terms and conditions similar to your notes (the “comparable yield”) and then determining as of the issue date a payment schedule that would produce the comparable yield. These rules will generally have the effect of requiring you to include amounts in income in respect of your notes prior to your receipt of cash attributable to such income.

We have determined that the comparable yield for the notes is equal to 4.20% per annum, compounded semi-annually, with a projected payment at maturity of $1,132.94 based on an investment of $1,000.

Based on this comparable yield, if you are an initial holder that holds a note until maturity and you pay your taxes on a calendar year basis, we have determined that you would be required to report the following amounts as ordinary income, not taking into account any positive or negative adjustments you may be required to take into account based on the actual payments on the notes, from the note each year:

Accrual Period	Interest Deemed to Accrue During Accrual Period (per $1,000 note)	Total Interest Deemed to Have Accrued from Original Issue Date (per $1,000 note) as of End of Accrual Period
July 29, 2022 through December 31, 2022	$17.62	$17.62
January 1, 2023 through December 31, 2023	$43.18	$60.80
January 1, 2024 through December 31, 2024	$45.02	$105.82
January 1, 2025 through July 31, 2025	$27.12	$132.94

You are required to use the comparable yield and projected payment schedule that we compute in determining your interest accruals in respect of your notes, unless you timely disclose and justify on your U.S. federal income tax return the use of a different comparable yield and projected payment schedule.

The comparable yield and projected payment schedule are not provided to you for any purpose other than the determination of your interest accruals in respect of your notes, and we make no representation regarding the amount of contingent payments with respect to your notes.

If you purchase your notes at a price other than their adjusted issue price determined for tax purposes, you must determine the extent to which the difference between the price you paid for your notes and their adjusted issue price is attributable to a change in expectations as to the projected payment schedule, a change in interest rates, or both, and reasonably allocate the difference accordingly. The adjusted issue price of your notes will equal your notes' original issue price plus any interest deemed to be accrued on your notes (under the rules governing contingent payment debt instruments) as of the time you purchase your notes. The original issue price of your notes will be the first price at which a substantial amount of the notes is sold to persons other than bond houses, brokers or similar persons or organizations acting in the capacity of underwriters, placement agents or wholesalers.

Therefore, you may be required to make the adjustments described above even if you purchase your notes in the initial offering if you purchase your notes at a price other than the issue price.

If the adjusted issue price of your notes is greater than the price you paid for your notes, you must make positive adjustments increasing (i) the amount of interest that you would otherwise accrue and include in income each year, and (ii) the amount of ordinary income (or decreasing the amount of ordinary loss) recognized upon maturity by the amounts allocated under the previous paragraph to each of interest and the projected payment schedule; if the adjusted issue price of your notes is less than the price you paid for your notes, you must make negative adjustments, decreasing (i) the amount of interest that you must include in income each year, and (ii) the amount of ordinary income (or increasing the amount of ordinary loss) recognized upon maturity by the amounts allocated under the previous paragraph to each of interest and the projected payment schedule. Adjustments allocated to the interest amount are not made until the date the daily portion of interest accrues.

Because any Form 1099-OID that you receive will not reflect the effects of positive or negative adjustments resulting from your purchase of notes at a price other than the adjusted issue price determined for tax purposes, you are urged to consult with your tax advisor as to whether and how adjustments should be made to the amounts reported on any Form 1099-OID.

You will recognize gain or loss upon the sale, exchange, or maturity of your notes in an amount equal to the difference, if any, between the cash amount you receive at such time and your adjusted basis in your notes. In general, your adjusted basis in your notes will equal the amount you paid for your notes, increased by the amount of interest you previously accrued with respect to your notes (in accordance with the comparable yield and the projected payment schedule for your notes) and increased or decreased by the amount of any positive or negative adjustment, respectively, that you are required to make if you purchase your notes at a price other than the adjusted issue price determined for tax purposes (as described in the accompanying prospectus supplement).

Any gain you recognize upon the sale, exchange, or maturity of your notes will be ordinary interest income. Any loss you recognize at such time will be ordinary loss to the extent of interest you included as income in the current or previous taxable years in respect of your notes, and thereafter, capital loss. If you are a noncorporate holder, you would generally be able to use such ordinary loss to offset your income only in the taxable year in which you recognize the ordinary loss and would generally not be able to carry such ordinary loss forward or back to offset income in other taxable years.

Non-United States Holders

If you are a non-United States holder, please see the discussion under "United States Taxation — Taxation of Debt Securities — Non-United States Holders" in the accompanying prospectus for a description of the tax consequences relevant to you. You are a non-United States holder if you are the beneficial owner of the notes and are, for U.S. federal income tax purposes:

- a nonresident alien individual;
- a foreign corporation; or
- an estate or trust that in either case is not subject to U.S. federal income tax on a net income basis on income or gain from the notes.

The Treasury Department has issued regulations under which amounts paid or deemed paid on certain financial instruments ("871(m) financial instruments") that are treated as attributable to U.S.-source dividends could be treated, in whole or in part depending on the circumstances, as a "dividend equivalent" payment that is subject to tax at a rate of 30% (or a lower rate under an applicable treaty), which in the case of amounts you receive upon the sale, exchange or maturity of your notes, could be collected via withholding. If these regulations were to apply to the notes, we may be required to withhold such taxes if any U.S.-source dividends are paid on the stocks included in the underlier during the term of the notes. We could also require you to make certifications (e.g., an applicable Internal Revenue Service Form W-8) prior to the maturity of the notes in order to avoid or minimize withholding obligations, and we could withhold accordingly (subject to your potential right to claim a refund from the Internal Revenue Service) if such certifications were not received or were not satisfactory. If withholding was required, we would not be required to pay any additional amounts with respect to amounts so withheld. These regulations generally will apply to 871(m) financial instruments (or a combination of financial instruments treated as having been entered into in connection with each other) issued (or significantly modified and treated as retired and reissued) on or after January 1, 2025, but will also apply to certain 871(m) financial instruments (or a combination of financial instruments treated as having been entered into in connection with each other) that have a delta (as defined in the applicable Treasury regulations) of one and are issued (or significantly modified and treated as retired and reissued) on or after January 1, 2017. In addition, these regulations will not apply to financial instruments that reference a "qualified index" (as defined in the regulations). We have determined that, as of the issue date of your notes, your notes will not be subject to withholding under these rules. In certain limited circumstances, however, you should be aware that it is possible for non-United States holders to be liable for tax under these rules with respect to a combination of transactions treated as having been entered into in connection with each other even when no withholding is required. You should consult your tax advisor concerning these regulations, subsequent official guidance and regarding any other possible alternative characterizations of your notes for U.S. federal income tax purposes.

Foreign Account Tax Compliance Act (FATCA) Withholding

Pursuant to Treasury regulations, Foreign Account Tax Compliance Act (FATCA) withholding (as described in "United States Taxation—Taxation of Debt Securities—Foreign Account Tax Compliance Act (FATCA) Withholding" in the accompanying prospectus) will generally apply to obligations that are issued on or after July 1, 2014; therefore, the notes will generally be subject to the FATCA withholding rules.

SUPPLEMENTAL PLAN OF DISTRIBUTION; CONFLICTS OF INTEREST

See “Supplemental Plan of Distribution” on page S-51 of the accompanying general terms supplement no. 8,999 and “Plan of Distribution — Conflicts of Interest” on page 127 of the accompanying prospectus. GS Finance Corp. estimates that its share of the total offering expenses, excluding underwriting discounts and commissions, will be approximately $10,000.

GS Finance Corp. will sell to GS&Co., and GS&Co. will purchase from GS Finance Corp., the aggregate face amount of the offered notes specified on the front cover of this pricing supplement. GS&Co. proposes initially to offer the notes to the public at the original issue price set forth on the cover page of this pricing supplement, and to certain securities dealers at such price less a concession not in excess of 2.78% of the face amount. GS&Co. is an affiliate of GS Finance Corp. and The Goldman Sachs Group, Inc. and, as such, will have a “conflict of interest” in this offering of notes within the meaning of Financial Industry Regulatory Authority, Inc. (FINRA) Rule 5121. Consequently, this offering of notes will be conducted in compliance with the provisions of FINRA Rule 5121. GS&Co. will not be permitted to sell notes in this offering to an account over which it exercises discretionary authority without the prior specific written approval of the account holder. We have been advised that GS&Co. will also pay a fee in connection with the distribution of the notes to SIMON Markets LLC, a broker-dealer affiliated with GS Finance Corp.

We will deliver the notes against payment therefor in New York, New York on July 29, 2022. Under Rule 15c6-1 of the Securities Exchange Act of 1934, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade notes on any date prior to two business days before delivery will be required to specify alternative settlement arrangements to prevent a failed settlement.

We have been advised by GS&Co. that it intends to make a market in the notes. However, neither GS&Co. nor any of our other affiliates that makes a market is obligated to do so and any of them may stop doing so at any time without notice. No assurance can be given as to the liquidity or trading market for the notes.

The notes will not be listed on any securities exchange or interdealer quotation system.

VALIDITY OF THE NOTES AND GUARANTEE

In the opinion of Sidley Austin LLP, as counsel to GS Finance Corp. and The Goldman Sachs Group, Inc., when the notes offered by this pricing supplement have been executed and issued by GS Finance Corp., such notes have been authenticated by the trustee pursuant to the indenture, and such notes have been delivered against payment as contemplated herein, (a) such notes will be valid and binding obligations of GS Finance Corp., enforceable in accordance with their terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability (including, without limitation, concepts of good faith, fair dealing and the lack of bad faith), provided that such counsel expresses no opinion as to the effect of fraudulent conveyance, fraudulent transfer or similar provision of applicable law on the conclusions expressed above and (b) the guarantee with respect to such notes will be a valid and binding obligation of The Goldman Sachs Group, Inc., enforceable in accordance with its terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability (including, without limitation, concepts of good faith, fair dealing and the lack of bad faith), provided that such counsel expresses no opinion as to the effect of fraudulent conveyance, fraudulent transfer or similar provision of applicable law on the conclusions expressed above. This opinion is given as of the date hereof and is limited to the laws of the State of New York and the General Corporation Law of the State of Delaware as in effect on the date hereof. In addition, this opinion is subject to customary assumptions about the trustee's authorization, execution and delivery of the indenture and the genuineness of signatures and certain factual matters, all as stated in the letter of such counsel dated January 18, 2023, which has been filed as Exhibit 5.6 to the registration statement on Form S-3 filed with the Securities and Exchange Commission by GS Finance Corp. and The Goldman Sachs Group, Inc. on January 18, 2023.

We have not authorized anyone to provide any information or to make any representations other than those contained or incorporated by reference in this pricing supplement, the accompanying general terms supplement no. 8,999, the accompanying prospectus supplement or the accompanying prospectus. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This pricing supplement, the accompanying general terms supplement no. 8,999, the accompanying prospectus supplement and the accompanying prospectus is an offer to sell only the notes offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this pricing supplement,, the accompanying general terms supplement no. 8,999, the accompanying prospectus supplement and the accompanying prospectus is current only as of the respective dates of such documents.

$8,892,000

GS Finance Corp.

S&P 500® Daily Risk Control 5% USD Excess Return Index-Linked Notes due 2025

guaranteed by

The Goldman Sachs Group, Inc.

Goldman Sachs & Co. LLC

EXHIBIT 15.1

August 2, 2023

Securities and Exchange Commission
100 F Street, N.E.
Washington, DC 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. 333-269296)

Commissioners:

We are aware that our report dated August 2, 2023 on our review of the consolidated balance sheet of The Goldman Sachs Group, Inc. and its subsidiaries (the Company) as of June 30, 2023, and the related consolidated statements of earnings, comprehensive income and changes in shareholders' equity for the three and six months ended June 30, 2023 and 2022, and the consolidated statements of cash flows for the six months ended June 30, 2023 and 2022 included in the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2023 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

PricewaterhouseCoopers LLP, 300 Madison Avenue, New York, NY 10017

EXHIBIT 31.1

CERTIFICATIONS

I, David Solomon, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 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: August 2, 2023

/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 June 30, 2023 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: August 2, 2023

/s/	Denis P. Coleman III
Name:	Denis P. Coleman III
Title:	Chief Financial Officer

EXHIBIT 32.1

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 June 30, 2023 (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: August 2, 2023

/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 June 30, 2023 (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: August 2, 2023	/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.