

Goldman Sachs & Co. LLC and Subsidiaries

Consolidated Statement of Financial Condition and Supplemental
Financial Information pursuant to Regulation 1.10 of the Commodity
Futures Trading Commission

December 31, 2022

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Report of Independent Registered Public Accounting Firm

To the Board of Managers and Members of Goldman Sachs & Co. LLC:

Opinion on the Financial Statement – Consolidated Statement of Financial Condition

We have audited the accompanying consolidated statement of financial condition of Goldman Sachs & Co. LLC and its subsidiaries (the “firm”) as of December 31, 2022, including the related notes (collectively referred to as the “consolidated financial statement”). In our opinion, the consolidated financial statement presents fairly, in all material respects, the financial position of the firm as of December 31, 2022 in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

The consolidated financial statement is the responsibility of the firm’s management. Our responsibility is to express an opinion on the firm’s consolidated financial statement based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the firm 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 audit of this consolidated financial statement in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statement is free of material misstatement, whether due to error or fraud.

Our audit included performing procedures to assess the risks of material misstatement of the consolidated financial statement, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statement. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as, evaluating the overall presentation of the consolidated financial statement. We believe that our audit provides a reasonable basis for our opinion.

Supplemental Information

The accompanying Supplemental Financial Information Pursuant to Regulation 1.10 as of December 31, 2022 has been subjected to audit procedures performed in conjunction with the audit of the firm’s consolidated financial statement. The supplemental information is the responsibility of the firm’s management. Our audit procedures included determining whether the supplemental information reconciles to the consolidated financial statement or the underlying accounting and other records, as applicable, and performing procedures to test the completeness and accuracy of the information presented in the supplemental information. In forming our opinion on the supplemental information, we evaluated whether the supplemental information, including its form and content, is presented in conformity with Regulation 1.10 under the Commodity Exchange Act. In our opinion, the Supplemental Financial Information Pursuant to Regulation 1.10 is fairly stated, in all material respects, in relation to the consolidated financial statement as a whole.

February 27, 2023

We have served as the firm's auditor since 1922.

Consolidated Statement of Financial Condition

<i>\$ in millions</i>	As of December 2022
Assets	
Cash	\$ 5,912
Collateralized agreements:	
Securities purchased under agreements to resell (includes \$205,555 at fair value)	219,363
Securities borrowed (includes \$34,623 at fair value)	187,273
Receivables:	
Brokers, dealers and clearing organizations	36,738
Customers and counterparties (includes \$25 at fair value)	36,712
Financial instruments owned (at fair value and includes \$20,351 pledged as collateral)	131,839
Other assets	3,375
Total assets	\$ 621,212
Liabilities and member's equity	
Collateralized financings:	
Securities sold under agreements to repurchase (at fair value)	\$ 134,834
Securities loaned (includes \$22,366 at fair value)	110,340
Other secured financings (includes \$2,423 at fair value)	53,928
Payables:	
Brokers, dealers and clearing organizations	22,176
Customers and counterparties	161,711
Financial instruments sold, but not yet purchased (at fair value)	71,858
Unsecured short-term borrowings	17,461
Unsecured long-term borrowings	36
Other liabilities	9,938
Subordinated borrowings	22,500
Total liabilities	\$ 604,782
Commitments, contingencies and guarantees	
Member's equity	
Member's equity	16,430
Total liabilities and member's equity	\$ 621,212

The accompanying notes are an integral part of this consolidated statement of financial condition.

Notes to Consolidated Statement of Financial Condition

Note 1.

Description of Business

Goldman Sachs & Co. LLC (GS&Co.), a limited liability company registered as a U.S. broker-dealer, futures commission merchant, swap dealer and security-based swap dealer, together with its consolidated subsidiaries (collectively, the firm), is a wholly-owned subsidiary of The Goldman Sachs Group, Inc. (Group Inc. and, collectively with its consolidated subsidiaries, GS Group), a Delaware corporation, except for de minimis non-voting, non-participating interests held by unaffiliated broker-dealers.

The firm conducts its activities in two business lines:

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 and provides prime brokerage and other equities financing activities, including securities lending, margin lending and swaps. The firm also provides financing to clients through securities purchased under agreements to resell (resale agreements).

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. The firm also provides investing and wealth advisory solutions, including executing brokerage transactions for wealth management clients.

Note 2.

Basis of Presentation

This consolidated statement of financial condition is prepared in accordance with accounting principles generally accepted in the United States (U.S. GAAP) and includes the accounts of GS&Co. and all other entities in which the firm has a controlling financial interest. Intercompany transactions and balances have been eliminated.

All references to 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.

Note 3.

Significant Accounting Policies

The firm's significant accounting policies include when and how to measure the fair value of assets and liabilities and when to consolidate an entity. See Note 4 for policies on fair value measurements and below and Note 15 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
Financial Instruments Owned and Financial Instruments Sold, But Not Yet Purchased	Note 6
Derivatives and Hedging Activities	Note 7
Fair Value Option	Note 8
Collateralized Agreements and Financings	Note 9
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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).

Notes to Consolidated Statement of Financial Condition

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 15 for further information about VIEs.

Use of Estimates

Preparation of this consolidated statement of financial condition requires management to make certain estimates and assumptions, the most important of which relate to fair value measurements, 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.

Financial Assets and Liabilities at Fair Value

Financial instruments owned and financial instruments sold, but not yet purchased are recorded 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 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. See Note 4 for further information about fair value measurements.

Transfers of Financial Assets

Transfers of financial assets are accounted for as sales when the firm has relinquished control over the assets transferred. 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 financial instruments owned and the transfer is accounted for as a collateralized financing, with the related interest expense recognized over the life of the transaction. See Note 9 for further information about transfers of financial assets accounted for as collateralized financings and Note 14 for further information about transfers of financial assets accounted for as sales.

Cash

Cash included cash and due from banks of \$4.15 billion as of December 2022. Cash also included interest-bearing deposits with banks of \$1.77 billion as of December 2022. See Note 17 for further information about cash deposited with an affiliate.

The firm segregates cash for regulatory and other purposes related to client activity. Cash segregated for regulatory and other purposes was \$4.39 billion as of December 2022. In addition, the firm segregates securities for regulatory and other purposes related to client activity. See Note 9 for further information about segregated securities.

Receivables from and Payables to Brokers, Dealers and Clearing Organizations

Receivables from and payables to brokers, dealers and clearing organizations are accounted for at cost plus accrued interest, which generally approximates fair value. These receivables primarily include margin receivables relating to transactions cleared on derivative exchanges as well as receivables when the firm has failed to deliver securities to a purchaser by the settlement date. As these receivables generally do not give rise to material credit risk for the firm, no allowance for credit losses is held against them. Payables to brokers, dealers and clearing organizations primarily includes payables relating to unsettled trades, including payables when the firm has failed to receive securities from a seller by the settlement date. As these receivables and 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 receivables and payables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of December 2022.

Notes to Consolidated Statement of Financial Condition

Receivables from Customers and Counterparties

Receivables from customers and counterparties generally relate to collateralized transactions. Such receivables primarily consist of customer margin loans and collateral posted in connection with certain derivative transactions.

Substantially all of these receivables are accounted for at amortized cost net of any allowance for credit losses, which generally approximates fair value. To mitigate credit exposure on customer margin loans, the firm monitors the market value of these transactions, and delivers or obtains additional collateral due to changes in the market value of the transactions, as appropriate. As such, generally no allowance for credit losses is held against these receivables. 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 December 2022. See Note 8 for further information about receivables from customers and counterparties accounted for at fair value under the fair value option. Interest on receivables from customers and counterparties is recognized over the life of the transaction.

Receivables from customers and counterparties 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 \$904 million as of December 2022. As of December 2022, there were no contract assets.

Payables to Customers and Counterparties

Payables to customers and counterparties primarily consist of customer credit balances related to the firm's prime brokerage activities. These payables are accounted for at cost plus accrued interest, which generally approximates fair value. As these payables are not accounted for at fair value, they are not included in the firm's fair value hierarchy in Notes 4 through 8. Had these payables been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of December 2022. Interest on payables to customers and counterparties is recognized over the life of the transaction.

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 statement of financial condition 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 statement of financial condition when such transactions meet certain settlement criteria and are subject to netting agreements.

In the consolidated statement of financial condition, 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 statement of financial condition, 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 9 for further information about collateral received and pledged, including rights to deliver or repledge collateral. See Notes 7 and 9 for further information about offsetting assets and liabilities.

Notes to Consolidated Statement of Financial Condition

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 statement of financial condition.

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 statement of financial condition.

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 obligations 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 statement of financial condition.

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 statement of financial condition.

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.

Notes to Consolidated Statement of Financial Condition

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

<i>\$ in millions</i>	As of December 2022
Total level 1 financial assets	\$ 80,832
Total level 2 financial assets	290,965
Total level 3 financial assets	1,233
Counterparty and cash collateral netting	(988)
Total financial assets at fair value	\$ 372,042
<hr/>	
Total assets	\$ 621,212
<hr/>	
Total level 3 financial assets divided by:	
Total assets	0.2%
Total financial assets at fair value	0.3%
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Total level 1 financial liabilities	\$ 56,955
Total level 2 financial liabilities	177,208
Total level 3 financial liabilities	911
Counterparty and cash collateral netting	(3,593)
Total financial liabilities at fair value	\$ 231,481
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Total liabilities	\$ 604,782
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Total level 3 financial liabilities divided by:	
Total liabilities	0.2%
Total financial liabilities at fair value	0.4%

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.

<i>\$ in millions</i>	As of December 2022
Cash instruments	\$ 1,196
Derivatives	37
Total	\$ 1,233

See Note 5 for further information about level 3 financial assets (including information about transfers into 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 Cash Instruments

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

Level 2. Level 2 cash 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 other debt obligations, and certain restricted or less liquid listed equities.

Valuations of level 2 cash 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 cash instruments (i) if the cash 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 cash instruments have one or more significant valuation inputs that are not observable. Absent evidence to the contrary, level 3 cash instruments are initially valued at transaction price, which is considered to be the best initial estimate of fair value. Subsequently, the firm uses other methodologies to determine fair value, which vary based on the type of instrument. Valuation inputs and assumptions are changed when corroborated by substantive observable evidence, including values realized on sales.

Notes to Consolidated Statement of Financial Condition

Valuation techniques of level 3 cash 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 cash 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 debt securities and corporate loans. 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 cash instrument, the cost of borrowing the underlying reference obligation; and
- Duration.

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
- 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 Cash Instruments

The significant inputs to the valuation of other cash instruments, such as state and municipal obligations and other 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.

Notes to Consolidated Statement of Financial Condition

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 and natural gas), 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 over-the-counter (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.

Notes to Consolidated Statement of Financial Condition

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 substantially all of the firm's level 3 derivatives are described below.

- 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 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 Instruments at Fair Value

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

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

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 9 for further information about other secured financings.

Receivables from Customers and Counterparties. The significant inputs to the valuation of such receivables are interest rates, the amount and timing of expected future cash flows and funding spreads.

Notes to Consolidated Statement of Financial Condition

Note 5.

Fair Value Hierarchy

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

Fair Value of Cash Instruments by Level

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

\$ in millions	As of December 2022			
	Level 1	Level 2	Level 3	Total
Assets				
Government and agency obligations:				
U.S.	\$ 66,086	\$ 29,504	\$ —	\$ 95,590
Non-U.S.	1,068	241	—	1,309
Loans and securities backed by:				
Commercial real estate	—	1,243	34	1,277
Residential real estate	—	1,298	62	1,360
Corporate debt instruments	93	11,102	934	12,129
State and municipal obligations	—	707	1	708
Other debt obligations	8	519	103	630
Equity securities	13,556	1,632	62	15,250
Total	\$ 80,811	\$ 46,246	\$ 1,196	\$128,253
Liabilities				
Government and agency obligations:				
U.S.	\$ (24,535)	\$ (37)	\$ —	\$ (24,572)
Non-U.S.	(292)	(407)	—	(699)
Loans and securities backed by:				
commercial real estate	—	(28)	—	(28)
Corporate debt instruments	(63)	(7,812)	(2)	(7,877)
Equity securities	(32,032)	(2)	(4)	(32,038)
Total	\$ (56,922)	\$ (8,286)	\$ (6)	\$ (65,214)

Cash instruments consists of instruments primarily held in connection with the firm's market-making or risk management activities. These instruments are accounted for at fair value.

In the table above:

- Cash instrument assets are shown as positive amounts and cash instrument liabilities are shown as negative amounts.
- Corporate debt instruments includes corporate loans, debt securities and convertible debentures.
- Other debt obligations includes other asset-backed securities and money market instruments.
- Equity securities includes public and private 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 cash instruments.

Significant Unobservable Inputs for Cash Instrument Assets

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

\$ in millions	As of December 2022	
	Amount or Range	Weighted Average
Loans and securities backed by real estate		
Level 3 assets	\$ 96	
Yield	3.0% to 36.3%	15.2%
Cumulative loss rate	3.7% to 29.9%	10.4%
Duration (years)	0.9 to 12.3	5.0
Corporate debt instruments		
Level 3 assets	\$ 934	
Yield	5.3% to 19.9%	11.9%
Duration (years)	1.0 to 5.9	3.4
Equity securities		
Level 3 assets	\$ 62	
Multiples	0.7x to 4.5x	3.8x
Other		
Level 3 assets	\$ 104	
Yield	3.8% to 19.0%	9.3%
Recovery rate	60.0% to 72.0%	68.9%
Duration (years)	1.2 to 14.4	4.8

In the table above:

- Other includes state and municipal obligations and other debt obligations.
- Ranges represent the significant unobservable inputs that were used in the valuation of each type of cash instrument.
- Weighted averages are calculated by weighting each input by the relative fair value of the 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 cash instrument. For example, the highest yield 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 cash instruments.
- Increases in yield, duration or cumulative loss rate used in the valuation of level 3 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 December 2022. Due to the distinctive nature of each level 3 cash instrument, the interrelationship of inputs is not necessarily uniform within each product type.

Notes to Consolidated Statement of Financial Condition

- Cash instruments are valued using discounted cash flows.
- The firm's corporate debt instruments that are classified in level 3 primarily contain an embedded derivative component. As the significant unobservable inputs used to value these corporate debt instruments primarily relate to the embedded derivative component, these unobservable inputs are incorporated in the firm's derivative disclosures below.

Level 3 Transfers for Cash Instruments

Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur.

Transfers into level 3 cash instrument assets during 2022 were \$86 million. The drivers of transfers into level 3 cash instrument assets during 2022 were not material.

Transfers out of level 3 cash instrument assets during 2022 were \$296 million, primarily reflecting 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).

Fair Value of Derivatives by Level

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

\$ in millions	As of December 2022			
	Level 1	Level 2	Level 3	Total
Assets				
Interest rates	\$ 21	\$ 35,874	\$ 14	\$ 35,909
Credit	—	2,644	70	2,714
Currencies	—	5,891	1	5,892
Commodities	—	74	8	82
Equities	—	32,534	275	32,809
Gross fair value	21	77,017	368	77,406
Counterparty netting in levels	—	(72,501)	(331)	(72,832)
Subtotal	\$ 21	\$ 4,516	\$ 37	\$ 4,574
Cross-level counterparty netting				(28)
Cash collateral netting				(960)
Net fair value				\$ 3,586
Liabilities				
Interest rates	\$ (33)	\$ (34,161)	\$ (30)	\$ (34,224)
Credit	—	(3,045)	(88)	(3,133)
Currencies	—	(5,365)	(2)	(5,367)
Commodities	—	(51)	—	(51)
Equities	—	(39,496)	(798)	(40,294)
Gross fair value	(33)	(82,118)	(918)	(83,069)
Counterparty netting in levels	—	72,501	331	72,832
Subtotal	\$ (33)	\$ (9,617)	\$ (587)	\$ (10,237)
Cross-level counterparty netting				28
Cash collateral netting				3,565
Net fair value				\$ (6,644)

In the table above:

- Gross fair values exclude the effects of both counterparty netting and collateral netting, and therefore are not representative of the firm's exposure.
- Counterparty netting is reflected in each level to the extent that receivable and payable balances are netted within the same level and is included in counterparty netting in levels. Where the counterparty netting is across levels, the netting is included in cross-level counterparty netting.
- Derivative assets are shown as positive amounts and derivative liabilities are shown as negative amounts.

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

Significant Unobservable Inputs for Derivatives

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

\$ in millions	As of December 2022	
	Amount or Range	Average/Median
Credit, net	\$ (18)	
Credit spreads (bps)	5 to 244	38/19
Upfront credit points	0 to 100	37/26
Recovery rates	20% to 70%	63%/70%
Equities, net	\$ (523)	
Correlation	(1)% to 99%	52%/45%
Volatility	5% to 95%	11%/6%

Level 3 interest rates, currencies and commodities were not material as of December 2022, and therefore are not included in the table above.

In the table above:

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

Notes to Consolidated Statement of Financial Condition

- 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 equity derivatives is appropriate for valuing a specific equity derivative but may not be appropriate for valuing any other equity derivative. Accordingly, the ranges of inputs do not represent uncertainty in, or possible ranges of, fair value measurements of level 3 derivatives.
- Equities derivatives are valued using option pricing models, and credit derivatives are valued using option pricing, correlation 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 equities includes cross-product type correlation.

Range of Significant Unobservable Inputs for Derivatives

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

- **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.
- **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 equity 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.

Sensitivity of Fair Value Measurement to Changes in Significant Unobservable Inputs for Derivatives

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 period-end:

- **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.
- **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.

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 Transfers for Derivatives

Transfers between levels of the fair value hierarchy are reported at the beginning of the reporting period in which they occur.

Transfers into level 3 derivatives during 2022 were \$609 million, primarily reflecting transfers of certain equity derivative liabilities from level 2 (principally due to decreased transparency of certain unobservable volatility inputs used to value these derivatives).

Transfers out of level 3 derivatives during 2022 were \$208 million, primarily reflecting transfers of certain equity derivative liabilities to level 2 (principally due to increased transparency of certain unobservable volatility inputs used to value these derivatives).

Notes to Consolidated Statement of Financial Condition

Fair Value of Other Financial Assets and Liabilities by Level

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

\$ in millions	As of December 2022			
	Level 1	Level 2	Level 3	Total
Assets				
Resale agreements	\$ —	\$ 205,555	\$ —	\$ 205,555
Securities borrowed	—	34,623	—	34,623
Receivables from customers and counterparties	—	25	—	25
Total	\$ —	\$ 240,203	\$ —	\$ 240,203
Liabilities				
Repurchase agreements	\$ —	\$(134,834)	\$ —	\$(134,834)
Securities loaned	—	(22,366)	—	(22,366)
Other secured financings	—	(2,105)	(318)	(2,423)
Total	\$ —	\$(159,305)	\$ (318)	\$(159,623)

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

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

Level 3 Transfers for Other Financial Instruments at Fair Value

There were no transfers into or out of level 3 other financial liabilities during 2022.

Note 6.

Financial Instruments Owned and Financial Instruments Sold, But Not Yet Purchased

Financial instruments owned and financial instruments sold, but not yet purchased include cash instruments and derivatives primarily held in connection with the firm's market-making or risk management activities. These assets and liabilities are accounted for at fair value either under the fair value option or in accordance with other U.S. GAAP.

The table below presents a summary of financial instruments owned and financial instruments sold, but not yet purchased.

\$ in millions	As of December 2022	
	Financial Instruments Owned	Financial Instruments Sold, But Not Yet Purchased
Cash instruments	\$ 128,253	\$ 65,214
Derivatives	3,586	6,644
Total	\$ 131,839	\$ 71,858

See Note 5 for further information about cash instruments and Note 7 for further information about derivatives.

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 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.

Notes to Consolidated Statement of Financial Condition

- **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 financial instruments owned and derivative liabilities are included in financial instruments sold, but not yet purchased.

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

<i>\$ in millions</i>	As of December 2022	
	Derivative Assets	Derivative Liabilities
Not accounted for as hedges		
Exchange-traded	\$ 7	\$ 2
OTC-cleared	1,049	1,211
Bilateral OTC	34,853	33,011
Total interest rates	35,909	34,224
Credit – bilateral OTC	2,714	3,133
Currencies – bilateral OTC	5,892	5,367
Exchange-traded	—	5
Bilateral OTC	82	46
Total commodities	82	51
Exchange-traded	15,512	17,145
Bilateral OTC	17,297	23,149
Total equities	32,809	40,294
Total gross fair value	\$ 77,406	\$ 83,069
Offset in the consolidated statement of financial condition		
Exchange-traded	\$ (15,492)	\$ (15,492)
OTC-cleared	(1,034)	(1,034)
Bilateral OTC	(56,334)	(56,334)
Counterparty netting	(72,860)	(72,860)
Cash collateral netting – bilateral OTC	(960)	(3,565)
Total amounts offset	\$ (73,820)	\$ (76,425)
Included in the consolidated statement of financial condition		
Exchange-traded	\$ 27	\$ 1,660
OTC-cleared	15	177
Bilateral OTC	3,544	4,807
Total	\$ 3,586	\$ 6,644
Not offset in the consolidated statement of financial condition		
Cash collateral	\$ (60)	\$ (226)
Securities collateral	(138)	(121)
Total	\$ 3,388	\$ 6,297

<i>\$ in millions</i>	Notional Amounts as of December 2022	
Not accounted for as hedges		
Exchange-traded	\$	85,832
OTC-cleared		246,820
Bilateral OTC		2,606,337
Total interest rates		2,938,989
Credit – bilateral OTC		
Exchange-traded		2,299
Bilateral OTC		708,179
Total currencies		710,478
Exchange-traded		57
OTC-cleared		1
Bilateral OTC		1,605
Total commodities		1,663
Exchange-traded		589,035
OTC-cleared		1
Bilateral OTC		787,599
Total equities		1,376,635
Total notional amounts	\$	5,267,307

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 \$2.09 billion and derivative liabilities of \$3.43 billion, 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.

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.

Notes to Consolidated Statement of Financial Condition

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 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 December 2022, written credit derivatives had a total gross notional amount of \$117.87 billion and purchased credit derivatives had a total gross notional amount of \$121.67 billion, for total net notional purchased protection of \$3.80 billion. Substantially all of the firm's written and purchased credit derivatives are credit default swaps.

The table below presents information about credit derivatives.

As of December 2022					
Credit Spread on Underlier (basis points)					
	Greater than				
	0 - 250	251 - 500	501 - 1,000	1,000	Total
<i>\$ in millions</i>					
Maximum Payout/Notional Amount of Written Credit Derivatives by Tenor					
Less than 1 year	\$ 11,762	\$ 229	\$ 731	\$ 3,245	\$ 15,967
1 – 5 years	87,015	5,332	3,541	2,825	98,713
Greater than 5 years	2,554	80	524	31	3,189
Total	\$ 101,331	\$ 5,641	\$ 4,796	\$ 6,101	\$ 117,869
Maximum Payout/Notional Amount of Purchased Credit Derivatives					
Offsetting	\$ 97,747	\$ 5,203	\$ 4,615	\$ 5,205	\$ 112,770
Other	\$ 7,586	\$ 481	\$ 426	\$ 410	\$ 8,903
Fair Value of Written Credit Derivatives					
Asset	\$ 953	\$ 90	\$ 46	\$ 34	\$ 1,123
Liability	187	56	318	1,187	1,748
Net asset/(liability)	\$ 766	\$ 34	\$ (272)	\$ (1,153)	\$ (625)

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.

Notes to Consolidated Statement of Financial Condition

- 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.

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) and the fair value of collateral posted. Additional collateral or termination payments that could have been called at the reporting date by counterparties in the event of a one- or two-notch downgrade in the credit ratings of the firm and/or Group Inc. was not material.

<i>\$ in millions</i>	As of	
	December 2022	
Net derivative liabilities under bilateral agreements	\$	981
Collateral posted	\$	288

Note 8.

Fair Value Option

Other Financial Assets and Liabilities at Fair Value

In addition to financial instruments owned and financial instruments sold, but not yet purchased, 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 instruments owned 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).

Hybrid financial instruments are instruments that contain bifurcated embedded derivatives and do not require settlement by physical delivery of nonfinancial assets. 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. If the firm does not elect to bifurcate, the entire hybrid financial instrument is accounted for at fair value under the fair value option. As of December 2022, the firm did not elect to bifurcate any hybrid financial instruments.

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

- Most resale and all repurchase agreements;
- Certain securities borrowed and loaned transactions;
- Certain receivables from customers and counterparties, including certain margin loans; and
- Certain other secured financings; including transfers of assets accounted for as financings.

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 at fair value, and Note 5 for information about other financial assets and liabilities at fair value within the fair value hierarchy.

Long-Term Debt Instruments

The difference between the aggregate contractual principal amount and the related fair value of long-term other secured financings, for which the fair value option was elected, was not material as of December 2022.

Note 9.

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 or facilitate 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 and collateralized financings is recognized over the life of the transaction.

Notes to Consolidated Statement of Financial Condition

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 equity securities.

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 statement of financial condition.

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.

Certain of the firm’s securities borrowed and loaned 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.

All other securities borrowed and loaned 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 December 2022.

Offsetting Arrangements

The table below presents resale and repurchase agreements and securities borrowed and loaned transactions included in the consolidated statement of financial condition, as well as the amounts not offset in the consolidated statement of financial condition.

<i>\$ in millions</i>	As of December 2022			
	Assets		Liabilities	
	Resale agreements	Securities borrowed	Repurchase agreements	Securities loaned
Included in the consolidated statement of financial condition				
Gross carrying value	\$ 312,835	\$ 187,273	\$ 228,306	\$ 110,340
Counterparty netting	(93,472)	—	(93,472)	—
Total	219,363	187,273	134,834	110,340
Amounts not offset				
Counterparty netting	(32,845)	(19,325)	(32,845)	(19,325)
Collateral	(184,740)	(154,215)	(100,913)	(88,535)
Total	\$ 1,778	\$ 13,733	\$ 1,076	\$ 2,480

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.

Notes to Consolidated Statement of Financial Condition

- Resale agreements included in the consolidated statement of financial condition of \$205.56 billion as of December 2022 were at fair value under the fair value option. Repurchase agreements are carried at fair value under the fair value option. See Note 4 for further information about the valuation techniques and significant inputs used to determine fair value.
- Securities borrowed included in the consolidated statement of financial condition of \$34.62 billion as of December 2022, and securities loaned of \$22.37 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.

<i>\$ in millions</i>	As of December 2022	
	Repurchase agreements	Securities loaned
U.S. government and agency obligations	\$ 217,113	\$ 216
Non-U.S. government and agency obligations	2,583	22,598
Securities backed by commercial real estate	508	71
Securities backed by residential real estate	654	53
Corporate debt securities	3,982	6,918
State and municipal obligations	143	—
Other debt obligations	150	—
Equity securities	3,173	80,484
Total	\$ 228,306	\$ 110,340

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

<i>\$ in millions</i>	As of December 2022	
	Repurchase agreements	Securities loaned
No stated maturity and overnight	\$ 166,989	\$ 106,592
2 - 30 days	16,722	—
31 - 90 days	11,687	701
91 days - 1 year	27,807	3,047
Greater than 1 year	5,101	—
Total	\$ 228,306	\$ 110,340

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 as collateral in these transactions. These other secured financings include:

- Secured financings from Goldman Sachs Funding LLC (Funding IHC), a wholly owned subsidiary of Group Inc.;
- Transfers of assets accounted for as financings rather than sales; and
- Other structured financing arrangements.

Other secured financings included nonrecourse arrangements. Nonrecourse other secured financings were \$6 million as of December 2022.

The firm has elected to apply the fair value option to certain 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 8 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 2 as of December 2022.

The table below presents other secured financings by maturity.

<i>\$ in millions</i>	As of December 2022
Other secured financings (short-term)	\$ 53,229
Other secured financings (long-term):	
2024	454
2025	13
2026	—
2027 - thereafter	232
Total other secured financings (long-term)	699
Total other secured financings	\$ 53,928

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.

Notes to Consolidated Statement of Financial Condition

- The weighted average interest rate on \$51.51 billion of other secured financings accounted for at amortized cost was 4.08%.

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 financial instruments owned in connection with repurchase agreements, securities loaned transactions and other secured financings in connection with other secured financings to counterparties who may or may not have the right to deliver or repledge them.

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

<i>\$ in millions</i>	As of December 2022
Collateral available to be delivered or repledged	\$ 731,688
Collateral that was delivered or repledged	\$ 647,204

The table below presents information about assets pledged.

<i>\$ in millions</i>	As of December 2022
Financial instruments owned pledged to counterparties that:	
Had the right to deliver or repledge	\$ 20,351
Did not have the right to deliver or repledge	\$ 54,390

The firm also segregates securities for regulatory and other purposes related to client activity. Such securities are segregated from financial instruments owned as well as from securities received as collateral under resale agreements and securities borrowed transactions. Securities segregated by the firm were \$49.60 billion as of December 2022.

Note 10.

Other Assets

The table below presents other assets by type.

<i>\$ in millions</i>	As of December 2022
Property, leasehold improvements and equipment	\$ 1,754
Income tax-related assets	782
Receivables from affiliates	480
Miscellaneous receivables and other	359
Total	\$ 3,375

In the table above, miscellaneous receivables and other primarily included prepaid expenses.

Property, Leasehold Improvements and Equipment

Property, leasehold improvements and equipment is net of accumulated depreciation and amortization of \$3.91 billion as of December 2022. Property and equipment is depreciated on a straight-line basis over the useful life of the asset. Leasehold improvements are amortized on a straight-line basis over the shorter of the useful life of the improvement or the term of the lease. Capitalized costs of software developed or obtained for internal use are amortized on a straight-line basis over three years.

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

Note 11.

Unsecured Borrowings

The table below presents information about unsecured borrowings.

<i>\$ in millions</i>	As of December 2022
Unsecured short-term borrowings	\$ 17,461
Unsecured long-term borrowings	36
Total	\$ 17,497

Notes to Consolidated Statement of Financial Condition

Unsecured Short-Term Borrowings

The firm has loan agreements with Group Inc. and Funding IHC through which it obtains substantially all of its unsecured short-term borrowings. Group Inc. and Funding IHC can demand repayment of the outstanding borrowings under these agreements with 90-day advance notice. 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 December 2022.

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

<i>\$ in millions</i>	As of December 2022
Borrowings from affiliates	\$ 17,241
Other unsecured short-term borrowings	220
Total unsecured short-term borrowings	\$ 17,461
Weighted average interest rate	3.92%

Note 12.

Subordinated Borrowings

As of December 2022, the firm had outstanding borrowings of \$5.00 billion from Group Inc. under a subordinated loan agreement, maturing in 2025. In addition, the firm has a \$17.50 billion revolving subordinated loan agreement with Group Inc., maturing in 2024. As of December 2022, \$17.50 billion was outstanding.

The interest rate on these subordinated loan agreements is the Secured Overnight Financing Rate plus 3.48% per annum. The carrying value of these borrowings approximates fair value. As these subordinated loan 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 borrowings been included in the firm's fair value hierarchy, substantially all would have been classified in level 2 as of December 2022.

The subordinated borrowings from Group Inc. are available in computing net capital under the U.S. Securities and Exchange Commission's (SEC) uniform net capital rule. To the extent that such borrowings are required for the firm's continued compliance with minimum net capital requirements, they may not be repaid.

Note 13.

Other Liabilities

The table below presents other liabilities by type.

<i>\$ in millions</i>	As of December 2022
Payables to affiliates	\$ 3,759
Compensation and benefits	3,139
Income tax-related liabilities	1,339
Accrued expenses and other	1,701
Total	\$ 9,938

In the table above, accrued expenses and other includes contract liabilities of \$77 million, which represent consideration received by the firm in connection with its contracts with clients, prior to providing the service.

Note 14.

Securitization Activities

The firm securitizes residential and commercial mortgages, corporate bonds 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 substantially all in connection with U.S. 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.

Notes to Consolidated Statement of Financial Condition

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. These interests are accounted for at fair value and included in financial instruments owned. Substantially all of these interests are classified in level 2 of the fair value hierarchy. See Notes 4 and 5 for further information about fair value measurements.

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.

<i>\$ in millions</i>	As of December 2022	
	Outstanding Principal Amount	Retained Interests
U.S. government agency-issued CMOs	\$ 38,617	\$ 1,836
Other residential mortgage-backed	3	2
Total	\$ 38,620	\$ 1,838

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 interests is limited to the fair value of these interests.
- Substantially all of the total outstanding principal amount and total fair value of retained interests relate to securitizations during 2012 and thereafter.
- Retained interests are carried at fair value.

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

<i>\$ in millions</i>	As of December 2022
Fair value of retained interests	\$ 1,838
Weighted average life (years)	8.0
Constant prepayment rate	10.0%
Impact of 10% adverse change	\$ (19)
Impact of 20% adverse change	\$ (33)
Discount rate	5.6%
Impact of 10% adverse change	\$ (62)
Impact of 20% adverse change	\$ (116)

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.

Note 15.

Variable Interest Entities

A variable interest in a VIE is an investment (e.g., debt or equity) or other interest (e.g., loans) 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; limited and general partnership interests; and preferred and common equity.

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 14, 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.

Notes to Consolidated Statement of Financial Condition

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.

Real Estate and Power-Related VIEs. The firm purchases equity and debt securities issued by and makes loans to VIEs that hold real estate and power-related assets. 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, and purchases and sells beneficial interests issued by corporate debt and other asset-backed VIEs in connection with market-making activities.

Nonconsolidated VIEs

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

<i>\$ in millions</i>	As of December 2022
Total nonconsolidated VIEs	
Assets in VIEs	\$ 54,954
Carrying value of variable interests - assets	\$ 2,691
Maximum exposure to loss:	
Retained interests	\$ 1,838
Purchased interests	836
Debt and equity	17
Total	\$ 2,691

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

<i>\$ in millions</i>	As of December 2022
Mortgage-backed	
Assets in VIEs	\$ 52,027
Carrying value of variable interests - assets	\$ 2,300
Maximum exposure to loss:	
Retained interests	\$ 1,838
Purchased interests	462
Total	\$ 2,300
Real estate and power-related	
Assets in VIEs	\$ 209
Carrying value of variable interests - assets	\$ 17
Maximum exposure to loss:	
Debt and equity	\$ 17
Total	\$ 17
Corporate debt and other asset-backed	
Assets in VIEs	\$ 2,718
Carrying value of variable interests - assets	\$ 374
Maximum exposure to loss:	
Purchased interests	\$ 374
Total	\$ 374

Notes to Consolidated Statement of Financial Condition

The carrying values of the firm's variable interests in nonconsolidated VIEs are included in financial instruments owned.

Consolidated VIEs

As of December 2022, the carrying value of assets and liabilities in consolidated VIEs was not material.

Note 16.

Commitments, Contingencies and Guarantees

Commitments

The table below presents commitments by type.

<i>\$ in millions</i>	As of December 2022
Commitment Type	
Collateralized agreement	\$ 88,952
Collateralized financing	31,893
Investment commitments	16
Other	507
Total	\$ 121,368

The table below presents commitments by expiration.

<i>\$ in millions</i>	As of December 2022			
	2023	2024 - 2025	2026 - 2027	2028 - Thereafter
Commitment Type				
Collateralized agreement	\$ 88,952	\$ —	\$ —	\$ —
Collateralized financing	31,893	—	—	—
Investment commitments	16	—	—	—
Other	272	235	—	—
Total	\$ 121,133	\$ 235	\$ —	\$ —

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.

Contingencies — Legal Proceedings

See Note 20 for information about legal proceedings.

Guarantees

The table below presents derivatives that meet the definition of a guarantee and securities clearing guarantees.

<i>\$ in millions</i>	As of December 2022	
	Derivatives	Securities Clearing
Carrying Value of Net Liability	\$ 15	\$ —
Maximum Payout/Notional Amount by Period of Expiration		
2023	\$ 133	\$ 8,737
2024 - 2025	566	—
2026 - 2027	—	—
2028 - thereafter	20	—
Total	\$ 719	\$ 8,737

In the table above, the maximum payout is based on the notional amount of the contract and does not represent anticipated losses.

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 Clearing Guarantees. Securities clearing guarantees consist of the guarantees that the firm provides in its capacity as a sponsoring member of the Fixed Income Clearing Corporation (FICC).

Notes to Consolidated Statement of Financial Condition

As a sponsoring member of the Government Securities Division of the FICC, the firm guarantees the performance of its sponsored member clients to the FICC 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 FICC. Therefore, the risk of loss on such guarantees is minimal. As of December 2022, the maximum payout on this guarantee was \$8.74 billion and the related collateral held was \$8.70 billion.

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 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 statement of financial condition as of 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 statement of financial condition as of December 2022.

Notes to Consolidated Statement of Financial Condition

Note 17.

Transactions with Related Parties

The firm enters into transactions with Group Inc. and affiliates in the normal course of business as part of market making and general operations.

The table below presents assets and liabilities with affiliates.

<i>\$ in millions</i>	As of December 2022
Assets	
Cash	\$ 3,713
Collateralized agreements:	
Resale agreements	100,775
Securities borrowed	41,404
Receivables:	
Brokers, dealers and clearing organizations	8,961
Customers and counterparties	454
Financial instruments owned	4,592
Other assets	480
Total	\$ 160,379
Liabilities	
Collateralized financings:	
Repurchase agreements	\$ 56,450
Securities loaned	104,959
Other secured financings	51,997
Payables:	
Brokers, dealers and clearing organizations	4,940
Customers and counterparties	16,287
Financial instruments sold, but not yet purchased	843
Unsecured short-term borrowings	17,241
Other liabilities	3,759
Subordinated borrowings	22,500
Total	\$ 278,976

In the table above:

- Cash included \$3.56 billion of segregated cash deposited with affiliates.
- The firm makes markets in debt issued by Group Inc. and certain affiliates. Financial instruments owned primarily included such issuances of \$3.68 billion and affiliate derivative contracts of \$442 million.
- Financial instruments sold, but not yet purchased, consists of derivative contracts with affiliates.

Group Inc. has guaranteed the payment obligations of GS&Co., subject to certain exceptions.

The firm receives and provides operational and administrative support and management services to affiliates and allocates costs for the services provided.

The firm is subject to service charges from affiliates for employment related costs of employees of affiliates pursuant to a Master Services Agreement supplemented by Service Level Agreements.

The firm has revenue sharing agreements with affiliated entities related to certain activities under which it transfers revenues to, and receives revenues from, such entities. Revenues related to market and credit risk exposures held by the firm or by affiliated entities that arise from activities covered by these agreements are shared among the firm and these entities.

The firm acts as the investment manager for numerous related party funds of Group Inc. and is entitled to receive management fees and, in certain cases, advisory fees or incentive fees from these funds.

The firm acts as underwriter for certain securities issuances of related parties.

Note 18.

Income Taxes

The Inflation Reduction Act of 2022 includes income tax incentives to encourage investments in clean energy and a new 15% corporate alternative minimum tax (CAMT). The CAMT applies to corporations with average annual profits over \$1 billion and is calculated on their financial statement income, with certain adjustments, for years beginning after December 31, 2022. The legislation had no impact on the the firm for 2022 and based on our current understanding of the CAMT, is not expected to have a material impact on the the firm for 2023.

Provision for Income Taxes

GS&Co. has elected to be taxed as a corporation for U.S. federal income tax purposes. As a corporation for tax purposes, the firm is subject to U.S. federal and various state and local income taxes on its earnings. The firm is included with Group Inc. and subsidiaries in the consolidated corporate federal as well as consolidated or combined state and local tax returns. The firm computes its tax liability on a modified separate company basis and settles such liability with Group Inc. pursuant to a tax sharing agreement. To the extent the firm generates tax benefits from losses, it will be reimbursed by Group Inc. pursuant to the tax sharing agreement. The firm's state and local tax liabilities are allocated to reflect its share of the consolidated or combined state and local income tax liability.

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.

Notes to Consolidated Statement of Financial Condition

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. As of December 2022, the firm had no valuation allowance to reduce deferred tax assets. Tax assets are included in other assets and tax liabilities are included in other liabilities.

The table below presents information about deferred tax assets and liabilities.

<i>\$ in millions</i>	As of December 2022
Deferred tax assets	
Compensation and benefits	\$ 967
Reserves	78
Total deferred tax assets	\$ 1,045
Deferred tax liabilities	
Depreciation and amortization	\$ 198
Unrealized gains	50
Other, net	18
Total deferred tax liabilities	\$ 266

Unrecognized Tax Benefits

The firm recognizes tax positions in the consolidated statement of financial condition 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 statement of financial condition. As of December 2022, the firm's liability related to uncertainty in income taxes was not material.

Regulatory Tax Examinations

The firm is subject to examination by the U.S. Internal Revenue Service (IRS), as part of Group Inc., and other taxing authorities in jurisdictions where the firm has significant business operations, such as New York State and City. The tax years under examination vary by jurisdiction.

GS Group 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 GS Group 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 and 2012 tax years have been resolved and completion is pending final review by the Joint Committee on Taxation (JCT). During 2022, GS Group reached an agreement with IRS Appeals on the remaining issues for tax years 2012 through 2019. Subject to final review by JCT, this agreement will not have a material impact on the the firm. During 2022, the fieldwork for the 2020 tax year was completed and the final resolution is not expected to have a material impact on the the firm. The 2021 tax year remains subject to post-filing review.

New York State and City examinations of tax years 2015 through 2018 commenced during 2021. All years, including and subsequent to 2015 for New York State and City, and all other significant states, 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 19.

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 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.

Notes to Consolidated Statement of Financial Condition

The table below presents the credit concentrations in cash instruments included in financial instruments owned.

<i>\$ in millions</i>	As of December 2022	
U.S. government and agency obligations	\$	95,590
Percentage of total assets		15.4%

As of December 2022, the firm did not have credit exposure to any other external 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 9 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.

<i>\$ in millions</i>	As of December 2022	
U.S. government and agency obligations	\$	250,065
Non-U.S. government and agency obligations	\$	15,076

In the table above:

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

Note 20.

Legal Proceedings

The firm is involved in a number of judicial, regulatory and arbitration proceedings 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.

These proceedings include, but are not limited to, the firm's role in certain underwriting activities, currency-related matters, treasury matters, mutual fund, swaps and securities-related matters.

With respect to matters 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 December 2022 of the relevant securities, in each of cases (i), (ii) and (iii), taking into account any other factors believed to be relevant to the particular matter or matters of that type. As of the date hereof, the firm has estimated the upper end of the range of reasonably possible aggregate loss for such matters where management has been able to estimate a range of reasonably possible aggregate loss to be approximately \$1.2 billion in excess of the aggregate reserves for such matters.

Notes to Consolidated Statement of Financial Condition

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 regulatory investigations and reviews 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.

Note 21.

Net Capital Requirements

GS&Co. is a U.S. regulated broker-dealer and is also a registered futures commission merchant and a registered swap dealer with the U.S. Commodity Futures Trading Commission (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.

As of December 2022, GS&Co. had regulatory net capital, as defined by Rule 15c3-1, of \$22.21 billion, which exceeded the amount required by \$17.46 billion. In meeting the requirements of Rule 15c3-1 of the SEC, GS&Co. also meets the requirements of Rules 1.17 and Part 23 Subpart E of the CFTC.

In addition to its alternative minimum net capital requirements, GS&Co. is also required to hold tentative net capital in excess of \$5.00 billion and net capital in excess of \$1.00 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 \$6.00 billion. As of December 2022, GS&Co. had tentative net capital and net capital in excess of both the minimum and the notification requirements.

Note 22.

Employee Benefit Plans

The firm's employees participate in various Group Inc. sponsored pension plans and certain other postretirement benefit plans, primarily healthcare and life insurance. Group Inc. also provides certain benefits to former or inactive employees prior to retirement. The cost of these plans is allocated to the firm by Group Inc.

Defined Benefit Pension Plans and Postretirement Plans

Group Inc. maintains a defined benefit pension plan for substantially all U.S. employees hired prior to November 1, 2003. As of November 2004, this plan was closed to new participants and frozen for existing participants. In addition, the firm maintains unfunded postretirement benefit plans that provide medical and life insurance for eligible retirees and their dependents covered under these programs. These plans do not have a material impact on the firm.

Defined Contribution Plans

The firm contributes to Group Inc.'s employer-sponsored U.S. defined contribution plan.

Note 23.

Employee Incentive Plans

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 are paid on outstanding restricted stock units (RSUs).

Notes to Consolidated Statement of Financial Condition

Stock Incentive Plan

Group Inc. sponsors a stock incentive plan, The Goldman Sachs Amended and Restated Stock Incentive Plan (2021) (2021 SIP), which provides for grants of RSUs, restricted stock, dividend equivalent rights, incentive stock options, nonqualified stock options, stock appreciation rights, and other share-based awards, each of which may be subject to terms and conditions, including performance or market conditions. On April 29, 2021, Group Inc.'s shareholders approved the 2021 SIP. The 2021 SIP is a successor to several predecessor stock incentive plans, the first of which was adopted on April 30, 1999, and each of which was approved by Group Inc.'s shareholders. The 2021 SIP is scheduled to terminate on the date of Group Inc.'s annual meeting of shareholders that occurs in 2025.

Restricted Stock Units

Group Inc. grants RSUs (including RSUs subject to performance conditions) to employees, which are generally valued based on the closing price of the underlying shares on the date of grant after taking into account a liquidity discount for any applicable post-vesting and delivery transfer restrictions. The value of equity awards also considers the impact of material non-public information, if any, that Group Inc. expects to make available shortly following grant. RSUs generally vest and underlying shares of common stock deliver (net of required withholding tax) as outlined in the applicable award agreements. Award agreements generally provide that vesting is accelerated in certain circumstances, such as on retirement, death, disability and, in certain cases, conflicted employment. Delivery of the underlying shares of common stock is conditioned on the grantees satisfying certain vesting and other requirements outlined in the award agreements. RSUs not subject to performance conditions generally vest and deliver over a three-year period.

RSUs that are subject to performance conditions generally deliver after the end of a three-year period. For awards that are subject to performance conditions, generally the final award is adjusted from zero up to 150% of the original grant based on the extent to which those conditions are satisfied. Dividend equivalents that accrue on these awards are paid when the awards settle. The subsequent amortization of the cost of these RSUs is allocated to the firm by Group Inc.

The table below presents the 2022 activity related to stock settled RSUs.

	Restricted Stock Units Outstanding		Weighted Average Grant-Date Fair Value of Restricted Stock Units Outstanding	
	Future Service Required	No Future Service Required	Future Service Required	No Future Service Required
Beginning balance	1,857,906	8,420,543	\$ 262.79	\$ 227.56
Granted	2,535,506	4,548,486	\$ 334.12	\$ 318.72
Forfeited	(253,937)	(148,746)	\$ 308.50	\$ 270.32
Delivered	—	(5,956,052)	—	\$ 231.64
Vested	(1,869,489)	1,869,489	\$ 283.30	\$ 283.30
Transfers	(5,150)	(148,510)	\$ 285.36	\$ 226.89
Ending balance	2,264,836	8,585,210	\$ 320.82	\$ 284.81

In the table above:

- The weighted average grant-date fair value of RSUs granted was \$324.23 during 2022. The grant-date fair value of these RSUs included an average liquidity discount of 6.6% during 2022 to reflect post-vesting and delivery transfer restrictions, generally of 1 year.
- The aggregate fair value of awards that vested was \$2.05 billion during 2022.
- The ending balance included restricted stock subject to future service requirements of 30,383 shares as of December 2022 and also included RSUs subject to future service requirements and performance conditions of 25,863 RSUs as of December 2022, and the maximum amount of such RSUs that may be earned was 25,863 RSUs as of December 2022.
- The ending balance also included RSUs not subject to future service requirements but subject to performance conditions of 104,636 RSUs as of December 2022 and the maximum amount of such RSUs that may be earned was 156,954 RSUs as of December 2022.

In relation to 2022 year-end, during the first quarter of 2023, Group Inc. granted to the firm's employees 3.2 million RSUs (of which 1.1 million RSUs require future service as a condition for delivery of the related shares of common stock). These RSUs are subject to additional conditions as outlined in the award agreements. Shares underlying these RSUs, net of required withholding tax, generally deliver over a three-year period. These awards are generally subject to a one-year post-vesting and delivery transfer restriction. These awards are not included in the table above.

Notes to Consolidated Statement of Financial Condition

Note 24.

Subsequent Events

Management has evaluated whether any events or transactions occurred subsequent to the date of the consolidated statement of financial condition and through February 27, 2023, the date this consolidated statement of financial condition was issued, and determined that there were no material events or transactions that would require recognition or disclosure in this consolidated statement of financial condition.

Supplemental Financial Information Pursuant to Regulation 1.10**Statement of Segregation Requirements and Funds in Segregation for Customers Trading on U.S. Commodity Exchanges**

As of December 31, 2022

*(in millions)***Segregation Requirements**

1. Net ledger balance		
A. Cash		\$ 22,854
B. Securities (at market)		13,975
2. Net unrealized profit (loss) in open futures contracts traded on a contract market		(275)
3. Exchange traded options		
A. Add market value of open option contracts purchased on a contract market		25,934
B. Deduct market value of open option contracts granted (sold) on a contract market		(25,819)
4. Net equity (deficit) (add lines 1, 2 and 3)		36,669
5. Accounts liquidating to a deficit and accounts with debit balances – gross amount	\$ 1,829	
Less: amount offset by customer owned securities	(1,828)	1
6. Amount required to be segregated (add lines 4 and 5)		<u>\$ 36,670</u>

Funds in Segregated Accounts

7. Deposited in segregated funds bank accounts		
A. Cash		\$ 2,279
B. Securities representing investments of customers' funds (at market)		599
C. Securities held for particular customers or option customers in lieu of cash (at market)		2,103
8. Margins on deposit with derivatives clearing organizations of contract markets		
A. Cash		13,026
B. Securities representing investments of customers' funds (at market)		7,292
C. Securities held for particular customers or option customers in lieu of cash (at market)		11,872
9. Net settlement from (to) derivatives clearing organizations of contract markets		415
10. Exchange traded options		
A. Value of open long option contracts		25,934
B. Value of open short option contracts		(25,819)
11. Net equities with other FCMs		
A. Net liquidating equity		12
B. Securities representing investments of customers' funds (at market)		—
C. Securities held for particular customers or option customers in lieu of cash (at market)		—
12. Segregated funds on hand		—
13. Total amount in segregation (add lines 7 through 12)		<u>37,713</u>
14. Excess (deficiency) funds in segregation (subtract line 6 from line 13)		<u>1,043</u>
15. Management target amount for excess funds in segregation		<u>775</u>
16. Excess (deficiency) funds in segregation over (under) management target amount excess		<u>\$ 268</u>

There are no material differences between the computations shown in the supplemental financial information as presented in this report and the corresponding computations prepared by GS&Co. included in its December 31, 2022, unaudited Part II FOCUS Report, as filed on January 26, 2023.

Supplemental Financial Information Pursuant to Regulation 1.10

Statement of Segregation Requirements and Funds in Segregation for Customers' Dealer Options Accounts

STATEMENT IS NOT APPLICABLE

Supplemental Financial Information Pursuant to Regulation 1.10**Statement of Secured Amounts and Funds Held in Separate Accounts Pursuant to Commission Regulation 30.7**

As of December 31, 2022

*(in millions)***Foreign Futures and Foreign Options Secured Amounts**

Amount required to be set aside pursuant to law, rule or regulation of a foreign government or a rule of a self-regulatory organization authorized thereunder		\$	—
1. Net ledger balance – foreign futures and foreign option trading – all customers			
A. Cash			9,198
B. Securities (at market)			3,045
2. Net unrealized profit (loss) in open futures contracts traded on a foreign board of trade			1,154
3. Exchange traded options			
A. Market value of open option contracts purchased on a foreign board of trade			11
B. Market value of open contracts granted (sold) on a foreign board of trade			(8)
4. Net equity (deficit) (add lines 1, 2 and 3)			<u>13,400</u>
5. Accounts liquidating to a deficit and accounts with debit balances – gross amount	\$	229	
Less: amount offset by customer owned securities		(220)	9
6. Amount required to be set aside as the secured amount – net liquidating equity method (add lines 4 and 5)			<u>13,409</u>
7. Greater of amount required to be set aside pursuant to foreign jurisdiction (above) or line 6			<u>\$ 13,409</u>

There are no material differences between the computations shown in the supplemental financial information as presented in this report and the corresponding computations prepared by GS&Co. included in its December 31, 2022, unaudited Part II FOCUS Report, as filed on January 26, 2023.

Supplemental Financial Information Pursuant to Regulation 1.10**Statement of Secured Amounts and Funds Held in Separate Accounts Pursuant to Commission Regulation 30.7**

As of December 31, 2022

*(in millions)***Funds Deposited in Separate 17 CFR 30.7 Accounts**

1. Cash in banks		
A. Banks located in the United States	\$	542
B. Other banks qualified under Regulation 30.7	333	\$ 875
2. Securities		
A. In safekeeping with banks located in the United States	7,541	
B. In safekeeping with other banks qualified under Regulation 30.7	—	7,541
3. Equities with registered futures commission merchants		
A. Cash	—	
B. Securities	—	
C. Unrealized gain (loss) on open futures contracts	—	
D. Value of long option contracts	—	
E. Value of short option contracts	—	—
4. Amounts held by clearing organizations of foreign boards of trade		
A. Cash	—	
B. Securities	—	
C. Amount due to (from) clearing organizations - daily variation	—	
D. Value of long option contracts	—	
E. Value of short option contracts	—	—
5. Amounts held by members of foreign boards of trade		
A. Cash	2,955	
B. Securities	1,490	
C. Unrealized gain (loss) on open futures contracts	1,144	
D. Value of long option contracts	11	
E. Value of short option contracts	(9)	5,591
6. Amounts with other depositories designated by a foreign board of trade		—
7. Segregated funds on hand		—
8. Total funds in separate 17 CFR 30.7 accounts		14,007
9. Excess (deficiency) set aside funds for secured amount (subtract line 7 secured statement from line 8)		598
10. Management target amount for excess funds in separate 17 CFR 30.7 accounts		475
11. Excess (deficiency) funds in separate 17 CFR 30.7 accounts over (under) management target		\$ 123

There are no material differences between the computations shown in the supplemental financial information as presented in this report and the corresponding computations prepared by GS&Co. included in its December 31, 2022, unaudited Part II FOCUS Report, as filed on January 26, 2023.

Supplemental Financial Information Pursuant to Regulation 1.10**Statement of Cleared Swaps Customer Segregation Requirements and Funds in Cleared Swaps Customer Accounts Under 4d(f) of the CEA**

As of December 31, 2022

*(in millions)***Cleared Swaps Customer Requirements**

1. Net ledger balance		
A. Cash		\$ 205
B. Securities (at market)		7,857
2. Net unrealized profit (loss) in open cleared swaps		10,617
3. Cleared swaps options		
A. Market value of open cleared swaps option contracts purchased		—
B. Market value of open cleared swaps option contracts granted (sold)		—
4. Net equity (deficit) (add lines 1, 2 and 3)		<u>18,679</u>
5. Accounts liquidating to a deficit and accounts with debit balances – gross amount	\$ 84	
Less: amount offset by customer owned securities	<u>(64)</u>	<u>20</u>
6. Amount required to be segregated for cleared swaps customers (add lines 4 and 5)		<u>\$ 18,699</u>

Funds in Cleared Swaps Customer Segregated Accounts

7. Deposited in cleared swaps customer segregated accounts at banks		
A. Cash		\$ 1,321
B. Securities representing investments of cleared swaps customers' funds (at market)		—
C. Securities held for particular cleared swaps customers in lieu of cash (at market)		607
8. Margins on deposit with derivatives clearing organizations in cleared swaps customer segregated accounts		
A. Cash		6,303
B. Securities representing investments of cleared swaps customers' funds (at market)		3,426
C. Securities held for particular cleared swaps customers in lieu of cash (at market)		7,250
9. Net settlement from (to) derivatives clearing organizations		280
10. Cleared swaps options		
A. Value of open cleared swaps long option contracts		—
B. Value of open cleared swaps short option contracts		—
11. Net equities with other FCMs		
A. Net liquidating equity		—
B. Securities representing investments of cleared swaps customers' funds (at market)		—
C. Securities held for particular cleared swaps customers in lieu of cash (at market)		—
12. Cleared swaps customer funds on hand		<u>—</u>
13. Total amount in cleared swaps customer segregation (add lines 7 through 12)		<u>19,187</u>
14. Excess (deficiency) funds in cleared swaps customer segregation (subtract line 6 from line 13)		<u>488</u>
15. Management target amount for excess funds in cleared swaps segregated accounts		<u>350</u>
16. Excess (deficiency) funds in cleared swaps customer segregated accounts over (under) management target excess		<u>\$ 138</u>

There are no material differences between the computations shown in the supplemental financial information as presented in this report and the corresponding computations prepared by GS&Co. included in its December 31, 2022, unaudited Part II FOCUS Report, as filed on January 26, 2023.