## COMMODITY FUTURES TRADING COMMISSION RULE 1.55(K):

## FCM-SPECIFIC DISCLOSURE DOCUMENT

**The Commodity Futures Trading Commission ("Commission") requires each futures commission merchant ("FCM"), including Goldman Sachs & Co. LLC ("GS&Co."), to provide the following information to a customer prior to the time the customer first enters into an account agreement with the FCM or deposits money or securities ("funds") with the FCM. Except as otherwise noted below, the information set out is as of January 8, 2024. GS&Co. will update this information annually and as necessary to take account of any material change to its business operations, financial condition or other factors that GS&Co. believes may be material to a customer's decision to do business with GS&Co. Nonetheless, the business activities and financial data of GS&Co. are not static and will change in non-material ways frequently throughout any 12-month period.**

**NOTE: GS&Co. is a subsidiary of The Goldman Sachs Group, Inc. ("Group Inc."). Information that may be material with respect to GS&Co. for purposes of the Commission's disclosure requirements may not be material to GS Group for purposes of applicable securities laws.**

**Firm and its Principals**

*(1) FCM's name, address of its principal place of business, phone number, fax number and email address.*

Goldman Sachs & Co. LLC
200 West Street
New York, NY 10282
212-902-1000
Facsimile: 212-256-4147
Email: Alicia.Crighton@gs.com

*(6) FCM's DSRO and DSRO's website address.*

Chicago Board of Trade
www.cmegroup.com

*(2) The name, title, business address, business background, areas of responsibility and the nature of the duties of each principal as defined in § 3.1(a).*

| NAME | OFFICER TITLE | BUSINESS ADDRESS | BUSINESS BACKGROUND | AREAS OF RESPONSIBILITY | NATURE OF DUTIES |
|---|---|---|---|---|---|
| Solomon, David | Manager | 200 West Street New York, NY 10282 | More than 23 years of Goldman Sachs experience (Executive Office, Global Banking & Markets) | Chairman and Chief Executive Officer of The Goldman Sachs Group, Inc. | Duties of the Chairman and Chief Executive Officer of The Goldman Sachs Group, Inc. |
| Ruemmler, Kathryn | Manager | 200 West Street New York, NY 10282 | More than 3 years of Goldman Sachs experience (Legal, Compliance) | Chief Legal Officer and General Counsel of the Goldman Sachs Group, Inc. | Duties of the Chief Legal Officer and General Counsel of the Goldman Sachs Group, Inc. |
| Waldron, John | Chief Executive Officer | 200 West Street New York, NY 10282 | More than 22 years of Goldman Sachs experience (Executive Office, Global Banking & Markets) | President and Chief Operating Officer of the Goldman Sachs Group, Inc. and Chief Executive Officer of Goldman Sachs & Co. LLC. | Duties of the President and Chief Operating Officer of the Goldman Sachs Group, Inc. and Chief Executive Officer of Goldman Sachs & Co. LLC |
| Coleman, Denis | Manager | 200 West Street New York, NY 10282 | More than 26 years of Goldman Sachs experience (Executive Office, Global Banking & Markets) | Chief Financial Officer of the Goldman Sachs Group, Inc. | Duties of the Chief Financial Officer of the Goldman Sachs Group, Inc. |
| Doyle, Brian | Chief Financial Officer | 200 West Street New York, NY 10282 | More than 22 years of Goldman Sachs experience (Controllers Division) | Chief Financial Officer of Goldman Sachs & Co. LLC | Duties of the Chief Financial Officer of Goldman Sachs & Co. LLC |
| Broadbery, Michael | Chief Compliance Officer | 200 West Street New York, NY 10282 | More than 20 years of Goldman Sachs experience (Compliance Division, Legal & Internal Audit Division) | Chief Compliance Officer of Goldman Sachs & Co. LLC as a swap dealer and futures commission merchant | Chief Compliance Officer of Goldman Sachs & Co. LLC as a swap dealer and futures commission merchant |
| Crighton, Alicia | Head of Business Unit, Division or Function | 200 West Street New York, NY 10282 | More than 24 years of Goldman Sachs experience (Global Banking & Markets, Operations Division) | Head of the Prime Services Clearing, Futures Clearing, and Cleared Swaps businesses. | Duties of the head of the Prime Services Clearing, Futures Clearing, and Cleared Swaps businesses. |
| Favia, Thomas | N/A | 30 Hudson Street Jersey City, NJ 07302 | More than 23 years of Goldman Sachs experience (Controllers Division) | Manager of the Regulatory Reporting department within Controllers | Duties of the manager of the Regulatory Reporting Department within Controllers. |

**Firm's Business**

*(3) The significant types of business activities and product lines engaged in by the futures commission merchant, and the approximate percentage of FCM's assets and capital that are used in each type of activity.*

**As of December 2022**

| | Asset Allocation | | Capital Employed | |
|---|---|---|---|---|
| Financing (Resales, Borrows) | 66% | | 7% | |
| Inventory | 21% | | 43% | |
| FICC | | 15% | | 17% |
| Equities | | 6% | | 25% |
| Other | | 0% | | 1% |
| Goodwill & Intangible Assets | 0% | | 0% | |
| Receivables from Brokers Dealers and Customers | 12% | | 17% | |
| Investments in Subs and Receivables from Affiliates | 0% | | 5% | |
| Fixed and all Other Assets | 1% | | 28% | |

**FCM Customer Business**

*(4) FCM's business on behalf of its customers, in its capacity as such, including:*

- *Types of customers:* institutional (asset managers, hedge funds, pension funds, insurance companies, banks); retail; commercial (agricultural, energy)
- *Markets:* financial, agricultural, energy, metals, security futures, swaps
- *International businesses:* Europe, Asia, Latin America
- *Exchange and Swap Execution Facility Memberships:*

| Exchange Memberships | SEF Memberships |
|---|---|
| CBOE Futures LLC | Bloomberg SEF LLC – Clearing Firm |
| Chicago Board of Trade | DW SEF LLC – Clearing Member |
| Chicago Mercantile Exchange, Inc. | ICE Swap Trade, LLC – Participant |
| Commodities Exchange Inc. | TW SEF LLC – Participant |
| Dubai Mercantile Exchange | MarketAxess SEF Corporation – Clearing Firm |
| ELX Futures LP | trueEX LLC – Clearing Firm |
| ICE Futures Abu Dhabi (IFAD) | |
| ICE Futures Europe | |
| ICE Futures US, Inc. | |
| Mexican Derivatives Exchange | |
| New York Mercantile Exchange, Inc. | |
| Nodal Exchange LLC | |

- *Clearinghouses used: member, non-member*

| **Clearing Organization** | **Goldman Sachs & Co. LLC a Member** | **Goldman Sachs & Co. LLC Affiliate a Member** | **Non Affiliate Clearing Broker (if applicable, mark US or Non- US)** |
|---|---|---|---|
| Asigna, Compensación y Liquidación | No | | Banco Santander Serfin (Non-US) |
| ASX Clear (Futures) | No | Goldman Sachs Australia Capital Markets Pty Ltd. | |
| ATHEX Clear | No | | EFG Eurobank Ergasias S.A. (Non-US) |
| B3 S.A. - Brasil, Bolsa, Balcão | No | Goldman Sachs Do Brasil Banco Multiplo SA | |
| Bursa Malaysia Derivatives Bhd | No | | RHB Investment Bank Berhad (Non-US) |
| CC&G (Italy) | No | Goldman Sachs Bank Europe SE ("GSBE") | |
| CDCC (Canada) | No | Goldman Sachs Canada | |
| Central Clearing House and Depository (KELER) | No | | Erste Bank der Oesterreichen Sparkassen (Non-US) |
| Central Counterparty Austria GmbH (CCP.A) | No | | Erste Bank der Oesterreichen Sparkassen (Non-US) |
| CFFEX | No | CITIC Securities Futures Co., Ltd. | |
| CME Clearing (US) | Yes | | |
| DCE Clearing | No | Qiankun Futures Co., Ltd. | |
| ECC (Germany) | No | GSI | |
| EUREX CLEARING AG (Germany) | No | GSI | |
| Hong Kong Exchange and Clearing Limited | No | Goldman Sachs Futures (Asia) Limited | |
| ICE Clear U.S. | Yes | | |
| ICE Clear Europe (UK) | Yes | GSI | |
| ICE Clear Credit | Yes | | |

| Clearing Organization | Goldman Sachs & Co. LLC a Member | Goldman Sachs & Co. LLC Affiliate a Member | Non Affiliate Clearing Broker (if applicable, mark US or Non- US) |
|---|---|---|---|
| Istanbul Stock Exchange Settlement and Custody Bank Inc. (Takasbank) | No | | EFG Istanbul Menkul Degerler A.S. (Non-US) |
| JSCC | No | Goldman Sachs Japan, Co., Ltd | Nissan Securities Co., Ltd. (Non-US) |
| JSE Ltd. Derivatives Clearing | No | | Standard Bank of South Africa Limited (Non-US) |
| Korea Exchange | No | Goldman Sachs (Asia) LLC | |
| LCH Limited | Yes | GSI | |
| LCH SA | No | GSI | |
| BME Clearing, S.A.U. | No | GSBE | |
| Minneapolis Grain Exchange | No | | ADM Investor Services, Inc. (US) |
| KR Futures (KTB) | No | | Samsung Futures Inc. (Non-US) |
| NASDAQ OMX Stockholm AB | No | GSI | |
| National Depository For Securities Poland | No | | Erste Bank der Oesterreichen Sparkassen (Non-US) |
| National Stocks Exchange of India Ltd. | No | Goldman Sachs (India) Securities Private Limited | |
| Nodal Clear, LLC | Yes | | |
| Options Clearing Corporation | Yes | | |
| SHFE Clearing | No | Qiankun Futures Co., Ltd. | |
| Singapore Exchange | No | Goldman Sachs Futures Pte Ltd | |
| The Thailand Clearing House Company Limited (TCH) | No | | Bualuang Securities Public Company Limited; Maybank Securities (Thailand) Public Company Limited (Non-US) |
| Tokyo Financial Exchange | No | Goldman Sachs Japan, Co., Ltd | |

| **Clearing Organization** | **Goldman Sachs & Co. LLC a Member** | **Goldman Sachs & Co. LLC Affiliate a Member** | **Non Affiliate Clearing Broker (if applicable, mark US or Non- US)** |
|---|---|---|---|
| Tokyo Stock Exchange | No | Goldman Sachs Japan, Co., Ltd | |

**Permitted Depositories and Counterparties**

*(4) FCM's policies and procedures concerning the choice of bank depositories, custodians and counterparties to permitted transactions under § 1.25:*

GS&Co. has a process for the evaluation of segregated fund depositories which includes evaluating the depositories' capitalization, creditworthiness, operational reliability and access to liquidity.

GS&Co. monitors the approved depositories to assess our continued satisfaction with each depository.

GS&Co. does not have counterparties with respect to the investment of customer funds under the Commission Rule 1.25.

**Part 190 Disclosure Regarding Separate Accounts**

If you establish or maintain more than one account with GS&Co. for the purpose of trading (a) futures and options on futures (collectively, "futures") on either U.S. or foreign futures exchanges, or (b) cleared swaps (each, a "separate account"), it is important that you read and understand the following disclosure. GS&Co. permits certain customers to establish and maintain separate accounts with GS&Co. Such separate accounts may be: (i) managed by different asset management firms, introducing brokers or associated persons; (ii) managed as separate investment portfolios by the same asset management firm, introducing broker or associated person; or (iii) subject to liens in connection with operating loans that contractually obligate an FCM to treat the accounts separately; or (iv) otherwise required for regulatory or appropriate business purposes. Subject to the terms and conditions of CFTC Letter No. 19-17 (https://www.cftc.gov/csl/19-17/download), GS&Co. treats such separate accounts as accounts of separate entities. Among other things, GS&Co. may calculate the margin requirements for each separate account independently from all other separate accounts of the same customer and may disburse excess funds from one separate account notwithstanding that another separate account is undermargined.

You should be aware that:

In the unlikely event of GS&Co.'s bankruptcy, you will be treated no differently from other customers as a result of having maintained separate accounts with GS&Co. In particular, all separate accounts maintained for you or on your behalf will be combined in determining your rights and obligations under the applicable provisions of the U.S. Bankruptcy Code and Part 190 of the Commodity Futures Trading Commission's Regulations.

**Material Risks**

*(5) The material risks, accompanied by an explanation of how such risks may be material to its customers, of entrusting funds to FCM, including, without limitation:*

> *(i) the nature of investments made by FCM (including credit quality, weighted average maturity and weighted average coupon);*
>
> *(ii) FCM's creditworthiness, leverage, capital, liquidity, principal liabilities, balance sheet leverage and other lines of business;*
>
> *(iii) risks to FCM created by its affiliates and their activities, including investment of customer funds in an affiliated entity; and*
>
> *(iv) any significant liabilities, contingent or otherwise, and material commitments.*

In this section, when we use the terms "we," "us" and "our," we mean Goldman Sachs & Co. LLC (GS&Co.) and its consolidated subsidiaries, and when we use the term "Goldman Sachs" we mean The Goldman Sachs Group, Inc. (Group Inc.) together with its consolidated subsidiaries, including GS&Co. GS&Co. is a registered U.S. broker-dealer, futures commission merchant (FCM), swap dealer and security-based swap dealer and is an indirect, wholly owned subsidiary of Group Inc., except for a de minimis amount of non-voting, non-participating interests that is held by broker-dealers not affiliated with Goldman Sachs.

The funds that customers deposit with GS&Co., in its capacity as a futures commission merchant, are subject to risk of loss, including in the event of the insolvency of GS&Co. or liquidation of GS&Co. pursuant to proceedings under the Securities Investor Protection Act of 1970 ("SIPA"). The principal risks specifically related to GS&Co.'s custody of segregated funds are addressed below. In addition, information about GS&Co.'s policies and procedures related to its custody of segregated funds is addressed in "(11) A summary of FCM's current risk practices, controls and procedures – Segregation Risk Management". Further, because we are dependent on Group Inc. and other Goldman Sachs entities to a significant extent, including for access to capital and funding and for risk management, risks that could affect Goldman Sachs could also have a significant impact on us. Goldman Sachs faces a variety of risks that are substantial and inherent in its businesses, including market, liquidity, credit, operational, legal, regulatory and reputational risks. The following are some of the more important factors that could affect GS&Co., including our creditworthiness, leverage, capital, liquidity and liabilities. Any one or more of these risk factors could have an impact on our financial condition, results of operations and cash flows that is material to the customers of our futures commission merchant business.

**FCM**

***Funds that FCM customers deposit with us are subject to risk of loss.***

Assets that FCM customers deposit with us as margin on futures, options on futures or cleared swaps positions are segregated in accordance with the Commodity Exchange Act and CFTC rules but are nevertheless subject to risk of loss, if the available assets held in segregation are insufficient to satisfy all customer claims, including in the event of our insolvency or liquidation pursuant to SIPA proceedings or in the event of the insolvency or bankruptcy, or the negligence or misconduct, of a depository or clearinghouse. In addition, margin assets deposited in connection with uncleared swaps are not required to be segregated, unless the customer elects segregation. If such assets are not segregated, they present greater risk of loss. Segregated assets are invested solely in instruments that are permissible for this purpose under CFTC rules. Nevertheless, it is possible that losses will be sustained on such investments. Although we are obligated to contribute our own funds to satisfy any shortfall in segregated assets, if we are unable to do so, the assets available for distribution to customers may not be sufficient to cover their

claims. Moreover, regardless of whether the amount of segregated assets is sufficient to cover customer claims, customers could experience delays in the return of their assets in the event of our insolvency. With regard to our FCM activities, we maintain specific processes, policies and procedures to address risks relating to the segregation and custody of customer assets. However, there can be no assurance that these processes, policies and procedures will be successful in ensuring that our FCM customers do not suffer losses in the assets they deposit with us.

Assets deposited as margin by FCM customers in connection with futures, options on futures or cleared swaps transactions are typically, although not exclusively, held at the relevant clearinghouse. Margin held at a clearinghouse is also required to be segregated by the clearinghouse. However, in certain contexts, the clearinghouse is permitted to apply margin deposited by one FCM customer to obligations incurred by another FCM customer. In addition, there is a risk that the clearinghouse itself may become insolvent. Under such circumstances, assets held in segregation should be protected from risk of loss. Nevertheless, there could be delays in recovering such assets and, in the event of errors or malfeasance, it is possible that a deficiency in the required amount of segregated assets will exist, which could result in customer losses.

**Market**

***Our businesses have been and may in the future be adversely affected by conditions in the global financial markets and broader economic conditions.***

Many of our businesses, including but not limited to our FCM business, by their nature, do not produce predictable earnings, and all of our businesses are materially affected by conditions in the global financial markets and economic conditions generally, both directly and through their impact on client activity levels and creditworthiness. These conditions can change suddenly and negatively.

Our financial performance is highly dependent on the environment in which our businesses operate. A favorable business environment is generally characterized by, among other factors, high global gross domestic product growth, regulatory and market conditions that result in transparent, liquid and efficient capital markets, low inflation, business, consumer and investor confidence, stable geopolitical conditions and strong business earnings.

Unfavorable or uncertain economic and market conditions can be caused by: low levels of or declines in economic growth, business activity or investor, business or consumer confidence; concerns over a potential recession; changes in consumer spending or borrowing patterns; pandemics; limitations on the availability or increases in the cost of credit and capital; illiquid markets; increases in inflation, interest rates, exchange rate or basic commodity price volatility or default rates; high levels of inflation or stagflation; concerns about sovereign defaults; uncertainty concerning fiscal or monetary policy, government shutdowns, debt ceilings or funding; the extent of and uncertainty about potential increases in tax rates and other regulatory changes; limitations on international trade and travel; laws and regulations that limit trading in, or the issuance of, securities of issuers outside their domestic markets; outbreaks of domestic or international tensions or hostilities, terrorism, nuclear proliferation, cybersecurity threats or attacks and other forms of disruption to or curtailment of global communication, energy transmission or transportation networks or other geopolitical instability or uncertainty; corporate, political or other scandals that reduce investor confidence in capital markets; extreme weather events or other natural disasters; or a combination of these or other factors.

The financial services industry and the securities and other financial markets have been materially and adversely affected in the past by significant declines in the values of nearly all asset classes, by a serious lack of liquidity and by high levels of borrower defaults. In addition, concerns about actual or potential increases in interest rates, inflation and other borrowing costs, a resurgence of COVID-19 cases, European sovereign debt risk and its impact on the European banking system, and limitations on international trade, have at times, negatively impacted the levels of client activity.

General uncertainty about economic, political and market activities, and the scope, timing and impact of regulatory reform, as well as weak consumer, investor and CEO confidence resulting in large part from such uncertainty, has in the past negatively impacted client activity, which can adversely affect many of our businesses. Periods of low volatility and periods of high volatility combined with a lack of liquidity, have at times had an unfavorable impact on our market making businesses.

Changes, or proposed changes, to U.S. international trade and investment policies, particularly with important trading partners, have in recent years negatively impacted financial markets. Continued or escalating tensions may result in further actions taken by the U.S. or other countries that could disrupt international trade and investment and adversely affect financial markets. Those actions could include, among others, the implementation of sanctions, tariffs or foreign exchange measures, the large-scale sale of U.S. Treasury securities or other restrictions on cross-border trade, investment, or transfer of information or technology. Any such developments could adversely affect our or our clients' businesses.

Financial institution returns may be negatively impacted by increased funding costs due in part to the lack of perceived government support of such institutions in the event of future financial crises relative to financial institutions in countries in which governmental support is maintained. In addition, liquidity in the financial markets has in the past been, and could in the future be, negatively impacted as market participants and market practices and structures adjust to evolving regulatory frameworks.

In January 2023, the outstanding debt of the U.S. reached its statutory limit and the U.S. Treasury Department commenced taking extraordinary measures to prevent the U.S. from defaulting on its obligations. If Congress does not raise the debt ceiling, the U.S. could default on its obligations, including Treasury securities that play an integral role in financial markets. A default by the U.S. could result in unprecedented market volatility and illiquidity, heightened operational risks relating to the clearance and settlement of transactions, margin and other disputes with clients and counterparties, an adverse impact to investors including money market funds that invest in U.S. Treasuries, downgrades in the U.S. credit rating, further increases in interest rates and borrowing costs and a recession in the U.S. or other economies. Even if the U.S. does not default, continued uncertainty relating to the debt ceiling could result in downgrades of the U.S. credit rating, which could adversely affect market conditions, lead to margin disputes, further increases in interest rates and borrowing costs and necessitate significant operational changes among market participants, including us. A downgrade of the federal government's credit rating could also materially and adversely affect the market for repurchase agreements, securities borrowing and lending, and other financings typically collateralized by U.S. Treasury or agency obligations. Further, the fair value, liquidity and credit ratings of securities issued by, or other obligations of, agencies of the U.S. government or related to the U.S. government or its agencies, as well as municipal bonds could be similarly adversely affected.

The foregoing factors could adversely affect our FCM business and FCM customers in a variety of ways, including by restricting available liquidity or increasing costs, which could cause us to reduce or terminate certain of our FCM business activities, or could result in losses in other of our business lines, which could in turn adversely affect our ability to fulfill our obligations on behalf of our FCM customers. In particular, among other risks, if the foregoing factors adversely affect our liquidity or capital, we may be unable to satisfy obligations to clearinghouses arising in connection with our role as clearing member for our customers, which could result in the liquidation of customer positions.

***Our businesses have been and may in the future be adversely affected by declining asset values, particularly where we have net "long" positions, receive fees based on the value of assets managed, or receive or post collateral.***

Many of our businesses have net "long" positions in debt securities, derivatives, mortgages, equities (including private equity) and most other asset classes. These include positions we take when we act as a principal to facilitate our clients' activities, including our exchange-based market-making activities, or

commit large amounts of capital to maintain positions in interest rate and credit products, as well as through our currencies, equities and mortgage-related activities. In addition, we invest in similar asset classes. Substantially all of our investing and market-making positions are marked-to-market on a daily or other periodic basis and declines in asset values directly and promptly impact our earnings, unless we have effectively "hedged" our exposures to those declines.

In certain circumstances (particularly in the case of credit products, private equities or other securities that are not freely tradable or lack established and liquid trading markets), it may not be possible or economic to hedge our exposures and to the extent that we do so the hedge may be ineffective or may greatly reduce our ability to profit from increases in the values of the assets. Sudden declines and significant volatility in the prices of assets have in the past substantially curtailed or eliminated, and may in the future substantially curtail or eliminate, the trading markets for certain assets, which may make it difficult to sell, hedge or value such assets. We may incur losses from time to time as trading markets deteriorate or cease to function, including with respect to loan commitments we have made or securities offerings we have underwritten. The inability to sell or effectively hedge assets reduces our ability to limit losses in such positions and the difficulty in valuing assets has in the past negatively affected, and may in the future negatively affect, our and our affiliates' capital, liquidity or leverage ratios, our and our affiliates' funding costs and our and our affiliates' ability to deploy capital.

In our exchange-based market-making activities, we are obligated by exchange rules to maintain an orderly market, including by purchasing securities in a declining market. In markets where asset values are declining and in volatile markets, this results in losses and an increased need for liquidity.

We receive asset-based management fees based on the value of our clients' portfolios or investment in funds managed by us. Declines in asset values would ordinarily reduce the value of our clients' portfolios or fund assets, which in turn would typically reduce the fees we earn for managing such assets.

We post collateral to support our obligations and receive collateral that supports the obligations of our clients and counterparties. When the value of the assets posted as collateral or the credit ratings of the party posting collateral decline, the party posting the collateral may need to provide additional collateral or, if possible, reduce its trading position. An example of such a situation is a "margin call" in connection with a brokerage account. Therefore, declines in the value of asset classes used as collateral mean that either the cost of funding positions is increased or the size of positions is decreased. If we are the party providing collateral, this can increase our costs and reduce our profitability and if we are the party receiving collateral, this can also reduce our profitability by reducing the level of business done with our clients and counterparties.

In addition, volatile or less liquid markets increase the difficulty of valuing assets, which can lead to costly and time-consuming disputes over asset values and the level of required collateral, as well as increased credit risk to the recipient of the collateral due to delays in receiving adequate collateral. In cases where we foreclose on collateral, sudden declines in the value or liquidity of the collateral have in the past resulted in and may in the future despite credit monitoring, over-collateralization, the ability to call for additional collateral or the ability to force repayment of the underlying obligation, result in significant losses to us, especially where there is a single type of collateral supporting the obligation. In addition, we have been, and may in the future be, subject to claims that the foreclosure was not permitted under the legal documents, was conducted in an improper manner, including in violation of law, or caused a client or counterparty to go out of business.

***Our market-making activities have been and may in the future be affected by changes in the levels of market volatility.***

Certain of our market-making activities depend on market volatility to provide trading and arbitrage opportunities to our clients, and decreases in volatility have reduced and may in the future reduce these

opportunities and the level of client activity associated with them and adversely affect the results of these activities. Increased volatility, while it can increase trading volumes and spreads, also increases risk as measured by Value-at-Risk (VaR) and may expose us to increased risks in connection with our market-making activities or may cause us to reduce our inventory in order to avoid increasing our VaR. Limiting the size of our market-making positions can adversely affect our profitability. In periods when volatility is increasing, but asset values are declining significantly, it may not be possible to sell assets at all or it may only be possible to do so at steep discounts. In those circumstances, we have been and may in the future be forced to either take on additional risk or to realize losses in order to decrease our VaR.

***Our investment banking, client intermediation, asset management and wealth management businesses have been adversely affected and may in the future be adversely affected by market uncertainty or lack of confidence among investors and CEOs due to declines in economic activity and other unfavorable economic, geopolitical or market conditions.***

Our investment banking business has been, and may in the future be, adversely affected by market conditions. Poor economic conditions and other uncertain geopolitical conditions may adversely affect and have in the past adversely affected investor and CEO confidence, resulting in significant industry-wide declines in the size and number of underwritings and of advisory transactions, which would likely have an adverse effect on our revenues and our profit margins. In particular, because a significant portion of our investment banking revenues is derived from our participation in large transactions, a decline in the number of large transactions has in the past and would in the future adversely affect our investment banking business. Similarly, in recent years, cross-border initial public offerings and other securities offerings have accounted for a significant proportion of new issuance activity. Legislative, regulatory or other changes that limit trading in, or the issuance of, securities outside the issuers' domestic markets, that result in or could result in the delisting or removal of securities from exchanges or indices, have in the past adversely affected and would in the future adversely affect our underwriting and client intermediation businesses. Furthermore, changes, or proposed changes, to international trade and investment policies of the U.S. and other countries could negatively affect market activity levels and our revenues.

In certain circumstances, market uncertainty or general declines in market or economic activity may adversely affect our client intermediation businesses by decreasing levels of overall activity or by decreasing volatility, but at other times market uncertainty and even declining economic activity may result in higher trading volumes or higher spreads or both.

Market uncertainty, volatility and adverse economic conditions, as well as declines in asset values, may cause our clients to transfer their assets out of our products or their brokerage accounts and result in reduced net revenues, principally in our wealth management and asset management businesses. Even if clients do not withdraw their funds, they may invest them in products that generate less fee income. These factors could also result in us restricting or terminating certain of our FCM activities or in us being unable to satisfy our obligations to clearinghouses on behalf of our customers.

***Our wealth management business has been and may in the future be adversely affected by the poor investment performance of our investment products or a client preference for products other than those which we offer or for products that generate lower fees.***

Poor investment returns in our wealth management business, due to either general market conditions or underperformance (relative to our competitors or to benchmarks) by funds or accounts that we manage or investment products that we design or sell, affect our ability to retain existing assets and to attract new clients or additional assets from existing clients. This could affect the management and incentive fees that we earn on assets under supervision (AUS) or the commissions and net spreads that we earn for selling other investment products, such as structured notes or derivatives. To the extent that our clients choose to invest in products that we do not currently offer, we will suffer outflows and a loss of management fees. Further, if, due to changes in investor sentiment or the relative performance of certain asset classes or

otherwise, clients continue to invest in products that generate lower fees (e.g., passively managed or fixed income products), our average effective management fee would continue to decline and our wealth management businesses could be adversely affected.

***Inflation has had, and could continue to have, a negative effect on our business, results of operations and financial condition.***

Inflationary pressures have affected economies, financial markets and market participants worldwide. Inflationary pressures have increased certain of our operating expenses, and have adversely affected consumer sentiment and CEO confidence. Central bank responses to inflationary pressures have also resulted in higher market interest rates, which, in turn, have contributed to lower activity levels across financial markets, in particular for debt underwriting transactions and mortgage originations, and resulted in lower values for certain financial assets. Higher interest rates increase our borrowing costs. If inflationary pressures persist, our expenses may increase further; activity levels for certain of our businesses, in particular debt underwriting, may remain at low levels or decline further; Goldman Sachs' interest expense could increase faster than its interest income, reducing its net interest income and net interest margin; AUS could decline, reducing management and other fees; economies worldwide could experience recessions; and we could continue to operate in a generally unfavorable economic and market environment.

Any or all of the foregoing market factors could also adversely affect our ability to satisfy our obligations to customers and clearinghouses incurred in connection with our FCM business, by reducing our liquidity and available assets, or increasing the amount of our obligations beyond our available liquidity and asset levels, which could result in losses to our FCM customers.

**Liquidity**

***Our liquidity, profitability and businesses may be adversely affected by an inability to borrow from Group Inc. or Goldman Sachs Funding LLC (Funding IHC) or to sell assets.***

Liquidity is essential to our businesses. It is of critical importance to us, as most of the failures of financial institutions have occurred in large part due to insufficient liquidity. Goldman Sachs' liquidity may be impaired by an inability to access secured and/or unsecured debt markets, an inability to raise or retain deposits, an inability to access funds from subsidiaries or otherwise allocate liquidity optimally, an inability to sell assets or redeem its investments, lack of timely settlement of transactions, unusual deposit outflows, or other unforeseen outflows of cash or collateral, such as in March 2020, when corporate clients drew on revolving credit facilities in response to the COVID-19 pandemic. This situation may arise due to circumstances that we may be unable to control, such as a general market or economic disruption or an operational problem that affects third parties, Goldman Sachs, or even by the perception among market participants that Goldman Sachs, or other market participants, are experiencing greater liquidity risk. GS&Co.'s liquidity may also be impaired by an inability to borrow from Group Inc. or Funding IHC.

We employ structured products to benefit our clients and hedge our own risks. The financial instruments that we hold and the contracts to which we are a party are often complex, and these complex structured products often do not have readily available markets to access in times of liquidity stress. Our investing and financing activities may lead to situations where the holdings from these activities represent a significant portion of specific markets, which could restrict liquidity for our positions.

Further, our ability to sell assets may be impaired if there is not generally a liquid market for such assets, as well as in circumstances where other market participants are seeking to sell similar otherwise generally liquid assets at the same time, as is likely to occur in a liquidity or other market crisis or in response to changes to rules or regulations. For example, in 2021, an investment management firm with large positions with several financial institutions defaulted, resulting in rapidly declining prices in the securities

underlying those positions. In addition, clearinghouses, exchanges and other financial institutions with which we interact may exercise set-off rights or the right to require additional collateral, including in difficult market conditions, which could further impair our liquidity.

Restrictions in available liquidity could adversely affect our ability to satisfy obligations arising in connection with our FCM business on a timely basis, which could cause us to reduce or terminate certain of these businesses. In addition, in extreme circumstances, a lack of liquidity could result in our failing to satisfy obligations to clearinghouses incurred on behalf of our FCM customers, which in turn could result in termination of customer positions and other adverse consequences, including the loss of FCM customer assets deposited as margin. The current market environment, which includes rising interest rates, financial stress in the banking sector, and liquidity constraints, could exacerbate these risks.

Numerous regulations have been adopted that impose more stringent liquidity requirements on large financial institutions, including Goldman Sachs. These regulations require Goldman Sachs to hold large amounts of highly liquid assets and reduce its flexibility to source and deploy funding.

***GS&Co. is an operating subsidiary of Group Inc. and depends on Group Inc. and Funding IHC for liquidity and capital.***

Group Inc. is a holding company and, therefore, depends on dividends, distributions, loans and other payments from its subsidiaries to provide capital and funding to its subsidiaries, including us. Many of Group Inc.'s subsidiaries, including Group Inc.'s bank and broker-dealer subsidiaries, are subject to laws that restrict dividend payments or authorize regulatory bodies to block or reduce the flow of funds from those subsidiaries to Group Inc.

To facilitate the execution of its resolution plan, Group Inc. formed Funding IHC, transferred certain intercompany receivables and substantially all of its global core liquid assets (GCLA) to Funding IHC, and agreed to transfer additional GCLA above prescribed thresholds. Goldman Sachs has also put in place a Capital and Liquidity Support Agreement (CLSA) among Group Inc., Funding IHC and Group Inc.'s major subsidiaries, including GS&Co. Under the CLSA, Funding IHC has provided Group Inc. with a committed line of credit that allows Group Inc. to draw sufficient funds to meet its cash needs during the ordinary course of business. If Goldman Sachs' financial resources deteriorate so severely that resolution may be imminent, the CLSA provides, among other things, that the committed line of credit will automatically terminate and Funding IHC will be required to recapitalize and provide liquidity to the major subsidiaries that are parties to the CLSA.

In addition, GS&Co. and Group Inc.'s bank and other broker-dealer entities and their subsidiaries are subject to restrictions on their ability to lend or transact with affiliates and to minimum regulatory capital and other requirements, as well as restrictions on their ability to use funds deposited with them in brokerage or bank accounts to fund their businesses. Additional restrictions on related-party transactions, increased capital and liquidity requirements, the Board of Governors of the Federal Reserve System's (Federal Reserve Board) source of strength policy and additional limitations on the use of funds on deposit in bank or brokerage accounts, as well as lower earnings, can reduce the amount of funds available to Group Inc. to provide capital or funding to GS&Co.

There has been a trend towards increased regulation and supervision of Group Inc.'s subsidiaries by the governments and regulators in the countries in which those subsidiaries are located or do business. Concerns about protecting clients and creditors of financial institutions that are controlled by persons or entities located outside of the country in which such entities are located or do business have caused or may cause a number of governments and regulators to take additional steps to "ring fence" or require internal total loss-absorbing capacity (which may also be subject to "bail-in" powers) at those entities in order to protect clients and creditors of those entities in the event of financial difficulties involving those entities. The result has been and may continue to be additional limitations on Goldman Sachs' ability to efficiently

move capital and liquidity among its affiliated entities, including GS&Co., including in times of stress, thereby increasing the overall level of capital and liquidity required by Goldman Sachs on a consolidated basis.

The requirements for Group Inc. and certain of its subsidiaries to develop and submit recovery and resolution plans to regulators, and the incorporation of feedback received from regulators, may require Goldman Sachs to increase capital or liquidity levels or issue additional long-term debt at Group Inc. or particular subsidiaries or otherwise incur additional or duplicative operational or other costs at multiple entities, and may reduce Group Inc.'s ability to guarantee the obligations of its subsidiaries or raise debt at Group Inc. Resolution planning may also impair Goldman Sachs' ability to structure its intercompany and external activities in a manner that Goldman Sachs may otherwise deem most operationally efficient. Furthermore, arrangements to facilitate Goldman Sachs' resolution planning may cause it to be subject to additional taxes.

***Our businesses have been and may in the future be adversely affected by disruptions or lack of liquidity in the credit markets, including reduced access to credit and higher costs of obtaining credit.***

Widening credit spreads for us or Group Inc., as well as significant declines in the availability of credit, have in the past adversely affected Goldman Sachs' ability to borrow on a secured and unsecured basis and may do so in the future. We obtain substantially all our unsecured funding through Funding IHC, a wholly owned, direct subsidiary of Group Inc., or directly from Group Inc., which funds itself on an unsecured basis by issuing long-term debt, by issuing hybrid financial instruments and by obtaining loans or lines of credit from commercial or other banking entities. We seek to finance many of our assets on a secured basis. Any disruptions in the credit markets may make it harder and more expensive to obtain funding for our businesses. If our available funding is limited or we are forced to fund our operations at a higher cost, these conditions may require us to curtail our business activities and increase our cost of funding, both of which could reduce our profitability, particularly in our businesses that involve investing, lending and market making.

In addition, liquidity constraints and restrictions on borrowing from affiliates could make it more difficult for us to satisfy our obligations incurred in connection with our FCM business on a timely basis, which could result in reductions in or terminations of portions of that business, or potentially termination of positions held for customers.

In particular, if we have insufficient liquidity to satisfy ongoing margin requirements on open positions held for customers, including but not limited to our FCM customers, it is possible that we will need to cease providing services to customers with respect to certain products or markets. In addition, in extreme cases, if we are unable to satisfy margin requirements on positions we hold for customers, and we default on such requirements, a clearinghouse could terminate customer positions and apply available customer assets to any required margin or settlement payments with respect to customer positions. Even when sufficient customer assets are held in segregation, there could be delays in recovering any assets and, if there is a shortfall in required segregated amounts, customers could sustain losses.

Our clients engaging in mergers, acquisitions and other types of strategic transactions often rely on access to the secured and unsecured credit markets to finance their transactions. A lack of available credit or an increased cost of credit can adversely affect the size, volume and timing of our clients' merger and acquisition transactions, particularly large transactions, and adversely affect our advisory and underwriting businesses.

Our credit businesses have been and may in the future be negatively affected by a lack of liquidity in credit markets. A lack of liquidity reduces price transparency, increases price volatility and decreases transaction volumes and size, all of which can increase transaction risk or decrease the profitability of these businesses.

***Reductions in our or Group Inc.'s credit ratings or an increase in our or Group Inc.'s credit spreads may adversely affect our liquidity and cost of funding.***

Our and Group Inc.'s credit ratings are important to our liquidity. A reduction in our or Group Inc.'s credit ratings could adversely affect our liquidity and competitive position, increase our borrowing costs, limit our access to the capital markets or funding from Group Inc. or Funding IHC or trigger our obligations under certain provisions in some of our trading and collateralized financing contracts. Under these provisions, counterparties could be permitted to terminate contracts with us or require us to post additional collateral. Termination of our trading and collateralized financing contracts could cause us to sustain losses and impair our liquidity by requiring us to find other sources of financing or to make significant cash payments or securities movements.

As of December 2022, Goldman Sachs' counterparties could have called for additional collateral or termination payments related to net derivative liabilities under bilateral agreements in an aggregate amount of $343 million in the event of a one-notch downgrade of its credit ratings and $1.12 billion in the event of a two-notch downgrade of its credit ratings. A downgrade by any one rating agency of Group Inc., depending on the agency's relative ratings at the time of the downgrade, may have an impact which is comparable to the impact of a downgrade by all rating agencies.

Our and Group Inc.'s cost of obtaining long-term unsecured funding is directly related to our and Group Inc.'s credit spreads (the amount in excess of the interest rate of benchmark securities that Group Inc. or we need to pay). Increases in our or Group Inc.'s credit spreads can significantly increase our cost of this funding. Changes in credit spreads are continuous, market-driven, and subject at times to unpredictable and highly volatile movements. Our and Group Inc.'s credit spreads are also influenced by market perceptions of our and Group Inc.'s creditworthiness and movements in the costs to purchasers of credit default swaps referenced to Group Inc.'s long-term debt. The market for credit default swaps has proven to be extremely volatile and at times has lacked a high degree of transparency or liquidity.

**Credit**

***Our businesses, profitability and liquidity may be adversely affected by deterioration in the credit quality of, or defaults by, third parties.***

We are exposed to the risk that third parties that owe us money, securities or other assets will not perform their obligations. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. A failure of a significant market participant, or even concerns about a default by such an institution, could lead to significant liquidity problems, losses or defaults by other institutions, which in turn could adversely affect us.

We are also subject to the risk that our rights against third parties may not be enforceable in all circumstances. In addition, deterioration in the credit quality of third parties whose securities or obligations we hold, including a deterioration in the value of collateral posted by third parties to secure their obligations to us under derivative contracts and loan agreements, could result in losses and/or adversely affect our ability to rehypothecate or otherwise use those securities or obligations for liquidity purposes.

A significant downgrade in the credit ratings of our counterparties could also have a negative impact on our results. While in many cases we are permitted to require additional collateral from counterparties that experience financial difficulty, disputes may arise as to the amount of collateral we are entitled to receive and the value of pledged assets. The termination of contracts and the foreclosure on collateral may subject us to claims for the improper exercise of our rights. Default rates, downgrades and disputes with counterparties as to the valuation of collateral typically increase significantly in times of market stress, increased volatility and illiquidity.

As part of our clearing and prime brokerage activities, we finance our clients' positions, and we could be held responsible for the defaults or misconduct of our clients. Although we have limits and regularly review credit exposures to specific clients, clearinghouses and other counterparties and to specific industries, countries and regions that we believe may present credit concerns, default risk may arise from events or circumstances that are difficult to detect or foresee.

***Concentration of risk increases the potential for significant losses in our market-making, underwriting, investing and financing activities.***

Concentration of risk increases the potential for significant losses in our market-making, underwriting, investing and financing activities. The number and size of these transactions has affected and may in the future affect our results of operations in a given period. Moreover, because of concentrated risk, we may suffer losses even when economic and market conditions are generally favorable for our competitors. Disruptions in the credit markets can make it difficult to hedge these credit exposures effectively or economically.

In the ordinary course of business, we may be subject to a concentration of credit risk to a particular counterparty, issuer, including sovereign issuers, or geographic area or group of related countries, such as the E.U., and a failure or downgrade of, or default by, such entity could negatively impact our businesses, perhaps materially, and the systems by which we set limits and monitor the level of our credit exposure to individual entities, industries, countries and regions may not function as we have anticipated. Regulatory reform, including the Dodd-Frank Act, has led to increased centralization of trading activity through particular clearinghouses, central agents or exchanges, which has significantly increased our concentration of risk with respect to these entities. While our activities expose us to many different industries, counterparties and countries, we routinely execute a high volume of transactions with counterparties engaged in financial services activities, including brokers and dealers, commercial banks, clearinghouses, exchanges and investment funds. This has resulted in significant credit concentration with respect to these counterparties.

***Derivative transactions and delayed documentation or settlements may expose us to credit risk, unexpected risks and potential losses.***

We are party to a large number of over-the-counter (OTC) derivative transactions, including credit derivatives, both in connection with our futures market activities and separate from them. Many of these derivative instruments are individually negotiated and non-standardized, which can make exiting, transferring or settling positions difficult. Many credit derivatives require that we deliver to the counterparty the underlying security, loan or other obligation in order to receive payment. In a number of cases, we do not hold the underlying security, loan or other obligation and may not be able to obtain the underlying security, loan or other obligation. This could cause us to forfeit the payments due to us under these contracts or result in settlement delays with the attendant credit and operational risk as well as increased costs to us.

Derivative transactions also involve the risk that documentation has not been properly executed, that executed agreements may not be enforceable against the counterparty, or that obligations under such agreements may not be able to be "netted" against other obligations with such counterparty. In addition, counterparties may claim that such transactions were not appropriate or authorized.

As a signatory to the International Swaps and Derivatives Association Universal Resolution Stay Protocol and the International Swaps and Derivatives Association 2018 U.S. Resolution Stay Protocol (the ISDA Protocols) and being subject to the Federal Reserve Board's and FDIC's rules on QFCs, we may not be able to exercise remedies against counterparties and, as this regime has not yet been tested, we may suffer risks or losses that we would not have expected to suffer if we could immediately close out transactions

upon a termination event. The ISDA Protocols and these rules and regulations extend to repurchase agreements and other instruments that are not derivative contracts.

Derivative contracts and other transactions entered into with third parties are not always confirmed by the counterparties or settled on a timely basis. While the transaction remains unconfirmed or during any delay in settlement, we are subject to heightened credit and operational risk and in the event of a default may find it more difficult to enforce our rights.

In addition, as new complex derivative products are created, covering a wider array of underlying credit and other instruments, disputes about the terms of the underlying contracts could arise, which could impair our ability to effectively manage our risk exposures from these products and subject us to increased costs. The provisions of the Dodd-Frank Act requiring central clearing of credit derivatives and other OTC derivatives, or a market shift toward standardized derivatives, could reduce the risk associated with these transactions, but under certain circumstances could also limit our ability to develop derivatives that best suit the needs of our clients and to hedge our own risks, and could adversely affect our profitability. In addition, these provisions have increased our credit exposure to central clearing platforms.

Many of our businesses, including our FCM business, are subject to risks arising from the foregoing factors. With respect to our FCM business in particular, these factors could result in substantial losses arising from credit risks, which in turn could cause reductions in our capital or limitations on our liquidity that could make it difficult for us to satisfy our obligations to clearinghouses on behalf of customers.

**Operational**

***A failure in our operational systems or human error, malfeasance or other misconduct, could impair our liquidity, disrupt our businesses, result in the disclosure of confidential information, damage our reputation and cause losses.***

Our businesses are highly dependent on our ability to process and monitor, on a daily basis, a very large number of transactions, many of which are highly complex and occur at high volumes and frequencies, across numerous and diverse markets in many currencies. These transactions, as well as the information technology services we provide to clients, often must adhere to client-specific guidelines, as well as legal and regulatory standards.

Many rules and regulations govern our obligations to execute transactions and report such transactions and other information to regulators, exchanges and investors. Compliance with these legal and reporting requirements can be challenging, and we, other Goldman Sachs entities and other financial institutions have been, and may in the future be, subject to regulatory fines and penalties for failing to follow these rules or to report timely, accurate and complete information in accordance with these rules. As reporting requirements expand, compliance with these rules and regulations has become more challenging.

As our client base expands and the volume, speed, frequency and complexity of transactions, especially electronic transactions (as well as the requirements to report such transactions on a real-time basis to clients, regulators and exchanges) increase, developing and maintaining our operational systems and infrastructure has become more challenging, and the risk of systems or human error in connection with such transactions has increased, as have the potential consequences of such errors due to the speed and volume of transactions involved and the potential difficulty associated with discovering errors quickly enough to limit the resulting consequences. These risks are exacerbated in times of increased volatility. As with other similarly situated institutions, Goldman Sachs utilizes credit underwriting models in connection with its businesses, including its consumer-oriented activities. Allegations or publicity, whether or not accurate, that our underwriting decisions do not treat consumers or clients fairly, or comply with the applicable law or regulation, can result in negative publicity, reputational damage and governmental and regulatory scrutiny, investigations and enforcement actions.

Our financial, accounting, data processing or other operational systems and facilities may fail to operate properly or become disabled as a result of events that are wholly or partially beyond our control, such as a spike in transaction volume, adversely affecting our ability to process these transactions or provide these services. We must continuously update these systems to support our operations and growth and to respond to changes in regulations and markets, and invest heavily in systemic controls and training to pursue our objective of ensuring that such transactions do not violate applicable rules and regulations or, due to errors in processing such transactions, adversely affect markets, our clients and counterparties or us. Enhancements and updates to systems, as well as the requisite training, including in connection with the integration of new businesses, entail significant costs and create risks associated with implementing new systems and integrating them with existing ones.

The use of computing devices and phones is critical to the work done by our employees and the operation of our systems and businesses and those of our clients and our third-party service providers and vendors. Their importance has continued to increase, in particular in light of work-from-home arrangements. Computers and computer networks are subject to various risks, including, among others, cyber attacks, inherent technological defects, system failures and human error. For example, fundamental security flaws in computer chips found in many types of these computing devices and phones have been reported in the past and may occur in the future. The use of personal devices by our employees or by our vendors for work-related activities also presents risks related to potential violations of record retention and other requirements. Cloud technologies are also critical to the operation of our systems and platforms and our reliance on cloud technologies is growing. Service disruptions have resulted, and may result in the future, in delays in accessing, or the loss of, data that is important to our businesses and may hinder our clients' access to our platforms. There have been a number of widely publicized cases of outages in connection with access to cloud computing providers. Addressing these and similar issues could be costly and affect the performance of these businesses and systems. Operational risks may be incurred in applying fixes and there may still be residual security risks.

Notwithstanding the proliferation of technology and technology-based risk and control systems, our businesses ultimately rely on people as our greatest resource, and, from time-to-time, they have in the past and may in the future make mistakes or engage in violations of applicable policies, laws, rules or procedures that are not always caught immediately by our technological processes or by our controls and other procedures which are intended to prevent and detect such errors or violations. These have in the past and may in the future include calculation errors, mistakes in addressing emails, errors in software or model development or implementation, or simple errors in judgment, as well as intentional efforts to ignore or circumvent applicable policies, laws, rules or procedures. Human errors, malfeasance and other misconduct, including the intentional misuse of client information in connection with insider trading or for other purposes, even if promptly discovered and remediated, has in the past resulted and may in the future result in reputational damage and losses and liabilities for Goldman Sachs.

The majority of the employees in our primary locations, including the New York metropolitan area, Salt Lake City and Dallas work in close proximity to one another. Our headquarters is located in the New York metropolitan area, and we have our largest employee concentration occupying two principal office buildings near the Hudson River waterfront. They are subject to potential catastrophic events, including, but not limited to, terrorist attacks, extreme weather, or other hostile events that could negatively affect our business. Notwithstanding our efforts to maintain business continuity, business disruptions impacting our offices and employees could lead to our employees' inability to occupy the offices, communicate with or travel to other office locations or work remotely. As a result, our ability to service and interact with clients may be adversely impacted, due to our failure or inability to successfully implement business contingency plans.

***A failure or disruption in our infrastructure, or in the operational systems or infrastructure of third parties, could impair our liquidity, disrupt our businesses, damage our reputation and cause losses.***

We face the risk of operational failure or significant operational delay, termination or capacity constraints of any of the clearing agents, exchanges, clearinghouses or other financial intermediaries we use to facilitate our securities and derivatives transactions, and as our interconnectivity with our clients grows, we increasingly face the risk of operational failure or significant operational delay with respect to our clients' systems. Operational, systems or communications failures could adversely affect our ability to satisfy our obligations to customers, clearinghouses and others in connection with our FCM business, prevent the effective segregation of customer assets or result in errors in the amount of customer assets being segregated, any of which could result in suspensions of business and losses to our FCM customers.

There has been significant consolidation among clearing agents, exchanges and clearinghouses and an increasing number of derivative transactions are cleared on exchanges, which has increased our exposure to operational failure or significant operational delay, termination or capacity constraints of the particular financial intermediaries that we use and could affect our ability to find adequate and cost-effective alternatives in the event of any such failure, delay, termination or constraint. Industry consolidation, whether among market participants or financial intermediaries, increases the risk of operational failure or significant operational delay as disparate complex systems need to be integrated, often on an accelerated basis.

The interconnectivity of multiple financial institutions with central agents, exchanges and clearinghouses, and the increased centrality of these entities, increases the risk that an operational failure at one institution or entity may cause an industry-wide operational failure that could materially impact our ability to conduct business. Interconnectivity of financial institutions with other companies through, among other things, application programming interfaces or APIs presents similar risks. Any such failure, termination or constraint could adversely affect our ability to effect transactions, service our clients, manage our exposure to risk or expand our businesses or result in financial loss or liability to our clients, impairment of our liquidity, disruption of our businesses, regulatory intervention or reputational damage.

Despite our resiliency plans and facilities, our ability to conduct business may be adversely impacted by a disruption in the infrastructure that supports our businesses and the communities where we are located. This may include a disruption involving electrical, satellite, undersea cable or other communications, internet, transportation or other facilities used by us, our employees or third parties with which we conduct business, including cloud service providers. These disruptions may occur as a result of events that affect only our buildings or systems or those of such third parties, or as a result of events with a broader impact globally, regionally or in the cities where those buildings or systems are located, including, but not limited to, natural disasters, war, civil unrest, terrorism, economic or political developments, pandemics and weather events.

In addition, although we seek to diversify our third-party vendors to increase our resiliency, we are exposed to risks if our vendors operate in the same area and are also exposed to the risk that a disruption or other information technology event at a common service provider to our vendors could impede their ability to provide products or services to us. We may not be able to effectively monitor or mitigate operational risks relating to our vendors' use of common service providers.

Additionally, although the prevalence and scope of applications of distributed ledger technology, cryptocurrency and similar technologies is growing, the technology is nascent and may be vulnerable to cyber attacks or have other inherent weaknesses. We are exposed to risks, and may become exposed to additional risks, related to distributed ledger technology, including through our facilitation of clients' activities involving financial products that use distributed ledger technology, such as blockchain, cryptocurrencies or other digital assets, our and our affiliates' investments in companies that seek to develop platforms based on distributed ledger technology, the use of distributed ledger technology by third-party vendors, clients, counterparties, clearinghouses and other financial intermediaries, and the receipt of cryptocurrencies or other digital assets as collateral. The market volatility that financial products using distributed ledger technology have recently experienced may increase these risks.

***A failure to protect our computer systems, networks and information, and our clients' information, against cyber attacks and similar threats could impair our ability to conduct our businesses, result in the disclosure, theft or destruction of confidential information, damage our reputation and cause losses.***

Our operations rely on the secure processing, storage and transmission of confidential and other information in our computer systems and networks and those of our vendors. There have been a number of highly publicized cases involving financial services companies, consumer-based companies, software and information technology service providers, governmental agencies and other organizations reporting the unauthorized access or disclosure of client, customer or other confidential information in recent years, as well as cyber attacks involving the dissemination, theft and destruction of corporate information or other assets, as a result of inadequate procedures or the failure to follow procedures by employees or contractors or as a result of actions by third parties, including actions by foreign governments. There have also been several highly publicized cases where hackers have requested "ransom" payments in exchange for not disclosing customer information or for restoring access to information or systems.

We are regularly the target of attempted cyber attacks, including denial-of-service attacks, and must continuously monitor and develop our systems to protect the integrity and functionality of our technology infrastructure and access to and the security of our data. Goldman Sachs has faced a high volume of cyber attacks as it expands its mobile- and other internet-based products and services, as well as its usage of mobile and cloud technologies and as it provides more of these services to a greater number of individual consumers. The migration of Goldman Sachs' communication from devices Goldman Sachs provides to employee-owned devices presents additional risks of cyber attacks, as do work-from-home arrangements. In addition, due to our interconnectivity with third-party vendors (and their respective service providers), central agents, exchanges, clearinghouses and other financial institutions, we could be adversely impacted if any of them is subject to a successful cyber attack or other information security event. These impacts could include the loss of access to information or services from the third party subject to the cyber attack or other information security event or could result in unauthorized access to or disclosure of client, customer or other confidential information, which could, in turn, interrupt certain of our businesses or adversely affect our results of operations and reputation.

Despite our efforts to ensure the integrity of our systems and information, we may not be able to anticipate, detect or implement effective preventive measures against all cyber threats, including because the techniques used are increasingly sophisticated, change frequently and are often not recognized until launched. Cyber attacks can originate from a variety of sources, including third parties who are affiliated with or sponsored by foreign governments or are involved with organized crime or terrorist organizations. Third parties may also attempt to place individuals in Goldman Sachs' offices or induce employees, clients or other users of our systems to disclose sensitive information or provide access to our data or that of our clients, and these types of risks may be difficult to detect or prevent.

Although we take protective measures proactively and endeavor to modify them as circumstances warrant, our computer systems, software and networks may be vulnerable to unauthorized access, misuse, computer viruses or other malicious code, cyber attacks on our vendors and other events that could have a security impact. Risks relating to cyber attacks on our vendors have been increasing given the greater frequency and severity in recent years of supply chain attacks affecting software and information technology service providers. Due to the complexity and interconnectedness of our systems, the process of enhancing our protective measures can itself create a risk of systems disruptions and security issues. In addition, protective measures that we employ to compartmentalize our data may reduce our visibility into, and adversely affect our ability to respond to, cyber threats and issues with our systems.

If one or more of these types of events occur, it potentially could jeopardize our, our clients', our counterparties' or third parties' confidential and other information processed, stored in, or transmitted through our computer systems and networks, or otherwise cause interruptions or malfunctions in our operations or those of our clients, counterparties or third parties, which could impact their ability to

transact with us or otherwise result in legal or regulatory action, significant losses or reputational damage. In addition, such an event could persist for an extended period of time before being properly detected or escalated, and, following detection or escalation, it could take considerable time for us to obtain full and reliable information about the extent, amount and type of information compromised. During the course of an investigation, we may not know the full impact of the event and how to remediate it, and actions, decisions and mistakes that are taken or made may further increase the negative effects of the event on our business, results of operations and reputation. Moreover, potential new regulations may require Group Inc. to disclose information about a material cybersecurity incident before it has been resolved or fully investigated.

We have expended, and expect to continue to expend, significant resources on an ongoing basis to modify our protective measures and to investigate and remediate vulnerabilities or other exposures, but these measures may be ineffective and we may be subject to legal or regulatory action as well as financial losses that are either not insured against or not fully covered through any insurance maintained by us.

Our clients' confidential information may also be at risk from the compromise of clients' personal electronic devices or as a result of a data security breach at an unrelated company. Losses due to unauthorized account activity could harm our reputation and may have adverse effects on our business, financial condition and results of operations.

The increased use of mobile and cloud technologies can heighten these and other operational risks, as can work-from-home arrangements. Certain aspects of the security of such technologies are unpredictable or beyond our control, and the failure by mobile technology and cloud service providers to adequately safeguard their systems and prevent cyber attacks could disrupt our operations and result in misappropriation, corruption or loss of confidential and other information. In addition, there is a risk that encryption and other protective measures, despite their sophistication, may be defeated, particularly to the extent that new computing technologies vastly increase the speed and computing power available.

We routinely transmit and receive personal, confidential and proprietary information by email and other electronic means. We have discussed and worked with clients, vendors, service providers, counterparties and other third parties to develop secure transmission capabilities and protect against cyber attacks, but we do not have, and may be unable to put in place, secure capabilities with all of our clients, vendors, service providers, counterparties and other third parties and we may not be able to ensure that these third parties have appropriate controls in place to protect the confidentiality of the information. An interception, misuse or mishandling of personal, confidential or proprietary information being sent to or received from a client, vendor, service provider, counterparty or other third party could result in legal liability, regulatory action and reputational harm.

With respect to our FCM business in particular, the foregoing circumstances or events could result in, among other things, our inability to transmit or receive essential communications, make or receive payments or transfer or obtain assets needed to settle transactions. Such circumstances or events could also result in the amounts of margin, settlement or other payments or transfers being erroneous, which could require us to return funds or assets, or recover funds or assets mistakenly paid or transferred. Any of these events could cause us to sustain losses, including on customer positions, which could result in losses to customers.

***We may incur losses as a result of ineffective risk management processes and strategies.***

We seek to monitor and control our risk exposure through a risk and control framework encompassing a variety of separate but complementary financial, credit, operational, compliance and legal reporting systems, internal controls, management review processes and other mechanisms. Our risk management process seeks to balance our ability to profit from market-making, investing or lending positions, and underwriting activities, with our exposure to potential losses. While we employ a broad and diversified set

of risk monitoring and risk mitigation techniques, those techniques and the judgments that accompany their application cannot anticipate every economic and financial outcome or the specifics and timing of such outcomes. Thus, in the course of our activities, we have incurred and may in the future incur losses. Market conditions in recent years have involved unprecedented dislocations and highlight the limitations inherent in using historical data to manage risk.

The models that we use to assess and control our risk exposures reflect assumptions about the degrees of correlation or lack thereof among prices of various asset classes or other market indicators. In times of market stress or other unforeseen circumstances, previously uncorrelated indicators may become correlated, or conversely previously correlated indicators may move in different directions. These types of market movements have at times limited the effectiveness of our hedging strategies and have caused us to incur significant losses, and they may do so in the future. These changes in correlation have been and may in the future be exacerbated where other market participants are using risk or trading models with assumptions or algorithms that are similar to ours. In these and other cases, it may be difficult to reduce our risk positions due to the activity of other market participants or widespread market dislocations, including circumstances where asset values are declining significantly or no market exists for certain assets.

In addition, the use of models in connection with risk management and numerous other critical activities presents risks that the models may be ineffective, either because of poor design, ineffective testing or improper or flawed inputs, as well as unpermitted access to the models resulting in unapproved or malicious changes to the model or its inputs.

To the extent that we have positions through our market-making activities or we make investments directly through our investing activities, including private equity, that do not have an established liquid trading market or are otherwise subject to restrictions on sale or hedging, we may not be able to reduce our positions and therefore reduce our risk associated with those positions.

Prudent risk management, as well as regulatory restrictions, may cause us to limit our exposure to counterparties, geographic areas or markets, which may limit our business opportunities and increase the cost of our funding or hedging activities.

With respect to our FCM business in particular, we utilize models and risk management tools to determine the amount of margin that we require from our customers, as well as our exposure to clearinghouses and other third parties. Any of the issues addressed above could impair our risk management capabilities and increase the risks to which we are exposed in connection with our FCM business, which could result in losses, potentially causing losses to our customers.

***In conducting our businesses, we are subject to potential employee misconduct.***

There have been a number of highly publicized cases around the world involving actual or alleged fraud or other misconduct by employees in the financial services industry and we have had, and may in the future have, employee misconduct. This misconduct has included and may also in the future include intentional efforts to ignore or circumvent applicable policies, rules or procedures or misappropriation of funds and the theft of proprietary information, including proprietary software. It is not always possible to deter or prevent employee misconduct and the precautions Goldman Sachs takes to prevent and detect this activity have not been and may not be effective in all cases.

**Legal and Regulatory**

***Our businesses and those of our clients are subject to extensive and pervasive regulation.***

As a participant in the financial services industry and a subsidiary of a systemically important financial institution, we are subject to extensive regulation. We face the risk of significant intervention by law

enforcement, regulatory and taxing authorities, as well as private litigation. In many cases, our activities have been and may continue to be subject to overlapping and divergent regulation. Among other things, as a result of law enforcement authorities, regulators or private parties challenging our compliance with existing laws and regulations, we or our employees have been, and could be, fined, criminally charged or sanctioned; prohibited from engaging in some of our business activities; subjected to limitations or conditions on our business activities, including higher capital requirements, or subjected to new or substantially higher taxes or other governmental charges in connection with the conduct of our businesses or with respect to our employees. These limitations or conditions may limit our business activities and negatively impact our profitability.

In addition to the impact on the scope and profitability of our business activities, day-to-day compliance with existing laws and regulations has involved and will continue to involve significant amounts of time, including that of our senior leaders and that of a large number of dedicated compliance and other reporting and operational personnel, all of which may negatively impact Goldman Sachs' profitability.

Goldman Sachs' revenues and profitability and those of its competitors have been and will continue to be impacted by requirements relating to capital, leverage, minimum liquidity and long-term funding levels, requirements related to resolution and recovery planning, derivatives clearing and margin rules and levels of regulatory oversight, as well as limitations on which and, if permitted, how certain business activities may be carried out by financial institutions. The laws and regulations that apply to Goldman Sachs' businesses are often complex and, in many cases, it must make interpretive decisions regarding the application of those laws and regulations to business activities. Changes in interpretations, whether in response to regulatory guidance, industry conventions, Goldman Sachs' own reassessments or otherwise, could adversely affect Goldman Sachs' businesses, results of operations or ability to satisfy applicable regulatory requirements, such as capital or liquidity requirements.

If there are new laws or regulations or changes in the interpretation or enforcement of existing laws or regulations applicable to our businesses or those of our clients, including capital, liquidity, leverage, long-term debt, total loss-absorbing capacity and margin requirements, reporting requirements, requirements relating to recovery and resolution planning, tax burdens and compensation restrictions, that are imposed on a limited subset of financial institutions (whether based on size, method of funding, activities, geography or other criteria), compliance with these new laws or regulations, or changes in the enforcement of existing laws or regulations, could adversely affect our ability to compete effectively with other institutions that are not affected in the same way. In addition, regulation imposed on financial institutions or market participants generally, such as taxes on stock transfers, share repurchases and other financial transactions, could adversely impact levels of market activity more broadly, and thus impact our businesses. Changes to laws or regulations, such as tax laws, could also have a disproportionate impact on Goldman Sachs, based on the way those laws or regulations are applied to financial services and financial firms or due to Goldman Sachs' corporate structure or where these services are provided.

U.S. and non-U.S. regulatory developments, in particular the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) and the Basel Committee on Banking Supervision's (Basel Committee) final capital framework for strengthening international capital standards (Basel III), have significantly altered the regulatory framework within which we operate and have adversely affected and may in the future adversely affect our profitability.

Among the aspects of the Dodd-Frank Act that have affected or may in the future affect our businesses are: increased capital, liquidity and reporting requirements; limitations on activities in which we may engage; increased regulation of and restrictions on OTC derivatives markets and transactions; limitations on incentive compensation; limitations on affiliate transactions; requirements to reorganize or limit activities in connection with recovery and resolution planning; and increased standards of care for broker-dealers and investment advisers in dealing with clients. The implementation of higher capital requirements, more stringent requirements relating to liquidity, long-term debt and total loss-absorbing capacity and the

prohibition on proprietary trading and the sponsorship of, or investment in, covered funds by the Volcker Rule may continue to adversely affect Goldman Sachs' profitability and competitive position, particularly if these requirements do not apply equally to Goldman Sachs' competitors or are not implemented uniformly across jurisdictions. Goldman Sachs may also become subject to higher and more stringent capital and other regulatory requirements as a result of the implementation of Basel Committee standards, including the credit and operational risk capital standards published in December 2017 and the market risk capital standard published in January 2019.

We are also subject to laws and regulations, such as the California Consumer Privacy Act, relating to the privacy of the information of clients, employees or others, and any failure to comply with these laws and regulations could expose us to liability and/or reputational damage. As new privacy-related laws and regulations are implemented, the time and resources needed for us to comply with such laws and regulations, as well as our potential liability for non-compliance and reporting obligations in the case of data breaches, may significantly increase.

In addition, Goldman Sachs' businesses are increasingly subject to laws and regulations relating to surveillance, encryption and data on-shoring in the jurisdictions in which it operates. Compliance with these laws and regulations may require Goldman Sachs to change its policies, procedures and technology for information security, which could, among other things, make us more vulnerable to cyber attacks and misappropriation, corruption or loss of information or technology.

Increasingly, regulators and courts have sought to hold financial institutions liable for the misconduct of their clients where they have determined that the financial institution should have detected that the client was engaged in wrongdoing, even though the financial institution had no direct knowledge of the activities engaged in by its client. Regulators and courts have also increasingly found liability as a "control person" for activities of entities in which financial institutions or funds controlled by financial institutions have an investment, but which they do not actively manage. In addition, regulators and courts continue to seek to establish "fiduciary" obligations to counterparties to which no such duty had been assumed to exist. To the extent that such efforts are successful, the cost of, and liabilities associated with, engaging in brokerage, clearing, market-making, prime brokerage, investing and other similar activities could increase significantly. To the extent that we have fiduciary obligations in connection with acting as a financial adviser or investment adviser or in other roles for individual, institutional, sovereign or investment fund clients, any breach, or even an alleged breach, of such obligations could have materially negative legal, regulatory and reputational consequences.

While business and other practices throughout the world differ, we are subject to rules and regulations relating to corrupt and illegal payments, hiring practices and money laundering, as well as laws relating to doing business with certain individuals, groups and countries, such as the U.S. Foreign Corrupt Practices Act and the USA PATRIOT Act. While we have invested and continue to invest significant resources in training and in compliance monitoring, the geographical diversity of our employees, clients and customers, as well as the vendors and other third parties that we deal with, greatly increases the risk that we may be found in violation of such rules or regulations and any such violation could subject us to significant penalties or adversely affect our reputation.

***A failure to appropriately identify and address potential conflicts of interest could adversely affect our businesses.***

Due to the broad scope of our businesses and our client base, we regularly address potential conflicts of interest, including situations where Goldman Sachs' services to a particular client or Goldman Sachs' investments or other interests conflict, or are perceived to conflict, with the interests of that client or another client, as well as situations where one or more of Goldman Sachs' businesses have access to material non-public information that may not be shared with other businesses within Goldman Sachs and situations where Goldman Sachs may be a creditor of an entity with which we also have an advisory or

other relationship. With respect to our FCM business, a variety of other conflicts could arise, including conflicts between the interests of customers and other interests Goldman Sachs may have, the interests of Goldman Sachs' other customers and interests that could arise from firm activity by, or other business activities of, GS&Co. or its affiliates.

In addition, our status as a subsidiary of a bank holding company subjects us to heightened regulation and increased regulatory scrutiny by the Federal Reserve Board with respect to our transactions with Goldman Sachs Bank USA (GS Bank USA) and, under the Volcker Rule, our transactions with covered funds. Furthermore, with respect to our FCM business, potential conflicts of interest could further impact the regulatory scrutiny to which we are subject, including conflicts of interest arising from GS&Co. acting as an FCM for affiliates, firm activities by GS&Co., and other business lines within GS&Co. that require allocation of resources.

We have extensive procedures and controls that are designed to identify and address conflicts of interest, including those designed to prevent the improper sharing of information among our businesses. However, appropriately identifying and dealing with conflicts of interest is complex and difficult, and our reputation, which is one of our most important assets, could be damaged and the willingness of clients to enter into transactions with us may be adversely affected if we fail, or appear to fail, to identify, disclose and deal appropriately with conflicts of interest. In addition, potential or perceived conflicts could give rise to litigation or regulatory enforcement actions. Additionally, the *One Goldman Sachs* initiative aims to increase collaboration among Goldman Sachs' businesses, which may increase the potential for actual or perceived conflicts of interest and improper information sharing. The realignment of Goldman Sachs' businesses, reflected in its new segments beginning with the fourth quarter of 2022, presents similar risks.

***We may be adversely affected by increased governmental and regulatory scrutiny or negative publicity.***

Governmental scrutiny from regulators, legislative bodies and law enforcement agencies with respect to matters relating to compensation, our business practices, our past actions and other matters remains at high levels. Political and public sentiment regarding financial institutions has in the past resulted and may in the future result in a significant amount of adverse press coverage, as well as adverse statements or charges by regulators or other government officials. Press coverage and other public statements that assert some form of wrongdoing (including, in some cases, press coverage and public statements that do not directly involve Goldman Sachs) often result in some type of investigation by regulators, legislators and law enforcement officials or in lawsuits.

Responding to these investigations and lawsuits, regardless of the ultimate outcome of the proceeding, is time-consuming and expensive and can divert the time and effort of our senior management from our business. Penalties and fines sought by regulatory authorities have increased substantially and certain regulators have been more likely in recent years to commence enforcement actions or to support legislation targeted at the financial services industry. Governmental authorities may also be more likely to pursue criminal or other actions, including seeking admissions of wrongdoing or guilty pleas, in connection with the resolution of an inquiry or investigation to the extent a company is viewed as having previously engaged in criminal, regulatory or other misconduct. Adverse publicity, governmental scrutiny and legal and enforcement proceedings can also have a negative impact on our reputation and on the morale and performance of our employees, which could adversely affect our businesses and results of operations. Further, Goldman Sachs is subject to regulatory settlements, orders and feedback that require significant remediation activities, which require it to commit significant resources, including hiring, as well as testing the operation and effectiveness of new controls, policies and procedures.

The financial services industry generally and Goldman Sachs' businesses in particular have been subject to negative publicity. Goldman Sachs' reputation and businesses may be adversely affected by negative publicity or information regarding its businesses and personnel, whether or not accurate or true, that may be posted on social media or other internet forums or published by news organizations. Postings on these

types of forums may also adversely impact risk positions of our clients and other parties that owe us money, securities or other assets and increase the chance that they will not perform their obligations to us or reduce the revenues we receive from their use of our services. The speed and pervasiveness with which information can be disseminated through these channels, in particular social media, may magnify risks relating to negative publicity.

***Substantial civil or criminal liability or significant regulatory action against us could have material adverse financial effects or cause us significant reputational harm, which in turn could seriously harm our business prospects.***

We face significant legal risks in our businesses, and the volume of claims and amount of damages and penalties claimed in litigation and regulatory proceedings against financial institutions remain high. We have seen legal claims by consumers and clients increase in a market downturn and employment-related claims increase following periods in which we have reduced our headcount. Additionally, governmental entities have been plaintiffs and are parties in certain of our legal proceedings, and we may face future civil or criminal actions or claims by the same or other governmental entities, as well as follow-on civil litigation that is often commenced after regulatory settlements.

Significant settlements by several large financial institutions, including, in some cases, us, with governmental entities have been publicly announced. The trend of large settlements with governmental entities may adversely affect the outcomes for other financial institutions, including, in some cases, us, in similar actions, especially where governmental officials have announced that the large settlements will be used as the basis or a template for other settlements. The uncertain regulatory enforcement environment makes it difficult to estimate probable losses, which can lead to substantial disparities between legal reserves and subsequent actual settlements or penalties.

Claims of collusion or anti-competitive conduct have become more common. Financial institutions (including Goldman Sachs) have been subject to civil cases and investigatory demands relating to alleged bid rigging, group boycotts or other anti-competitive practices. Antitrust laws generally provide for joint and several liability and treble damages. These claims have resulted in significant settlements and fines in the past and may do so in the future.

Certain law enforcement authorities have recently required admissions of wrongdoing, and, in some cases, criminal pleas, as part of the resolutions of matters brought against financial institutions or their employees. Any such resolution of a criminal matter involving Goldman Sachs or its employees could lead to increased exposure to civil litigation, could adversely affect our reputation, could result in penalties or limitations on our ability to conduct our activities generally or in certain circumstances and could have other negative effects.

**Competition**

***Our results have been and may in the future be adversely affected by the composition of our client base.***

Our client base is not the same as that of our major competitors. Our businesses may have a higher or lower percentage of clients in certain industries or markets than some or all of our competitors. Therefore, unfavorable industry developments or market conditions affecting certain industries or markets have resulted in the past and may result in the future in our businesses underperforming relative to similar businesses of a competitor if our businesses have a higher concentration of clients in such industries or markets. For example, our market-making businesses have a higher percentage of clients with actively managed assets than some of our competitors and such clients have in the past been and may in the future be disproportionately affected by low volatility.

Correspondingly, favorable or simply less adverse developments or market conditions involving industries or markets in a business where we have a lower concentration of clients in such industry or market have also resulted in the past and may result in the future in our underperforming relative to a similar business of a competitor that has a higher concentration of clients in such industry or market. For example, we have a smaller corporate client base in our market-making businesses than some of our peers and therefore those competitors may benefit more from increased activity by corporate clients. Similarly, we have not historically engaged in retail equities intermediation to the same extent as other financial institutions, which has in the past affected and could in the future adversely affect our market share in equities execution.

***The financial services industry is highly competitive.***

The financial services industry and all of our businesses are intensely competitive, and we expect them to remain so. We compete on the basis of a number of factors, including transaction execution, our products and services, innovation, reputation, creditworthiness and price. There has been substantial consolidation and convergence among companies in the financial services industry. This has hastened the globalization of the securities and other financial services markets.

Governments and regulators have adopted regulations, imposed taxes, adopted compensation restrictions or otherwise put forward various proposals that have impacted or may impact our ability to conduct certain of our businesses in a cost-effective manner or at all in certain or all jurisdictions, including proposals relating to restrictions on the type of activities in which financial institutions are permitted to engage. These or other similar rules could impact our ability to compete effectively.

Pricing and other competitive pressures in our businesses have continued to increase, particularly in situations where some of our competitors may seek to increase market share by reducing prices. For example, in connection with investment banking and other assignments, in response to competitive pressure we have experienced, we have extended and priced credit at levels that in some cases have not fully compensated us for the risks we undertook.

The financial services industry is highly interrelated in that a significant volume of transactions occur among a limited number of members of that industry. Many of Goldman Sachs' transactions are syndicated to other financial institutions and financial institutions are often counterparties in transactions. This has led to claims by other market participants and regulators that such institutions have colluded in order to manipulate markets or market prices, including allegations that antitrust laws have been violated. While Goldman Sachs has extensive procedures and controls that are designed to identify and prevent such activities, they may not be effective. Allegations of such activities, particularly by regulators, can have a negative reputational impact and can subject us to large fines and settlements, and potentially significant penalties, including treble damages.

***The growth of electronic trading and the introduction of new products and technologies, including trading and distributed ledger technologies, including cryptocurrencies, has increased competition.***

Technology is fundamental to our business and our industry. The growth of electronic trading and the introduction of new technologies is changing our businesses and presenting us with new challenges. Securities, futures and options transactions are increasingly occurring electronically, both on our own systems and through other alternative trading systems, and it appears that the trend toward alternative trading systems will continue. Some of these alternative trading systems compete with us, and we may experience continued competitive pressures in these and other areas. In addition, the increased use by our clients of low-cost electronic trading systems and direct electronic access to trading markets could cause a reduction in commissions and spreads. As our clients increasingly use our systems to trade directly in the markets, we may incur liabilities as a result of their use of our order routing and execution infrastructure.

We have invested significant resources into the development of electronic trading systems and expect to continue to do so, but there is no assurance that the revenues generated by these systems will yield an adequate return, particularly given the generally lower commissions arising from electronic trades.

In addition, the emergence, adoption and evolution of new technologies, including distributed ledgers, such as digital assets and blockchain, have required Goldman Sachs to invest resources to adapt its existing products and services, and it expects to continue to make such investments, which could be material. The adoption and evolution of such new technologies may also increase Goldman Sachs' compliance and regulatory costs. Further, technologies, such as those based on distributed ledgers, that do not require intermediation could also significantly disrupt payments processing and other financial services. Regulatory limitations on Goldman Sachs' involvement in products and platforms involving digital assets and distributed ledger technologies may not apply equally or in some cases at all to certain of its competitors. Goldman Sachs may not be as timely or successful in developing or integrating, or even able to develop or integrate, new products and technologies, such as those built on distributed ledgers, into its existing products and services, adapting to changes in consumer preferences or achieving market acceptance of its products and services, any of which could affect its ability to attract or retain clients, causing it to lose market share or result in service disruptions and in turn reduce revenues or otherwise adversely affect it.

***Our businesses would be adversely affected if we are unable to hire and retain qualified employees.***

Our performance is largely dependent on the talents and efforts of highly skilled people; therefore, our continued ability to compete effectively in our businesses, to manage our businesses effectively and to expand into new businesses depends on our ability to attract new talented and diverse employees and to retain and motivate our existing employees. Factors that affect our ability to attract and retain such employees include the level and composition of our compensation and benefits, and our reputation as a successful business with a culture of fairly hiring, training and promoting qualified employees. As a significant portion of the compensation that we pay to our employees is in the form of year-end discretionary compensation, a significant portion of which is in the form of deferred equity-related awards, declines in Goldman Sachs' profitability, or in the outlook for its future profitability, as well as regulatory limitations on compensation levels and terms, can negatively impact our ability to hire and retain highly qualified employees.

Competition from within the financial services industry and from businesses outside the financial services industry, including the technology industry, for qualified employees has often been intense. We have experienced increased competition in hiring and retaining employees to address the demands of new regulatory requirements and our technology initiatives.

Laws or regulations in jurisdictions in which our operations are located that affect taxes on our employees' income, or the amount or composition of compensation, or that require us to disclose our or our competitors' compensation practices, may also adversely affect our ability to hire and retain qualified employees in those jurisdictions.

Because we are a subsidiary of a bank holding company, our compensation practices are subject to review by, and the standards of, the Federal Reserve Board. As a subsidiary of a large global financial and banking institution, we are subject to limitations on compensation practices (which may or may not affect our competitors) by the Federal Reserve Board and the Federal Deposit Insurance Corporation. These limitations, including any imposed by or as a result of future legislation or regulation, may require us to alter our compensation practices in ways that could adversely affect our ability to attract and retain talented employees.

## Market Developments and General Business Environment

***Goldman Sachs' businesses, financial condition, liquidity and results of operations have been, and may in the future be, adversely affected by unforeseen or catastrophic events, including pandemics, terrorist attacks, extreme weather events or other natural disasters.***

The occurrence of unforeseen or catastrophic events, including pandemics, such as COVID-19, or other widespread health emergencies (or concerns over the possibility of such an emergency), terrorist attacks, extreme weather events, solar events or other natural disasters, could adversely affect our business, financial condition, liquidity and results of operations. These events could have such effects through economic or financial market disruptions or challenging economic or market conditions more generally, the deterioration of our creditworthiness or that of our counterparties, changes in consumer sentiment and consumer borrowing, spending and savings patterns, liquidity stress, or operational difficulties (such as travel limitations and limitations on occupancy in our offices) that impair our ability to manage our businesses.

The COVID-19 pandemic created economic and financial disruptions that have in the past adversely affected, and may in the future adversely affect, Goldman Sachs' business, financial condition, liquidity and results of operations. The extent to which the COVID-19 pandemic will negatively affect Goldman Sachs' businesses, financial condition, liquidity and results of operations will depend on, among other things, future developments, including any resurgence of COVID-19 cases, the emergence of new variants of COVID-19 and the effectiveness of vaccines and treatment over the long term and against new variants, which are highly uncertain and cannot be predicted.

***Climate change could disrupt our businesses and adversely affect client activity levels and the creditworthiness of our clients and counterparties, and our efforts to address concerns relating to climate change could result in damage to our reputation.***

Climate change may cause extreme weather events that disrupt operations at one or more of our primary locations, which may negatively affect our ability to service and interact with our clients. Climate change and the transition to a less carbon-dependent economy may also have a negative impact on the operations or financial condition of our clients and counterparties, which may decrease revenues from those clients and counterparties and increase the credit risk associated with credit exposures to those clients and counterparties. In addition, climate change may impact the broader economy.

We are also exposed to risks resulting from changes in public policy, laws and regulations, or market and public perceptions and preferences in connection with the transition to a less carbon-dependent economy. These changes could adversely affect our business, results of operations and reputation. For example, our reputation and client relationships may be damaged as a result of our or our clients' involvement in, or decision not to participate in, certain industries or projects associated with causing or exacerbating climate change, as well as any decisions we make to continue to conduct or change our activities in response to considerations relating to climate change. If we are unable to achieve our objectives relating to climate change or our response to climate change is perceived to be ineffective, insufficient or otherwise inappropriate, our business, reputation and efforts to recruit and retain employees may suffer.

New regulations or guidance relating to climate change, as well as the perspectives of government officials, regulators, shareholders, employees and other stakeholders regarding climate change, may affect whether and on what terms and conditions Goldman Sachs engages in certain activities or offers certain products. Federal and state, and non-U.S. banking regulators and supervisory authorities, shareholders and other stakeholders have increasingly viewed financial institutions as playing an important role in helping to address risks related to climate change, both directly and with respect to their clients, which may result in financial institutions coming under increased requirements and expectations regarding the disclosure

and management of their climate risks and related lending, investment and advisory activities. The Federal Reserve Board has announced that Goldman Sachs is among the six U.S. financial institutions participating in a pilot climate scenario analysis exercise in 2023, and Goldman Sachs is also subject to new or heightened regulatory requirements relating to climate change, such as requirements relating to operational resiliency or stress testing for various climate stress scenarios. Any such new or heightened requirements could result in increased regulatory, compliance or other costs or higher capital requirements. The risks associated with, and the perspective of regulators, shareholders, employees and other stakeholders regarding, climate change are continuing to evolve rapidly, which can make it difficult to assess the ultimate impact on us of climate change-related risks and uncertainties, and we expect that climate change-related risks will increase over time.

***Our business, financial condition, liquidity and results of operations may be adversely affected by disruptions in the global economy caused by Russia's invasion of Ukraine and related sanctions and other developments.***

The war between Russia and Ukraine has negatively affected the global economy. Governments around the world have responded to Russia's invasion by imposing economic sanctions and export controls on certain industry sectors, including price caps on Russian oil, and parties in Russia. Compliance with economic sanctions and restrictions imposed by governments has increased our costs and otherwise adversely affected our business and may continue to do so. Russia has responded with its own restrictions against investors and countries outside Russia and has proposed additional measures aimed at non-Russia owned businesses. Businesses in the U.S. and globally have experienced shortages in materials and increased costs for transportation, energy, and raw materials due in part to the negative effects of the war on the global economy. The escalation or continuation of the war between Russia and Ukraine or other hostilities could result in, among other things, further increased risk of cyber attacks, an increased frequency and volume of failures to settle securities transactions, supply chain disruptions, higher inflation, lower consumer demand and increased volatility in commodity, currency and other financial markets.

The extent and duration of the war, sanctions and resulting market disruptions are impossible to predict, and the consequences for our business could be significant.

***Certain of our businesses, our funding instruments and financial products may be adversely affected by changes in or the discontinuance of Interbank Offered Rates (IBORs), in particular USD LIBOR.***

On January 1, 2022, the publication of all EUR, CHF, JPY, and GBP LIBOR (non-USD LIBOR) settings along with certain USD LIBOR settings ceased. The publication of the most commonly used USD LIBOR settings as representative rates will cease after June 2023. The FCA proposed that certain of those USD LIBOR settings continue to be published on a synthetic basis through September 2024. The FCA has allowed the publication and use of synthetic rates for certain GBP LIBOR settings in legacy GBP LIBOR-based derivative contracts through March 2024. The International Swaps and Derivatives Association (ISDA) 2020 IBOR Fallbacks Protocol (IBOR Protocol) has provided derivatives market participants with amended fallbacks for legacy and new derivative contracts to mitigate legal or economic uncertainty. Both counterparties have to adhere to the IBOR Protocol or engage in bilateral amendments for the terms to be effective for derivative contracts. ISDA has confirmed that the FCA's formal announcement to cease both non-USD and USD LIBOR settings fixed the spread adjustment for all LIBOR rates and as a result fallbacks applied automatically for non-USD LIBOR settings following December 31, 2021 and will apply automatically for USD LIBOR settings following June 30, 2023. The Adjustable Interest Rate (LIBOR) Act (LIBOR Act), that was enacted in March 2022, provides a statutory framework to replace USD LIBOR with a benchmark rate based on the Secured Overnight Financing Rate (SOFR) for contracts governed by U.S. law that have no fallbacks or fallbacks that would require the use of a poll or LIBOR-based rate. In December 2022, the Federal Reserve Board adopted a final rule that implements the LIBOR Act, which became effective on February 27, 2023. The final rule identifies different SOFR-based

replacement rates for derivative contracts, for cash instruments such as floating-rate notes and preferred stock, for consumer contracts, for certain government-sponsored enterprise contracts and for certain student loan securitizations that lack a fallback to an alternative rate when USD LIBOR ceases to be published on June 30, 2023. As the transition from LIBOR is ongoing, there continues to be uncertainty as to the ultimate effect of the transition on the financial markets for LIBOR-linked financial instruments. Similar developments have occurred with respect to other IBORs.

The language in Goldman Sachs' contracts and financial instruments that define IBORs, in particular LIBOR, have developed over time and have various events that trigger when a successor rate to the designated rate would be selected. Once a trigger is satisfied, contracts and financial instruments often give the calculation agent (which may be us) discretion over the successor rate or benchmark to be selected. Although the LIBOR Act includes safe harbors if the SOFR-based replacement rate identified by the Federal Reserve Board is selected, these safe harbors are untested. As a result, and despite the enactment of the LIBOR Act, for the most commonly used USD LIBOR settings, the selection of a successor rate could result in client disputes and litigation surrounding the proper interpretation of our IBOR-based contracts and financial instruments. Discretionary actions taken in connection with the implementation of fallback provisions could also result in client disputes and litigation particularly for derivatives and other synthetic instruments. Changes in, the discontinuation of, or changes in market acceptance of any IBOR, particularly USD LIBOR, as a reference rate may adversely affect certain of our businesses, our funding instruments and financial products.

***Certain of our businesses and our funding instruments may be adversely affected by changes in other reference rates, currencies, indexes, baskets or exchange-traded funds (ETFs) to which products we offer or funding that we raise are linked.***

Many of the products that we own or that we offer, such as structured notes, warrants, swaps or security-based swaps, pay interest or determine the principal amount to be paid at maturity or in the event of default by reference to rates or by reference to an index, currency, basket, ETF or other financial metric (the underlier). In the event that the composition of the underlier is significantly changed, by reference to rules governing such underlier or otherwise, the underlier ceases to exist (for example, in the event that a country withdraws from the Euro or links its currency to or delinks its currency from another currency or benchmark, an index or ETF sponsor materially alters the composition of an index or ETF, or stocks in a basket are delisted or become impermissible to be included in the index or ETF), the underlier ceases to be recognized as an acceptable market benchmark or there are legal or regulatory constraints on linking a financial instrument to the underlier, we may experience adverse effects.

***Our business, financial condition, liquidity and results of operations may be adversely affected by disruptions in the global economy caused by escalating tensions between the U.S. and China.***

Continued or escalating tensions between the U.S. and China have resulted in and may result in additional changes to U.S. international trade and investment policies, which could disrupt international trade and investment, adversely affect financial markets, including market activity levels, and adversely impact our revenues. Continued or escalating tensions may also lead to the U.S., China or other countries taking other actions, which could include the implementation of sanctions, tariffs or foreign exchange measures, the large-scale sale of U.S. Treasury securities or restrictions on cross-border trade, investment or transfer of information or technology. Any such developments could adversely affect our or our clients' businesses, as well as our financial condition, liquidity and results of operations, possibly materially.

A conflict, or concerns about a potential conflict, involving China and Taiwan, the U.S. or other countries could negatively impact financial markets and our or our clients' businesses. Trade restrictions by the U.S. or other countries in response to a conflict or potential conflict involving China, including financial and economic sanctions and export controls against certain organizations or individuals, or actions taken by

China in response to trade restrictions, could negatively impact our or our clients' ability to conduct business in certain countries or with certain counterparties and could negatively impact regional and global financial markets and economic conditions. Any of the foregoing could adversely affect our business, financial condition, liquidity and results of operations, possibly materially.

***We face enhanced risks as new business initiatives and acquisitions lead us and our affiliates to engage in new activities, operate in new locations, transact with a broader array of clients and counterparties and expose us and our affiliates to new asset classes and new markets.***

A number of Goldman Sachs' recent and planned business initiatives and expansions of existing businesses, including through acquisitions and partnership arrangements could continue to bring us into contact, directly or indirectly, with individuals and entities that are not within our traditional client and counterparty base, expose us to new asset classes and new markets, and present us with integration challenges. For example, Goldman Sachs continues to transact business and invest in new regions, including a wide range of emerging and growth markets, and we expect this trend to continue. Various emerging and growth market countries have experienced severe economic and financial disruptions, including significant devaluations of their currencies, defaults or threatened defaults on sovereign debt, capital and currency exchange controls, and low or negative growth rates in their economies. The possible effects of any of these conditions include an adverse impact on our businesses and increased volatility in financial markets generally.

Furthermore, in a number of Goldman Sachs' businesses, including where we and our affiliates make markets, invest and lend, we and our affiliates own interests in, or otherwise become affiliated with the ownership and operation of public services, such as airports, toll roads and shipping ports, as well as physical commodities and commodities infrastructure components, both within and outside the U.S.

Goldman Sachs has increased its consumer-oriented deposit-taking and lending activities. To the extent Goldman Sachs engages in those and other consumer-oriented activities, it has faced, and would continue to face, additional compliance, legal and regulatory risk, increased reputational risk and increased operational risk due to, among other things, higher transaction volumes and significantly increased retention and transmission of consumer and client information. Acquisitions and new products can also expose Goldman Sachs to new or different types of risks. Goldman Sachs is also subject to additional legal requirements, including with respect to suitability and consumer protection (for example, Regulation Best Interest, fair lending laws and regulations and privacy laws and regulations). Further, identity fraud may increase and credit reporting practices may change in a manner that makes it more difficult for financial institutions, such as Goldman Sachs, to evaluate the creditworthiness of consumers.

Goldman Sachs has increased and intends to further increase its transaction banking activities. As a result, it expects to face additional compliance, legal and regulatory risk, including with respect to know-your-customer, anti-money laundering and reporting requirements and prohibitions on transfers of property belonging to countries, entities and individuals subject to sanctions by U.S. or other governmental authorities.

New business initiatives expose us to new and enhanced risks, including risks associated with dealing with governmental entities, reputational concerns arising from dealing with different types of clients, business partners, counterparties and investors, greater regulatory scrutiny of these activities, increased credit-related, market, sovereign and operational risks, risks arising from accidents or acts of terrorism, and reputational concerns with the manner in which certain assets are being operated or held or in which we interact with these clients, business partners, counterparties and investors. Legal, regulatory and reputational risks may also exist in connection with activities and transactions involving new products or markets where there is regulatory uncertainty or where there are different or conflicting regulations depending on the regulator involved.

Goldman Sachs has developed and pursued new business and strategic initiatives, including acquisitions, and expects to continue to do so. If and to the extent Goldman Sachs is unable to successfully execute those initiatives, it may incur unanticipated costs and losses, and face other adverse consequences, such as negative reputational effects. In addition, the actual effects of pursuing those initiatives may differ, possibly materially, from the benefits that Goldman Sachs expects to realize from them, such as generating additional revenues, achieving expense savings, reducing operational risk exposures or using capital and funding more efficiently. Engaging in new activities exposes Goldman Sachs to a variety of risks, including that it may be unable to successfully develop new, competitive, efficient and effective systems and processes, and hire and retain the necessary personnel. Due to Goldman Sachs' lack of historical experience with unsecured consumer lending, its loan loss assumptions may prove to be incorrect and it may incur losses significantly above those which it originally anticipated in entering the business or in expanding the product offerings for the business.

In recent years, Goldman Sachs has invested, and may continue to invest, more in businesses that it expects will generate a higher level of more consistent revenues. In order to develop and be able to offer consumer financial products that compete effectively, Goldman Sachs has made and may continue to make significant investments in technology and human capital resources in connection with its consumer-oriented activities. Such investments and acquisitions may not be successful or have returns similar to its other businesses.

***Goldman Sachs may not be able to fully realize the expected benefits or synergies from acquisitions or other business initiatives in the time frames it expects, or at all.***

Goldman Sachs has engaged in selective acquisitions and may continue to do so in the future and these acquisitions may, individually or in the aggregate, be material. Any future acquisitions could involve the issuance of common stock and/or the payment of cash as consideration. The success of Goldman Sachs' acquisitions will depend, in part, on its ability to integrate the acquired businesses and realize anticipated synergies, cost savings and growth opportunities. Goldman Sachs may face numerous risks and uncertainties in combining and integrating the relevant businesses and systems, including the need to combine or separate accounting and data processing systems and management controls and to integrate relationships with clients, counterparties, regulators and others in connection with acquisitions. Integration of acquired businesses is time-consuming and could disrupt Goldman Sachs' ongoing businesses, produce unforeseen regulatory or operating difficulties, cause it to incur incremental expenses or require incremental financial, management and other resources. It is also possible that an acquisition, once announced, may not close due to the failure to satisfy applicable closing conditions, such as the receipt of necessary shareholder or regulatory approvals.

There is no assurance that any of Goldman Sachs' acquisitions will be successfully integrated or yield all of the expected benefits and synergies in the time frames that it expects, or at all. If Goldman Sachs is not able to integrate its acquisitions successfully, its results of operations, financial condition and cash flows could be adversely affected.

There is no assurance that the reorganization of Goldman Sachs' business segments will yield all of the expected benefits in the time frames that we expect, or at all.

**Material Complaints or Actions**

*(7) Any material administrative, civil, enforcement or criminal complaints or actions filed against FCM where such complaints or actions have not concluded, and any enforcement complaints or actions filed against FCM during the last three years.*

In this section, when we use the terms "we," "us" and "our," we mean Goldman Sachs & Co. LLC (GS&Co.) and its consolidated subsidiaries, and when we use the term "Goldman Sachs" we mean The Goldman Sachs Group, Inc. (Group Inc.) together with its consolidated subsidiaries, including GS&Co. GS&Co. is a registered U.S. broker-dealer, futures commission merchant (FCM) and swap dealer and is a wholly owned subsidiary of Group Inc., except for de minimis non-voting, non-participating interests held by unaffiliated broker-dealers.

GS&Co. is or has been involved in a number of judicial, regulatory and arbitration proceedings concerning matters arising in connection with the conduct of its businesses. In addition, GS&Co. and certain of its affiliates are subject to a number of investigations and reviews by, and in some cases have received subpoenas and requests for documents and information from, various governmental and regulatory bodies and self-regulatory organizations relating to various matters relating to their businesses. Pursuant to 17 CFR 1.55(k)(7), the following disclosure is intended to provide information that may be material to an FCM customer regarding administrative, civil, enforcement or criminal actions filed against GS&Co. that have not concluded, and enforcement complaints or actions filed against GS&Co. during the last three years, and is not a comprehensive list of all proceedings to which GS&Co. is or has been a party. Additional information on regulatory, civil and arbitration proceedings involving Goldman Sachs, including the proceedings described below, proceedings involving GS&Co. that are not required to be disclosed under 17 CFR 1.55(k)(7) and proceedings involving other Goldman Sachs entities, is available through FINRA's BrokerCheck (which can be accessed electronically at www.finra.org), the National Futures Association's Background Affiliation Status Information Center (which can be accessed electronically at www.nfa.futures.org/basicnet) and under the caption "Legal Proceedings" in the notes to the financial statements included in Group Inc.'s Annual and Quarterly Reports on Forms 10-K and 10-Q filed with the SEC (which are also available through the investor relations section of Goldman Sachs' website at www.gs.com).

**Currencies-Related Litigation**

GS&Co. is among the defendants named in a putative class action filed in the U.S. District Court for the Southern District of New York on August 4, 2021. The amended complaint, filed on January 6, 2022, generally asserts claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to manipulate auctions for foreign exchange transactions on an electronic trading platform, as well as claims under the Racketeer Influenced and Corrupt Organizations Act. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of treble and other damages. On May 18, 2023, the court dismissed certain state common law claims, but denied dismissal of the remaining claims. On July 7, 2023, the plaintiffs filed a second amended complaint.

**Archegos-Related Matter**

GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 13, 2021 in New York Supreme Court, County of New York, relating to ViacomCBS Inc.'s (ViacomCBS) March 2021 public offerings of $1.7 billion of common stock and $1.0 billion of preferred stock. In addition to the underwriters, the defendants include ViacomCBS and certain of its officers and directors. GS&Co. underwrote 646,154 shares of common stock representing an aggregate offering price of approximately $55 million and 323,077 shares of preferred stock representing an aggregate offering

price of approximately $32 million. The complaint asserts claims under the federal securities laws and alleges that the offering documents contained material misstatements and omissions, including, among other things, that the offering documents failed to disclose that Archegos Capital Management, LP (Archegos) had substantial exposure to ViacomCBS, including through total return swaps to which certain of the underwriters, including GS&Co., were allegedly counterparties, and that such underwriters failed to disclose their exposure to Archegos. On December 21, 2021, the plaintiffs filed a corrected amended complaint. The complaint seeks rescission and compensatory damages in unspecified amounts. On February 6, 2023, the court dismissed the claims against ViacomCBS and the individual defendants, but denied the defendants' motions to dismiss with respect to GS&Co. and the other underwriter defendants. On February 15, 2023, the underwriter defendants appealed the court's denial of the motion to dismiss. On March 10, 2023, the plaintiffs appealed the court's dismissal of the claims against ViacomCBS and the individual defendants. On June 12, 2023, the court denied the underwriter defendants' motion to stay the proceedings pending their appeal of the court's denial of the motion to dismiss, and on June 27, 2023, the underwriter defendants appealed.

**Silicon Valley Bank Matters**

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

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

**Underwriting Litigation**

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

**Uber Technologies, Inc.** GS&Co. is among the underwriters named as defendants in several putative securities class actions filed beginning in September 2019 in California Superior Court, County of San Francisco and the U.S. District Court for the Northern District of California, relating to Uber Technologies, Inc.'s (Uber) $8.1 billion May 2019 initial public offering. In addition to the underwriters, the defendants include Uber and certain of its officers and directors. GS&Co. underwrote 35,864,408 shares of common stock representing an aggregate offering price of approximately $1.6 billion. On November 16, 2020, the court in the state court action granted defendants' motion to dismiss the consolidated amended complaint filed on February 11, 2020, and on December 16, 2020, plaintiffs appealed. On August 7, 2020, defendants' motion to dismiss the district court action was denied. On December 5, 2020, the plaintiffs in the state court action filed a complaint in the district court, which was consolidated with the existing district court action on January 25, 2021. On May 14, 2021, the plaintiffs filed a second amended complaint in the district court, purporting to add the plaintiffs from the state court action as additional class representatives. On October 1, 2021, defendants' motion to dismiss the additional class representatives from the second amended complaint was denied, and on July 26, 2022, the district court granted the plaintiffs' motion for class certification. On February 27, 2023, the U.S. Court of Appeals for the Ninth Circuit denied the defendants' petition seeking interlocutory review of the district court's grant of class certification.

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

**Array Technologies, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on May 14, 2021 in the U.S. District Court for the Southern District of New York relating to Array Technologies, Inc.'s (Array) $1.2 billion October 2020 initial public offering of common stock, $1.3 billion December 2020 offering of common stock and $993 million March 2021 offering of common stock. In addition to the underwriters, the defendants include Array and certain of its officers and directors. GS&Co. underwrote an aggregate of 31,912,213 shares of common stock in the three offerings representing an aggregate offering price of approximately $877 million. On December 7, 2021, the plaintiffs filed an amended consolidated complaint, and on May 19, 2023, the court granted the defendants' motion to dismiss the amended consolidated complaint. On July 5, 2023, the court denied the plaintiffs' request for leave to amend the amended consolidated complaint and dismissed the case with prejudice. On August 4, 2023, plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit.

**ContextLogic Inc.** GS&Co. is among the underwriters named as defendants in putative securities class actions filed beginning on May 17, 2021 and consolidated in the U.S. District Court for the Northern District of California, relating to ContextLogic, Inc.'s (ContextLogic) $1.1 billion December 2020 initial public offering of common stock. In addition to the underwriters, the defendants include ContextLogic and certain of its officers and directors. GS&Co. underwrote 16,169,000 shares of common stock representing an aggregate offering price of approximately $388 million. On July 15, 2022, the plaintiffs filed a consolidated amended complaint, and on March 10, 2023, the court granted the defendants' motion to

dismiss the consolidated amended complaint with leave to amend. On April 10, 2023, the plaintiffs filed a second consolidated amended complaint.

**Vroom Inc.** GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on October 4, 2021 in the U.S. District Court for the Southern District of New York relating to Vroom Inc.'s (Vroom) approximately $589 million September 2020 public offering of common stock. In addition to the underwriters, the defendants include Vroom and certain of its officers and directors. GS&Co. underwrote 3,886,819 shares of common stock representing an aggregate offering price of approximately $212 million.

**Zymergen Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 4, 2021 in the U.S. District Court for the Northern District of California relating to Zymergen Inc.'s (Zymergen) $575 million April 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Zymergen and certain of its officers and directors. GS&Co. underwrote 5,750,345 shares of common stock representing an aggregate offering price of approximately $178 million. On February 24, 2022, the plaintiffs filed an amended complaint, and on November 29, 2022, the court granted in part and denied in part the defendants' motion to dismiss the amended complaint, denying dismissal of the claims for violations of Section 11 of the Securities Act. On August 11, 2023, the court granted the plaintiffs' motion for class certification. On October 3, 2023, Zymergen and three affiliates filed Chapter 11 bankruptcy petitions in the U.S. Bankruptcy Court for the District of Delaware.

**Rivian Automotive Inc.** GS&Co. is among the underwriters named as defendants in putative securities class actions filed on March 7, 2022 and February 28, 2023 in the U.S. District Court for the Central District of California and in the Superior Court of the State of California, County of Orange, respectively, relating to Rivian Automotive Inc.'s (Rivian) approximately $13.7 billion November 2021 initial public offering. In addition to the underwriters, the defendants include Rivian and certain of its officers and directors. GS&Co. underwrote 44,733,050 shares of common stock representing an aggregate offering price of approximately $3.5 billion. On March 2, 2023, the plaintiffs in the federal court action filed an amended consolidated complaint, and on July 3, 2023, the court denied the defendants' motion to dismiss the amended consolidated complaint. On June 30, 2023, the court in the state court action granted the defendants' motion to dismiss the complaint, and on September 1, 2023, the plaintiffs appealed.

**Natera Inc.** GS&Co. is among the underwriters named as defendants in putative securities class actions in New York Supreme Court, County of New York and the U.S. District Court for the Western District of Texas filed on March 10, 2022 and October 7, 2022, respectively, relating to Natera Inc.'s (Natera) approximately $585 million July 2021 public offering of common stock. In addition to the underwriters, the defendants include Natera and certain of its officers and directors. GS&Co. underwrote 1,449,000 shares of common stock representing an aggregate offering price of approximately $164 million. On July 15, 2022, the parties in the state court action filed a stipulation and proposed order approving the discontinuance of the action without prejudice. On September 11, 2023, the federal court granted in part and denied in part the defendants' motion to dismiss.

**Robinhood Markets, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on December 17, 2021 in the U.S. District Court for the Northern District of California relating to Robinhood Markets, Inc.'s (Robinhood) approximately $2.2 billion July 2021 initial public offering. In addition to the underwriters, the defendants include Robinhood and certain of its officers and directors. GS&Co. underwrote 18,039,706 shares of common stock representing an aggregate offering price of approximately $686 million. On February 10, 2023, the court granted the defendants' motion to dismiss the complaint with leave to amend, and on March 13, 2023, the plaintiffs filed a second amended complaint.

**ON24, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on November 3, 2021 in the U.S. District Court for the Northern District of California relating to ON24, Inc.'s (ON24) approximately $492 million February 2021 initial public offering of common stock. In addition to the underwriters, the defendants include ON24 and certain of its officers and directors, including a director who was a Managing Director of GS&Co. at the time of the initial public offering. GS&Co. underwrote 3,616,785 shares of common stock representing an aggregate offering price of approximately $181 million. On March 18, 2022, the plaintiffs filed a consolidated complaint, and on July 7, 2023, the court granted the defendants' motion to dismiss the consolidated complaint with leave to amend. On September 1, 2023, the plaintiffs filed an amended consolidated complaint.

**Oscar Health, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on May 12, 2022 in the U.S. District Court for the Southern District of New York relating to Oscar Health, Inc.'s (Oscar Health) approximately $1.4 billion March 2021 initial public offering. In addition to the underwriters, the defendants include Oscar Health and certain of its officers and directors. GS&Co. underwrote 12,760,633 shares of common stock representing an aggregate offering price of approximately $498 million. On December 5, 2022, the plaintiffs filed an amended complaint.

**Oak Street Health, Inc.** GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on May 25, 2022 in the U.S. District Court for the Northern District of Illinois relating to Oak Street Health, Inc.'s (Oak Street) $377 million August 2020 initial public offering, $298 million December 2020 secondary equity offering, $691 million February 2021 secondary equity offering and $747 million May 2021 secondary equity offering. In addition to the underwriters, the defendants include Oak Street, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 4,157,103 shares of common stock in the August 2020 initial public offering representing an aggregate offering price of approximately $87 million, 1,503,944 shares of common stock in the December 2020 secondary equity offering representing an aggregate offering price of approximately $69 million, 3,083,098 shares of common stock in the February 2021 secondary equity offering representing an aggregate offering price of approximately $173 million and 3,013,065 shares of common stock in the May 2021 secondary equity offering representing an aggregate offering price of approximately $187 million. On February 10, 2023, the court granted in part and denied in part the defendants' motion to dismiss, dismissing the claim alleging a violation of Section 12(a)(2) of the Securities Act and, with respect to the May 2021 secondary equity offering only, the claim alleging a violation of Section 11 of the Securities Act, but declining to dismiss the remaining claims.

**Reata Pharmaceuticals, Inc.** GS&Co. is among the underwriters named as defendants in a consolidated amended complaint for a putative securities class action filed on June 21, 2022 in the U.S. District Court for the Eastern District of Texas relating to Reata Pharmaceuticals, Inc.'s (Reata) approximately $282 million December 2020 public offering of common stock. In addition to the underwriters, the defendants include Reata and certain of its officers and directors. GS&Co. underwrote 1,000,000 shares of common stock representing an aggregate offering price of approximately $141 million. In October 2023, the parties reached a settlement, subject to court approval, to resolve this action. The settlement would not require a contribution from GS&Co.

**Bright Health Group, Inc.** GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on June 24, 2022 in the U.S. District Court for the Eastern District of New York relating to Bright Health Group, Inc.'s (Bright Health) approximately $924 million June 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Bright Health and certain of its officers and directors. GS&Co. underwrote 11,297,000 shares of common stock representing an aggregate offering price of approximately $203 million.

**LifeStance Health Group, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 10, 2022 in the U.S. District Court for the Southern District of New York relating to LifeStance Health Group, Inc.'s (LifeStance) approximately $828 million June 2021

initial public offering of common stock. In addition to the underwriters, the defendants include LifeStance and certain of its officers and directors. GS&Co. underwrote 10,580,000 shares of common stock representing an aggregate offering price of approximately $190 million. On December 19, 2022, the plaintiffs filed an amended complaint, and on April 10, 2023, the defendants' motion to dismiss the amended complaint was denied. On September 7, 2023, the court granted the plaintiffs' motion for class certification. On October 25, 2023, the court preliminarily approved a settlement, which would not require a contribution from GS&Co.

**Coupang, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on August 26, 2022 in the U.S. District Court for the Southern District of New York relating to Coupang, Inc.'s (Coupang) approximately $4.6 billion March 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Coupang and certain of its officers and directors. GS&Co. underwrote 42,900,000 shares of common stock representing an aggregate offering price of approximately $1.5 billion. On May 24, 2023, the plaintiffs filed an amended complaint.

**Rent the Runway, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on November 14, 2022 in the U.S. District Court for the Eastern District of New York relating to Rent the Runway, Inc.'s (Rent the Runway) $357 million October 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Rent the Runway and certain of its officers and directors. GS&Co. underwrote 5,254,304 shares of common stock representing an aggregate offering price of approximately $110 million. On September 5, 2023, the plaintiffs filed an amended complaint.

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

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

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

1,375,397 shares of common stock in the December 2021 public offering of common stock representing an aggregate offering price of approximately $199 million.

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

**F45 Training Holdings Inc.** GS&Co. is among the underwriters named as defendants in an amended complaint for a putative securities class action filed on May 19, 2023 in the U.S. District Court for the Western District of Texas relating to F45 Training Holdings Inc.'s (F45) approximately $350 million July 2021 initial public offering of common stock. In addition to the underwriters, the defendants include F45, certain of its officers and directors and certain of its shareholders. GS&Co. acted as a qualified independent underwriter for the offering and underwrote 8,303,744 shares of common stock representing an aggregate offering price of approximately $133 million.

**Olaplex Holdings, Inc.** GS&Co. is among the underwriters named as defendants in a putative securities class action filed on April 28, 2023 in the U.S. District Court for the Central District of California relating to Olaplex Holdings, Inc.'s (Olaplex) approximately $1.8 billion September 2021 initial public offering of common stock. In addition to the underwriters, the defendants include Olaplex, certain of its officers and directors and selling shareholders. GS&Co. underwrote 19,419,420 shares of common stock representing an aggregate offering price of approximately $408 million. On June 22, 2023, the plaintiffs filed a revised consolidated complaint.

**Securities Lending Antitrust Litigation**

Group Inc. and GS&Co. were among the defendants named in a putative antitrust class action and three individual actions relating to securities lending practices filed in the U.S. District Court for the Southern District of New York beginning in August 2017. The complaints generally assert claims under federal and state antitrust law and state common law in connection with an alleged conspiracy among the defendants to preclude the development of electronic platforms for securities lending transactions. The individual complaints also assert claims for tortious interference with business relations and under state trade practices law and, in the second and third individual actions, unjust enrichment under state common law. The complaints seek declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble, punitive and other damages. Group Inc. was voluntarily dismissed from the putative class action on January 26, 2018. Defendants' motion to dismiss the class action complaint was denied on September 27, 2018. Defendants' motion to dismiss the first individual action was granted on August 7, 2019. On September 30, 2021, the defendants' motion to dismiss the second and third individual actions, which were consolidated in June 2019, was granted, and on March 24, 2023, the U.S. Court of Appeals for the Second Circuit affirmed the dismissal. On June 30, 2022, the Magistrate Judge recommended that the plaintiffs' motion for class certification in the putative class action be granted in part and denied in part. On August 15, 2022, the plaintiffs and defendants filed objections to the Magistrate Judge's report and recommendation with the district court. On September 1, 2023, the court preliminarily approved a settlement among the plaintiffs and certain defendants, including Goldman Sachs, to resolve this action. Goldman Sachs had reserved the full amount of its proposed contribution to the settlement.

**Variable Rate Demand Obligations Antitrust Litigation**

GS&Co. is among the defendants named in a putative class action relating to variable rate demand obligations (VRDOs), filed beginning in February 2019 under separate complaints and consolidated in the U.S. District Court for the Southern District of New York. The consolidated amended complaint, filed on

May 31, 2019, generally asserts claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to manipulate the market for VRDOs. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble and other damages. On November 2, 2020, the court granted in part and denied in part the defendants' motion to dismiss, dismissing the state common law claims against GS&Co., but denying dismissal of the federal antitrust law claims.

GS&Co. is also among the defendants named in a related putative class action filed on June 2, 2021 in the U.S. District Court for the Southern District of New York. The complaint alleges the same conspiracy in the market for VRDOs as that alleged in the consolidated amended complaint filed on May 31, 2019, and asserts federal antitrust law, state law and state common law claims against the defendants. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, treble and other damages. On August 6, 2021, plaintiffs in the May 31, 2019 action filed an amended complaint consolidating the June 2, 2021 action with the May 31, 2019 action. On June 28, 2022, the court granted in part and denied in part the defendants' motion to dismiss, dismissing the state breach of fiduciary duty claim against GS&Co., but declining to dismiss any portion of the federal antitrust law claims. On September 21, 2023, the court granted the plaintiffs' motion for class certification.

**Interest Rate Swap Antitrust Litigation**

Group Inc., GS&Co., GSI, GS Bank USA and Goldman Sachs Financial Markets, L.P. are among the defendants named in a putative antitrust class action relating to the trading of interest rate swaps, filed in November 2015 and consolidated in the U.S. District Court for the Southern District of New York. The same Goldman Sachs entities are also among the defendants named in two antitrust actions relating to the trading of interest rate swaps, commenced in April 2016 and June 2018, respectively, in the U.S. District Court for the Southern District of New York by three operators of swap execution facilities and certain of their affiliates. These actions have been consolidated for pretrial proceedings. The complaints generally assert claims under federal antitrust law and state common law in connection with an alleged conspiracy among the defendants to preclude exchange trading of interest rate swaps. The complaints in the individual actions also assert claims under state antitrust law. The complaints seek declaratory and injunctive relief, as well as treble damages in an unspecified amount. The district court dismissed the state common law claims asserted by the plaintiffs in the first individual action and otherwise limited the state common law claim in the putative class action and the antitrust claims in both actions to the period from 2013 to 2016. On November 20, 2018, the court granted in part and denied in part the defendants' motion to dismiss the second individual action, dismissing the state common law claims for unjust enrichment and tortious interference but denying dismissal of the federal and state antitrust claims. On March 13, 2019, the court denied the plaintiffs' motion in the putative class action to amend their complaint to add allegations related to conduct from 2008 to 2012, but granted the motion to add limited allegations from 2013 to 2016, which the plaintiffs added in a fourth consolidated amended complaint filed on March 22, 2019.

**Commodities-Related Litigation**

GS&Co., GSI, J. Aron & Company and Metro International Trade Services (Metro), a previously consolidated subsidiary of Group Inc. that was sold in the fourth quarter of 2014, are among the defendants in a number of putative class and individual actions filed beginning on August 1, 2013 and consolidated in the U.S. District Court for the Southern District of New York. The complaints generally allege violations of federal antitrust laws and state laws in connection with the storage of aluminum and aluminum trading. The complaints seek declaratory, injunctive and other equitable relief, as well as unspecified monetary damages, including treble damages. In December 2016, the district court granted defendants' motions to dismiss and on August 27, 2019, the Second Circuit vacated the district court's dismissals and remanded the case to district court for further proceedings. On July 23, 2020, the district court denied the class plaintiffs' motion for class certification, and on December 16, 2020 the Second Circuit denied leave to

appeal the denial. On February 17, 2021, the district court granted defendants' motion for summary judgment with respect to the claims of most of the individual plaintiffs. On April 14, 2021, the plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit. On May 31, 2022, the two remaining individual plaintiffs entered into a settlement with the defendants. Goldman Sachs has paid the full amount of its contribution to the settlement.

**U.S. Treasury Securities Litigation**

GS&Co. is among the primary dealers named as defendants in several putative class actions relating to the market for U.S. Treasury securities, filed beginning in July 2015 and consolidated in the U.S. District Court for the Southern District of New York. GS&Co. is also among the primary dealers named as defendants in a similar individual action filed in the U.S. District Court for the Southern District of New York on August 25, 2017. The consolidated class action complaint, filed on December 29, 2017, generally alleges that the defendants violated antitrust laws in connection with an alleged conspiracy to manipulate the when-issued market and auctions for U.S. Treasury securities and that certain defendants, including GS&Co., colluded to preclude trading of U.S. Treasury securities on electronic trading platforms in order to impede competition in the bidding process. The individual action alleges a similar conspiracy regarding manipulation of the when-issued market and auctions, as well as related futures and options in violation of the Commodity Exchange Act. The complaints seek declaratory and injunctive relief, treble damages in an unspecified amount and restitution. Defendants' motion to dismiss was granted on March 31, 2021. On May 14, 2021, plaintiffs filed an amended complaint. Defendants' motion to dismiss the amended complaint was granted on March 31, 2022. On April 28, 2022, plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit.

**Corporate Bonds Antitrust Litigation**

Group Inc. and GS&Co. are among the dealers named as defendants in a putative class action relating to the secondary market for odd-lot corporate bonds, filed on April 21, 2020 in the U.S. District Court for the Southern District of New York. The amended consolidated complaint, filed on October 29, 2020, asserts claims under federal antitrust law in connection with alleged anti-competitive conduct by the defendants in the secondary market for odd-lots of corporate bonds, and seeks declaratory and injunctive relief, as well as unspecified monetary damages, including treble and punitive damages and restitution. On October 25, 2021, the court granted defendants' motion to dismiss with prejudice. On November 23, 2021, plaintiffs appealed to the U.S. Court of Appeals for the Second Circuit. On November 10, 2022, the district court denied the plaintiffs' motion for an indicative ruling that the judgment should be vacated because the wife of the district judge owned stock in one of the defendants and the district judge did not recuse himself.

**Credit Default Swap Antitrust Litigation**

Group Inc., GS&Co. and GSI were among the defendants named in a putative antitrust class action relating to the settlement of credit default swaps, filed on June 30, 2021 in the U.S. District Court for the District of New Mexico. The complaint generally asserts claims under federal antitrust law and the Commodity Exchange Act in connection with an alleged conspiracy among the defendants to manipulate the benchmark price used to value credit default swaps for settlement. The complaint also asserts a claim for unjust enrichment under state common law. The complaint seeks declaratory and injunctive relief, as well as unspecified amounts of treble and other damages. On February 4, 2022, the plaintiffs filed an amended complaint and voluntarily dismissed Group Inc. from the action. On June 5, 2023, the court dismissed the claims against certain foreign defendants for lack of personal jurisdiction but denied the defendants' motion to dismiss with respect to GS&Co., GSI and the remaining defendants.

**Employment-Related Matters**
On September 15, 2010, a putative class action was filed in the U.S. District Court for the Southern District of New York by three female former employees. The complaint, as subsequently amended, alleges that Group Inc. and GS&Co. have systematically discriminated against female employees in respect of compensation, promotion and performance evaluations. The complaint alleges a class consisting of all female employees employed at specified levels in specified areas by Group Inc. and GS&Co. since July 2002, and asserts claims under federal and New York City discrimination laws.

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

**Trading Matters.** On November 18, 2020, Group Inc. received a notice of enforcement from the CME Group Inc. (CME) relating to alleged violations, through multiple subsidiaries, including GS&Co. and J. Aron & Company, of the CME's block-trade and pre-hedging rule and alleged failures to supervise related to 21 instances of alleged improper pre-hedging between January 2019 and September 2020. On May 19, 2022, J. Aron & Company entered into a settlement with the CME to settle all of the charges against Group Inc. and its subsidiaries, including GS&Co. Under this settlement, J. Aron & Company paid a $125,000 fine and disgorged profits in the amount of $10,825. Separately, in February 2021, the CFTC notified Goldman Sachs that it would send an information request concerning the same general subject matter as the CME's notice, and made that request in November 2021. Goldman Sachs is cooperating with the matter.

On March 31, 2022, GS&Co. entered into a settlement with the National Futures Association's (NFA) Business Conduct Committee to settle charges that, among other things, GS&Co. did not collect or post variation margin on uncleared swaps with certain counterparties that were covered by the CFTC's variation margin regulations; did not provide pre-trade mid-market marks to certain uncleared swaps counterparties when required; failed to promptly submit accurate and complete reports, documents and supplemental information to the NFA; did not diligently supervise all activities relating to its business; and did not monitor the firm's compliance with certain external business conduct standards policies and procedures. Under this settlement, GS&Co. paid $2.5 million to the NFA.

On April 4, 2023, GS&Co. entered into a settlement with FINRA to settle charges that from October 2015 to April 2018 GS&Co. (i) mismarked approximately 60 million short sale orders and (ii) failed to establish and maintain a supervisory system reasonably designed to achieve compliance with SEC and FINRA rules relating to short sale practices and trade reporting and order memoranda. Under this settlement, GS&Co. consented to a censure and paid a fine of $3 million, of which $1,147,500 was paid to FINRA and the remainder of the fine was paid to 11 exchanges.

On April 10, 2023, GS&Co. entered into a settlement with the CFTC to settle charges that during 2015 and 2016 GS&Co. (i) failed to disclose to clients the pre-trade mid-market mark in dozens of swap transactions and (ii) failed to communicate in good faith and in a fair and balanced manner in soliciting or agreeing to enter into "same-day" equity index swaps with its counterparties, in each case in violation of the Commodity Exchange Act and CFTC rules. Under this settlement, GS&Co. agreed to pay $15 million to

the CFTC and to cease and desist from violating certain sections of the Commodity Exchange Act and certain CFTC rules.

On August 29, 2023, GS&Co. entered a settlement with the CFTC to resolve charges that between March 2020 and November 2020 GS&Co. (i) committed recordkeeping violations by failing to make and retain certain audio recordings due to failures in components of vendor systems; and (ii) as a consequence of such recording failures also violated the cease-and-desist provision of a prior November 2019 CFTC order relating to other swap dealer recording violations under the same record-keeping provisions. Under this settlement, GS&Co. agreed to pay $5.5 million to the CFTC and to cease and desist from violating recordkeeping provisions of the Commodity Exchange Act and CFTC regulations.

On September 22, 2023, GS&Co. entered into a settlement with the SEC to resolve charges that, from November 2012 through March 2022, GS&Co. submitted at least 22,192 blue sheets to the SEC that inaccurately reported one or more of 43 separate types of issues that impacted its electronic blue sheets reporting. Under the SEC settlement, GS&Co. agreed to pay $6 million to the SEC and to cease and desist from violating recordkeeping provisions of the Securities Exchange Act and SEC regulations. On the same day, GS&Co. entered into a settlement with FINRA to resolve similar charges. Under the FINRA settlement, GS&Co. consented to a censure and paid a fine of $6 million.

On September 29, 2023, GS&Co. entered into a settlement with the CFTC to resolve charges that GS&Co. failed to diligently supervise numerous aspects of its swap dealer business, failed to report accurate and timely swap data and failed to disclose pre-trade mid-market marks, in violation of the Commodities Exchange Act and CFTC rules. Under the settlement, GS&Co. agreed to pay $30 million to the CFTC and to cease and desist from violating certain sections of the Commodity Exchange Act and certain CFTC rules.

On September 29, 2023, GS&Co. entered into a settlement with the CFTC to resolve charges that GS&Co. failed to supervise disruptive trading and omitted material information to the CFTC in violation of the Commodities Exchange Act and CFTC rules. Under the settlement, GS&Co. agreed to pay $3 million to the CFTC and to cease and desist from violating certain sections of the Commodity Exchange Act and certain CFTC rules.

**Customer Funds Segregation.**
*(8) A basic overview of customer fund segregation, FCM management and investments, FCMs and joint FCM/broker dealers.*

**Customer Accounts.** FCMs may maintain up to three different types of accounts for customers, depending on the products a customer trades:

(i) a **Customer Segregated Account** for customers that trade futures and options on futures listed on US futures exchanges;

(ii) a **Secured or 30.7 Account ("Secured Account")** for customers that trade futures and options on futures listed on foreign boards of trade; and

(iii) a **Cleared Swaps Customer Account** for customers trading swaps that are cleared on a DCO registered with the Commission.

The requirement to maintain these separate accounts reflects the different risks posed by the different products. Cash, securities and other collateral (collectively, Customer Funds) required to be held in one type of account, *e.g.*, the Customer Segregated Account, may not be commingled with funds required to be held in another type of account, *e.g.*, the Secured Account, except as the Commission may permit by order. For example, the Commission has issued orders authorizing ICE Clear Europe Limited, which is registered with the Commission as a DCO, and its FCM clearing members: (i) to hold in Cleared Swaps Customer Accounts Customer Funds used to margin both (a) Cleared Swaps and (b) foreign futures and foreign options traded on ICE Futures Europe, and to provide for portfolio margining of such Cleared Swaps and foreign futures and foreign options; and (ii) to hold in Customer Segregated Accounts Customer Funds used to margin both (c) futures and options on futures traded on ICE Futures US and (d) foreign futures and foreign options traded on ICE Futures Europe, and to provide for portfolio margining of such transactions.

**Customer Segregated Account.** Funds that customers deposit with an FCM, or that are otherwise required to be held for the benefit of customers, to margin futures and options on futures contracts traded on futures exchanges located in the US, *i.e.*, designated contract markets, are held in a Customer Segregated Account in accordance with section 4d(a)(2) of the Commodity Exchange Act and Commission Rule 1.20. Customer Segregated Funds held in the Customer Segregated Account may not be used to meet the obligations of the FCM or any other person, including another customer.

All Customer Segregated Funds may be commingled in a single account, *i.e.*, a customer omnibus account, and held with: (i) a bank or trust company located in the US; (ii) a bank or trust company located outside of the US that has in excess of $1 billion of regulatory capital; (iii) an FCM; or (iv) a DCO. Such commingled account must be properly titled to make clear that the funds belong to, and are being held for the benefit of, the FCM's customers. Unless a customer provides instructions to the contrary, an FCM may hold Customer Segregated Funds only: (i) in the US; (ii) in a money center country;[1] or (iii) in the country of origin of the currency.

An FCM must hold sufficient US dollars in the US to meet all US dollar obligations and sufficient funds in each other currency to meet obligations in such currency. Notwithstanding the foregoing, assets denominated in a currency may be held to meet obligations denominated in another currency (other than the US dollar) as follows: (i) US dollars may be held in the US or in money center countries to meet obligations denominated in any other currency; and (ii) funds in money center currencies[2] may be held in

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[1] Money center countries means Canada, France, Italy, Germany, Japan, and the United Kingdom.

[2] Money center currencies mean the currency of any money center country and the Euro.

the US or in money center countries to meet obligations denominated in currencies other than the US dollar.

**Secured Account.** Funds that Secured Customers deposit with an FCM, or that are otherwise required to be held for the benefit of customers, to margin futures and options on futures contracts traded on foreign boards of trade, *i.e.*, Secured Customer Funds, and sometimes referred to as the foreign futures and foreign options secured amount, are held in a Secured Account in accordance with Commission Rule 30.7.

Funds required to be held in the Secured Account for or on behalf of Secured Customers may be commingled in an omnibus account and held with: (i) a bank or trust company located in the US; (ii) a bank or trust company located outside the US that has in excess of $1 billion in regulatory capital; (iii) an FCM; (iv) a DCO; (v) the clearing organization of any foreign board of trade; (vi) a foreign broker; or (vii) such clearing organization's or foreign broker's designated depositories. Such commingled account must be properly titled to make clear that the funds belong to, and are being held for the benefit of, the FCM's Secured Customers. As explained below, Commission Rule 30.7 restricts the amount of such funds that may be held outside of the US.

Customers trading on foreign markets assume additional risks. Laws or regulations will vary depending on the foreign jurisdiction in which the transaction occurs, and funds held in a Secured Account outside of the US may not receive the same level of protection as Customer Segregated Funds. If the foreign broker carrying Secured Customer positions fails, the broker will be liquidated in accordance with the laws of the jurisdiction in which it is organized, which laws may differ significantly from the US Bankruptcy Code. Return of Secured Customer Funds to the US will be delayed and likely will be subject to the costs of administration of the failed foreign broker in accordance with the law of the applicable jurisdiction, as well as possible other intervening foreign brokers, if multiple foreign brokers were used to process the US customers' transactions on foreign markets.

If the foreign broker does not fail but the Secured Customers' US FCM fails, the foreign broker may want to assure that appropriate authorization has been obtained before returning the Secured Customer Funds to the FCM's trustee, which may delay their return. If both the foreign broker and the US FCM were to fail, potential differences between the trustee for the US FCM and the administrator for the foreign broker, each with independent fiduciary obligations under applicable law, may result in significant delays and additional administrative expenses. Use of other intervening foreign brokers by the US FCM to process the trades of Secured Customers on foreign markets may cause additional delays and administrative expenses.

To reduce the potential risk to Secured Customer Funds held outside of the US, Commission Rule 30.7 generally provides that an FCM may not deposit or hold Secured Customer Funds in permitted accounts outside of the US except as necessary to meet margin requirements, including prefunding margin requirements, established by rule, regulation, or order of the relevant foreign boards of trade or foreign clearing organizations, or to meet margin calls issued by foreign brokers carrying the Secured Customers' positions. The rule further provides, however, that, in order to avoid the daily transfer of funds from accounts in the US, an FCM may maintain in accounts located outside of the US an additional amount of up to 20 percent of the total amount of funds necessary to meet margin and prefunding margin requirements to avoid daily transfers of funds.

**Cleared Swaps Customer Account.** Funds deposited with an FCM, or otherwise required to be held for the benefit of customers, to margin swaps cleared through a registered DCO, *i.e.*, Cleared Swaps Customer Collateral, are held in a Cleared Swaps Customer Account in accordance with the provisions of section 4d(f) of the Act and Part 22 of the Commission's rules. Cleared Swaps Customer Accounts are sometimes referred to as LSOC Accounts. LSOC is an acronym for "legally separated, operationally commingled." Funds required to be held in a Cleared Swaps Customer Account may be commingled in an omnibus

account and held with: (i) a bank or trust company located in the US; (ii) a bank or trust company located outside of the US that has in excess of $1 billion of regulatory capital; (iii) a DCO; or (iv) another FCM. Such commingled account must be properly titled to make clear that the funds belong to, and are being held for the benefit of, the FCM's Cleared Swaps Customers.

**Investment of Customer Funds.** Section 4d(a)(2) of the Act authorizes FCMs to invest Customer Segregated Funds in obligations of the United States, in general obligations of any State or of any political subdivision thereof, and in obligations fully guaranteed as to principal and interest by the United States. Section 4d(f) authorizes FCMs to invest Cleared Swaps Customer Collateral in similar instruments.

Commission Rule 1.25 authorizes FCMs to invest Customer Segregated Funds, Cleared Swaps Customer Collateral and Secured Customer Funds in instruments of a similar nature. Commission rules further provide that the FCM may retain all gains earned and is responsible for investment losses incurred in connection with the investment of Customer Funds. However, the FCM and customer may agree that the FCM will pay the customer interest on the funds deposited.

Permitted investments include:

(i) Obligations of the United States and obligations fully guaranteed as to principal and interest by the United States (U.S. government securities);

(ii) General obligations of any State or of any political subdivision thereof (municipal securities);

(iii) Obligations of any United States government corporation or enterprise sponsored by the United States government (U.S. agency obligations);[3]

(iv) Certificates of deposit issued by a bank (certificates of deposit) as defined in section 3(a)(6) of the Securities Exchange Act of 1934, or a domestic branch of a foreign bank that carries deposits insured by the Federal Deposit Insurance Corporation;

(v) Commercial paper fully guaranteed as to principal and interest by the United States under the Temporary Liquidity Guarantee Program as administered by the Federal Deposit Insurance Corporation (commercial paper);

(vi) Corporate notes or bonds fully guaranteed as to principal and interest by the United States under the Temporary Liquidity Guarantee Program as administered by the Federal Deposit Insurance Corporation (corporate notes or bonds); and

(vii) Interests in money market mutual funds.

The duration of the securities in which an FCM invests Customer Funds cannot exceed, on average, two years.

An FCM may also engage in repurchase and reverse repurchase transactions with non-affiliated registered broker-dealers, provided such transactions are made on a delivery versus payment basis and involve only permitted investments. All funds or securities received in repurchase and reverse repurchase transactions with Customer Funds must be held in the appropriate Customer Account, *i.e.*, Customer Segregated, Secured or Cleared Swaps Account. Further, in accordance with the provisions of Commission Rule 1.25,

[3] Obligations issued by the Federal National Mortgage Association or the Federal Home Loan Mortgage Association are permitted only while these entities operate under the conservatorship or receivership of the Federal Housing Finance Authority with capital support from the United States.

all such funds or collateral must be received in the appropriate Customer Account on a delivery versus payment basis in immediately available funds.[4]

**No SIPC Protection.** Although GS&Co. is a registered broker-dealer, it is important to understand that the funds you deposit with GS&Co. for trading futures and options on futures contracts on either US or foreign markets or cleared swaps are not protected by the Securities Investor Protection Corporation.

Further, Commission rules require GS&Co. to hold funds deposited to margin futures and options on futures contracts traded on US designated contract markets in Customer Segregated Accounts. Similarly, GS&Co. must hold funds deposited to margin cleared swaps and futures and options on futures contracts traded on foreign boards of trade in a Cleared Swaps Customer Account or a Secured Account, respectively. In computing its Customer Funds requirements under relevant Commission rules, GS&Co. may only consider those Customer Funds actually held in the applicable Customer Accounts and may not apply free funds in an account under identical ownership but of a different classification or account type (*e.g.*, securities, Customer Segregated, Secured Account) to an account's margin deficiency. In order to be used for margin purposes, the funds must actually transfer to the identically-owned undermargined account.

For additional information on the protection of customer funds, please see the Futures Industry Association's "Protection of Customer Funds Frequently Asked Questions" located at https://www.fia.org/resources/fia-issues-fourth-version-guide-customer-fund-protections

**Filing a Complaint**

*(9) Information on how a customer may obtain information regarding filing a complaint about FCM with the Commission or with FCM's DSRO.*

A customer that wishes to file a complaint about GS&Co. or one of its employees with the Commission can contact the Division of Enforcement either electronically at https://www.cftc.gov/Forms/tipsandcomplaints.html or by calling the Division of Enforcement toll-free at 866-FON-CFTC (866-366-2382).

A customer that may file a complaint about the GS&Co. or one of its employees with the National Futures Association electronically at http://www.nfa.futures.org/basicnet/Complaint.aspx or by calling NFA directly at 800-621-3570.

A customer that wishes to file a complaint about GS&Co. or one of its employees with the Chicago Mercantile Exchange electronically at: http://www.cmegroup.com/market-regulation/file-complaint.html or by calling the CME at 312-341-3286.

**Relevant Financial Data**

*(6) The location where GS&Co.'s annual audited financial statements are made available.*

http://www.goldmansachs.com/disclosures/cftc_fcm_disclosures/index.html

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[4] As discussed below, NFA publishes twice-monthly a report, which shows for each FCM, *inter alia*, the percentage of Customer Funds that are held in cash and each of the permitted investments under Commission Rule 1.25. The report also indicates whether the FCM held any Customer Funds during that month at a depository that is an affiliate of the FCM.

*(10) Financial data as of the most recent month-end when the Disclosure Document is prepared.*

*(i) the FCM's total equity, regulatory capital, and net worth, all computed in accordance with U.S. Generally Accepted Accounting Principles and Rule 1.17, as applicable;*

As of November 2023, GS&Co. had total equity of $14.76 billion included in regulatory capital of $37.26 billion, as defined by Rule 15c3-1, which exceeded the amount required by $16.16 billion.

*(ii) the dollar value of the FCM's proprietary margin requirements as a percentage of the aggregate margin requirement for futures customers, cleared swaps customers, and 30.7 customers;*

As of November 2023, GS&Co.'s house margin requirements (representing positions carried for the FCM and its affiliates) were approximately

i) 41% of Segregated Customers' requirements (funds held on behalf of futures customers of GS&Co. for positions on U.S. futures exchange);
ii) 6% of Cleared Swaps Customers' requirements (funds held on behalf of Cleared Swaps customers of GS&Co); and
iii) 26% of Secured Customers' (30.7) requirements, (funds held on behalf of futures customers of GS&Co for positions on non-U.S. futures exchanges)

*(iii) the number of futures customers, cleared swaps customers, and 30.7 customers that comprise 50 percent of the FCM's total funds held for futures customers, cleared swaps customers, and 30.7 customers, respectively;*

As of November 2023, the number of GS&Co. customers that comprised 50 percent of the total funds held by GS&Co for each category of GS&Co. FCM customers listed below:

| | |
|---|---|
| Segregated Customers (customers with positions on U.S. futures exchanges) | 181 |
| Cleared Swaps Customers | 25 |
| Secured Customers (customers with positions on non-U.S. futures exchanges) | 47 |

*Excludes customer omnibus account(s) carried on behalf of FCM affiliate(s).

*(iv) the aggregate notional value, by asset class, of all non-hedged, principal over-the-counter transactions into which the FCM has entered;*

All consolidated principal over-the-counter transactions are disclosed in Note 7: Derivatives and Hedging Activities at https://www.goldmansachs.com/investor-relations/financials/subsidiary-financial-info/gsco/2022/gsco-12-31-2022.pdf

*(v) the amount, generic source and purpose of any unsecured lines of credit (or similar short-term funding) the FCM has obtained but not yet drawn upon.*

GS&Co. does not have any committed unsecured lines of credit for FCM business.

*(vi) the aggregated amount of financing the FCM provides for customer transactions involving illiquid financial products for which it is difficult to obtain timely and accurate prices;*

As a matter of policy, GS&Co. does not finance illiquid products. (Note: GS&Co. does not finance any products for its futures and cleared swaps clients.) If a product becomes illiquid, appropriate capital charges will be taken pursuant to SEC Rule 15c3-1.

*(vii) the percentage of futures customer, cleared swaps customer, and 30.7 customer receivable balances that the FCM had to write-off as uncollectable during the past 12-month period, as compared to the current balance of funds held for futures customers, cleared swaps customers, and 30.7 customers.*

GS&Co. has not had to write off any such balances in the last 12 month period.

Additional financial information on all FCMs is also available on the Commission's website at: http://www.cftc.gov/MarketReports/FinancialDataforFCMs/index.htm.

Customers should be aware that the National Futures Association ("NFA") publishes on its website certain financial information with respect to each FCM. The FCM Capital Report provides each FCM's most recent month-end adjusted net capital, required net capital, and excess net capital. (Information for a twelve-month period is available.) In addition, NFA publishes twice-monthly a Customer Segregated Funds report, which shows for each FCM: (i) total funds held in Customer Segregated Accounts; (ii) total funds required to be held in Customer Segregated Accounts; and (iii) excess segregated funds, *i.e.*, the FCM's Residual Interest. This report also shows the percentage of Customer Segregated Funds that are held in cash and each of the permitted investments under Commission Rule 1.25. Finally, the report indicates whether the FCM held any Customer Segregated Funds during that month at a depository that is an affiliate of the FCM.

The report shows the most recent semi-monthly information, but the public will also have the ability to see information for the most recent twelve-month period. A Secured Customer Funds report and a Customer Cleared Swaps Collateral report provides the same information with respect to the Secured Account and the Cleared Swaps Customer Account.

The above financial information reports can be found by conducting a search for a specific FCM in NFA's BASIC system (http://www.nfa.futures.org/basicnet/) and then clicking on the FCM's BASIC Details page.

*(11) A summary of FCM's current risk practices, controls and procedures*

In this section, when we use the terms "we," "us" and "our," we mean Goldman Sachs & Co. LLC (GS&Co.) and its consolidated subsidiaries. GS&Co. is a registered U.S. broker-dealer, futures commission merchant (FCM) and swap dealer and is an indirect, wholly owned subsidiary of The Goldman Sachs Group, Inc. (Group Inc. and, together with its consolidated subsidiaries, including GS&Co., Goldman Sachs).

**Overview and Structure of Risk Management**

We believe that effective risk management is of critical importance to our success, as well as the protection of the interests of our FCM customers. Accordingly, we have adopted and enforce comprehensive risk management processes through which we monitor, evaluate and manage the risks we assume in conducting our activities. These include market, credit, liquidity, operational, legal, regulatory and reputational risk exposures. An extensive cross-divisional committee membership structure with representation from the senior leaders of GS&Co. is key to the risk management culture of Goldman Sachs. Our risk management framework, consistent with that of Goldman Sachs, is built around three core components: governance, processes and people.

**Governance.**

Risk management governance starts with the Board of Directors of Group Inc. ("Board"), which both directly and through its committees, including its Risk Committee, oversees our risk management policies and practices implemented through the enterprise risk management framework. The Board is also responsible for the annual review and approval of our risk appetite statement. The risk appetite statement describes the levels and types of risk we are willing to accept or to avoid, in order to achieve our strategic business objectives, while remaining in compliance with regulatory requirements. The Board reviews our strategic business plan and is ultimately responsible for overseeing and providing direction about our strategy and risk appetite.

The Board receives regular briefings on firmwide risks, including liquidity risk, market risk, credit risk, operational risk and model risk from our independent risk oversight and control functions, including the chief risk officer, and on compliance risk and conduct risk from the head of Compliance, on legal and regulatory matters from the general counsel, and on other matters impacting our reputation from the chair of our Firmwide Client and Business Standards Committee and our Firmwide Reputational Risk Committee. The chief risk officer reports to our chief executive officer and to the Risk Committee of the Board. As part of the review of the firmwide risk portfolio, the chief risk officer regularly advises the Risk Committee of the Board of relevant risk metrics and material exposures, including risk limits and thresholds established in our risk appetite statement.

The implementation of our risk governance structure and core risk management processes are overseen by Enterprise Risk, which reports to our chief risk officer, and is responsible for ensuring that our enterprise risk management framework provides the Board, our risk committees and senior management with a consistent and integrated approach to managing our various risks in a manner consistent with our risk appetite.

Our revenue-producing units, as well as Treasury, Engineering, Human Capital Management and Corporate and Workplace Solutions, are considered our first line of defense. They are accountable for the outcomes of our risk-generating activities, as well as for assessing and managing those risks within our risk appetite.

Our independent risk oversight and control functions are considered our second line of defense and provide independent assessment, oversight and challenge of the risks taken by our first line of defense, as well as lead and participate in risk-oriented committees. Independent risk oversight and control functions include Compliance, Conflicts Resolution, Controllers, Credit Risk, Enterprise Risk, Legal, Liquidity Risk, Market Risk, Model Risk, Operational Risk and Tax.

Internal Audit is considered our third line of defense and reports to our chief executive officer and the Audit Committee of the Board. Internal Audit includes professionals with a broad range of audit and industry experience, including risk management expertise. Internal Audit is responsible for independently assessing and validating the effectiveness of key controls, including those within the risk management framework, and providing timely reporting to the Audit Committee of the Board, senior management and regulators.

The three lines of defense structure promotes the accountability of first line risk takers, provides a framework for effective challenge by the second line and empowers independent review from the third line.

**Processes.** We maintain various processes that are critical components of our risk management framework, including (i) risk identification and assessment, (ii) risk appetite, limit and threshold setting, (iii) risk reporting and monitoring, and (iv) risk decision-making.

- **Risk Identification and Assessment.** We believe that the identification and assessment of our risks is a critical step in providing our Board and senior management transparency and insight into the range and materiality of our risks. We have a comprehensive data collection process, including firmwide policies and procedures that require all employees to report and escalate risk events. Our approach for risk identification and assessment is comprehensive across all risk types, is dynamic and forward-looking to reflect and adapt to our changing risk profile and business environment, leverages subject matter expertise, and allows for prioritization of our most critical risks.

  To effectively assess our risks, we maintain a daily discipline of marking substantially all of our inventory to current market levels. We carry our inventory at fair value, with changes in valuation reflected immediately in our risk management systems and in net revenues. We do so because we believe this discipline is one of the most effective tools for assessing and managing risk and that it provides transparent and realistic insight into our inventory exposures.

  An important part of our risk management process is firmwide stress testing. It allows us to quantify our exposure to tail risks, highlight potential loss concentrations, undertake risk/reward analysis, and assess and mitigate our risk positions. Firmwide stress tests are performed on a regular basis and are designed to ensure a comprehensive analysis of our vulnerabilities and idiosyncratic risks combining financial and nonfinancial risks, including, but not limited to, credit, market, liquidity and funding, operational and compliance, strategic, systemic and emerging risks into a single combined scenario. We also perform ad hoc stress tests in anticipation of market events or conditions. Stress tests are also used to assess capital adequacy as part of our capital planning and stress testing process.

- **Risk Appetite, Limit and Threshold Setting.** We apply a rigorous framework of limits and thresholds to control and monitor risk across transactions, products, businesses and markets. The Board, directly or indirectly through its Risk Committee, approves limits and thresholds included in our risk appetite statement at firmwide, business and product levels. In addition, the Firmwide Enterprise Risk Committee is responsible for approving our risk limits framework, subject to the overall limits approved by the Risk Committee of the Board, and monitoring these limits.

The Risk Governance Committee is responsible for approving limits at firmwide, business and product levels. Certain limits may be set at levels that will require periodic adjustment, rather than at levels that reflect our maximum risk appetite. This fosters an ongoing dialogue about risk among our first and second lines of defense, committees and senior management, as well as rapid escalation of risk-related matters. Additionally, through delegated authority from the Risk Governance Committee, Market Risk sets limits at certain product and desk levels, and Credit Risk sets limits for individual counterparties, counterparties and their subsidiaries, industries and countries. Limits are reviewed regularly and amended on a permanent or temporary basis to reflect changing market conditions, business conditions or risk tolerance.

- **Risk Reporting and Monitoring.** Effective risk reporting and risk decision-making depends on our ability to get the right information to the right people at the right time. As such, we focus on the rigor and effectiveness of our risk systems, with the objective of ensuring that our risk management technology systems provide us with complete, accurate and timely information. Our risk reporting and monitoring processes are designed to take into account information about both existing and emerging risks, thereby enabling our risk committees and senior management to perform their responsibilities with the appropriate level of insight into risk exposures. Furthermore, our limit and threshold breach processes provide means for timely escalation. We evaluate changes in our risk profile and our businesses, including changes in business mix or jurisdictions in which we operate, by monitoring risk factors at a firmwide level.
- **Risk Decision-Making.** Our governance structure provides the protocol and responsibility for decision-making on risk management issues and ensures implementation of those decisions. We make extensive use of risk committees that meet regularly and serve as an important means to facilitate and foster ongoing discussions to manage and mitigate risks.

  We maintain strong and proactive communication about risk and we have a culture of collaboration in decisionmaking among our first and second lines of defense, committees and senior management. While our first line of defense is responsible for management of their risk, we dedicate extensive resources to our second line of defense in order to ensure a strong oversight structure and an appropriate segregation of duties. We regularly reinforce our strong culture of escalation and accountability across all functions.

**People.** Even the best technology serves only as a tool for helping to make informed decisions in real time about the risks we are taking. Ultimately, effective risk management requires our people to interpret our risk data on an ongoing and timely basis and adjust risk positions accordingly. In both our revenue-producing units and our independent control and support functions, the experience of our professionals, and their understanding of the nuances and limitations of each risk measure, guide us in assessing exposures and maintaining them within prudent levels.

We reinforce a culture of effective risk management in our training and development programs as well as the way we evaluate performance, and recognize and reward our people. Our training and development programs, including certain sessions led by the most senior leaders of Goldman Sachs and GS&Co., are focused on the importance of risk management, client relationships and reputational excellence. As part of our annual performance review process, we assess reputational excellence including how an employee exercises good risk management and reputational judgment, and adheres to our code of conduct and compliance policies. Our review and reward processes are designed to communicate and reinforce to our professionals the link between behavior and how people are recognized, the need to focus on our clients and our reputation, and the need to always act in accordance with our highest standards.

**Structure**

Ultimate oversight of risk at Goldman Sachs is the responsibility of the Board of Directors of Group Inc., which oversees risk throughout Goldman Sachs, including at GS&Co., both directly and through various committees. Within Goldman Sachs, a series of committees with specific risk-management mandates covering important aspects of GS&Co.'s businesses also have oversight or decision-making responsibilities. The risk committees with oversight of GS&Co.'s activities, including FCM activities, are described below.

**Management Committee.** The Management Committee oversees our global activities. It provides this oversight directly and through authority delegated to committees it has established. This committee consists of our most senior leaders, and is chaired by our chief executive officer. Most members of the Management Committee are also members of other committees. The following are the committees that are principally involved in firmwide risk management.

**Firmwide Enterprise Risk Committee.** The Firmwide Enterprise Risk Committee is responsible for overseeing our financial and nonfinancial risks. As a part of such oversight, the committee is responsible for the ongoing review, approval and monitoring of our enterprise risk management framework, as well as our risk limits framework. This committee is co-chaired by our chief financial officer and our chief risk officer, who are appointed as chairs by our chief executive officer, and reports to the Management Committee. The following are the primary committees that report to the Firmwide Enterprise Risk Committee:

- **Firmwide Risk Council.** The Firmwide Risk Council is responsible for the ongoing monitoring of relevant financial risks and related risk limits at the firmwide, business and product levels. This committee is co-chaired by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide New Activity Committee.** The Firmwide New Activity Committee is responsible for reviewing new activities and for establishing a process to identify and review previously approved activities that are significant and that have changed in complexity and/or structure or present different reputational and suitability concerns over time to consider whether these activities remain appropriate. This committee is co-chaired by the controller and chief accounting officer, and the head of Operations and Engineering for Goldman Sachs Global Banking & Markets, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Operational Risk and Resilience Committee.** The Firmwide Operational Risk and Resilience Committee is responsible for overseeing operational risk, and for ensuring our business and operational resilience. To assist the Firmwide Operational Risk and Resilience Committee in carrying out its mandate, other risk committees with dedicated oversight for technology-related risks, including cyber security matters, report into the Firmwide Operational Risk and Resilience Committee. This committee is co-chaired by our chief administrative officer and deputy chief risk officer, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Conduct Committee.** The Firmwide Conduct Committee is responsible for the ongoing approval and monitoring of the frameworks and policies which govern our conduct risks. Conduct risk is the risk that our people fail to act in a manner consistent with our Business Principles and related core values, policies or codes, or applicable laws or regulations, thereby falling short in fulfilling their responsibilities to us, our clients, colleagues, other market participants or the broader community. The co-chairs of this committee are appointed by the chairs of the Firmwide Enterprise Risk Committee.

- **Risk Governance Committee.** The Risk Governance Committee (through delegated authority from the Firmwide Enterprise Risk Committee) is globally responsible for the ongoing approval and monitoring of risk frameworks, policies, parameters and limits, at firmwide, business and product levels. In addition, this committee reviews the results of stress tests and scenario analyses. This committee is chaired by our chief risk officer, who is appointed as chair by the chairs of the Firmwide Enterprise Risk Committee.

**Firmwide Client and Business Standards Committee.** The Firmwide Client and Business Standards Committee is responsible for overseeing relationships with our clients, client service and experience, and related business standards, as well as client-related reputational matters. This committee is chaired by our president and chief operating officer, who is appointed as chair by the chief executive officer, and reports to the Management Committee. This committee periodically provides updates to, and receives guidance from, the Public Responsibilities Committee of the Board.

The following committees report jointly to the Firmwide Enterprise Risk Committee and the Firmwide Client and Business Standards Committee:

- **Firmwide Reputational Risk Committee.** The Firmwide Reputational Risk Committee is responsible for assessing reputational risks arising from transactions that have been identified as having potential heightened reputational risk pursuant to the criteria established by the Firmwide Reputational Risk Committee. This committee is chaired by our president and chief operating officer, and the vice-chairs are the head of Regulatory Affairs and the head of Conflicts Resolution, who are appointed as vice-chairs by the chair of the Firmwide Reputational Risk Committee. This committee periodically provides updates to, and receives guidance from, the Public Responsibilities Committee of the Board.
- **Firmwide Suitability Committee.** The Firmwide Suitability Committee is responsible for setting standards and policies for product, transaction and client suitability and providing a forum for consistency across functions, regions and products on suitability assessments. This committee also reviews suitability matters escalated from other committees. This committee is co-chaired by our chief compliance officer and the co-head of Europe, Middle East and Africa FICC sales, who are appointed as chairs by the chair of the Firmwide Client and Business Standards Committee.
- **Firmwide Investment Policy Committee.** The Firmwide Investment Policy Committee reviews, approves, sets policies, and provides oversight for certain illiquid principal investments, including review of risk management and controls for these types of investments. This committee is co-chaired by the chairman of our Merchant Banking Division, the head of our Merchant Banking Division and the chief risk officer, who are appointed as chairs by our president and chief operating officer and our chief financial officer.
- **Firmwide Capital Committee.** The Firmwide Capital Committee provides approval and oversight of debt-related transactions, including principal commitments of our capital. This committee aims to ensure that business, reputational and suitability standards for underwritings and capital commitments are maintained on a global basis. This committee is co-chaired by the head of Credit Risk and a co-head of the Financing Group, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Commitments Committee.** The Firmwide Commitments Committee reviews our underwriting and distribution activities with respect to equity and equity-related product offerings, and sets and maintains policies and procedures designed to ensure that legal, reputational, regulatory and business standards are maintained on a global basis. In addition to reviewing specific transactions, this committee periodically conducts general strategic reviews of sectors and products and establishes policies in connection with transaction practices. This committee is co-chaired by the co-head of the

Industrials Group in our Investment Banking business unit, the chief debt underwriting officer for EMEA and a managing director in our Investment Banking business unit, who are appointed as chairs by the chair of the Firmwide Client and Business Standards Committee.

**Firmwide Asset Liability Committee.** The Firmwide Asset Liability Committee reviews and approves the strategic direction for our financial resources, including capital, liquidity, funding and balance sheet. This committee has oversight responsibility for asset liability management, including interest rate and currency risk, funds transfer pricing, capital allocation and incentives, and credit ratings. This committee makes recommendations as to any adjustments to asset liability management and financial resource allocation in light of current events, risks, exposures, and regulatory requirements and approves related policies. This committee is co-chaired by our chief financial officer and our global treasurer, who are appointed as chairs by our chief executive officer, and reports to the Management Committee.

**Conflicts Management**

Conflicts of interest and Goldman Sachs' approach to dealing with them are fundamental to our client relationships, our reputation and our long-term success. The term "conflict of interest" does not have a universally accepted meaning, and conflicts can arise in many forms within a business or between businesses. The responsibility for identifying potential conflicts, as well as complying with Goldman Sachs' policies and procedures, is shared by all of our employees.

Goldman Sachs has a multilayered approach to resolving conflicts and addressing reputational risk. Goldman Sachs' senior management oversees policies related to conflicts resolution, and, in conjunction with the Business Selection and Conflicts Resolution Group, the Legal Department and Compliance Division, the Firmwide Client and Business Standards Committee, and other internal committees, formulates policies, standards and principles, and assists in making judgments regarding the appropriate resolution of particular conflicts. Resolving potential conflicts necessarily depends on the facts and circumstances of a particular situation and the application of experienced and informed judgment.

As a general matter, the Conflicts Resolution Group reviews all financing and advisory assignments in Goldman Sachs Investment Banking and certain investing, lending and other activities of Goldman Sachs. In addition, Goldman Sachs has various transaction oversight committees, such as the Firmwide Capital, Commitments and Suitability Committees and other committees across Goldman Sachs that also review new underwritings, loans, investments and structured products. These groups and committees work with internal and external counsel and the Compliance Division to evaluate and address any actual or potential conflicts.

GS&Co.'s policies and procedures, including those relating to its FCM activities, assess and address risks posed to GS&Co. by its affiliates. In particular, as discussed below under "Segregation Risk Management", assets of GS&Co.'s FCM customers are not invested in any obligations of GS&Co.'s affiliates, and are not subject to any resale or repurchase agreements between GS&Co. and any of its affiliates.

Goldman Sachs regularly assesses its policies and procedures that address conflicts of interest in an effort to conduct its business in accordance with the highest ethical standards and in compliance with all applicable laws, rules, and regulations.

**Climate Risk Management**

We categorize climate risk into physical risk and transition risk. Physical risk is the risk that asset values may decline or operations may be disrupted as a result of changes in the climate, while transition risk is the

risk that asset values may decline because of changes in climate policies or changes in the underlying economy due to decarbonization. As a global financial institution, climate-related risks manifest in different ways across our businesses and we have continued to make significant enhancements to our climate risk management framework, including steps to further integrate climate into our broader risk management processes. We have integrated oversight of climate-related risks into our risk management governance structure, from senior management to our Board and its committees, including the Risk and Public Responsibilities Committees. The Risk Committee of the Board oversees firmwide financial and nonfinancial risks, which include climate risk, and, as part of its oversight, receives updates on our risk management approach to climate risk, including our approaches towards scenario analysis and integration into existing risk management processes. The Public Responsibilities Committee of the Board assists the Board in its oversight of our firmwide sustainability strategy and sustainability issues affecting us, including with respect to climate change. As part of its oversight, the Public Responsibilities Committee receives periodic updates on our sustainability strategy, and also periodically reviews our governance and related policies and processes for sustainability and climate change-related risks. Senior management within Risk is responsible for the development of our climate risk program. We have begun incorporating climate risk into our credit evaluation and underwriting processes for select industries. Climate risk factors are now evaluated as part of transaction due diligence for select loan commitments.

**Compliance Risk Management**

Compliance risk is the risk of legal or regulatory sanctions, material financial loss or damage to our reputation arising from our failure to comply with the requirements of applicable laws, rules and regulations, and our internal policies and procedures. Compliance risk is inherent in all activities through which we conduct our businesses. Our Compliance Risk Management Program, administered by Compliance, assesses our compliance, regulatory and reputational risk; monitors for compliance with new or amended laws, rules and regulations; designs and implements controls, policies, procedures and training; conducts independent testing; investigates, surveils and monitors for compliance risks and breaches; and leads our responses to regulatory examinations, audits and inquiries. We monitor and review business practices to assess whether they meet or exceed minimum regulatory and legal standards in all markets and jurisdictions in which we conduct business.

**Capital Risk Management**

Capital risk is the risk that our capital is insufficient to support our business activities under normal and stressed market conditions or we face capital reductions or RWA increases, including from new or revised rules or changes in interpretations of existing rules, and are therefore unable to meet our internal capital targets or external regulatory capital requirements. Capital adequacy is of critical importance to us. Accordingly, we have in place a comprehensive capital management policy that provides a framework, defines objectives and establishes guidelines to maintain an appropriate level and composition of capital in both business-as-usual and stressed conditions. Our capital management framework is designed to provide us with the information needed to comprehensively manage risk, and develop and apply projected stress scenarios that capture idiosyncratic vulnerabilities with a goal of holding sufficient capital to remain adequately capitalized even after experiencing a severe stress event. See “Capital Management and Regulatory Capital” for further information about our capital management process.

We have established a comprehensive governance structure to manage and oversee our day-to-day capital management activities and compliance with capital rules and related policies. Our capital management activities are overseen by the Board and its committees. The Board is responsible for approving our annual capital plan and the Risk Committee of the Board approves our capital management policy. In addition,

committees and members of senior management are responsible for the ongoing monitoring of our capital adequacy and evaluate current and future regulatory capital requirements, review the results of our capital planning and stress tests processes, and the results of our capital models, review our contingency capital plan, key capital adequacy metrics, including regulatory capital ratios, as well as capital plan metrics, such as the payout ratio, outcomes and findings of calculation testing, and monitor capital risk limits and breaches. Our process for managing capital risk also includes independent review functions in Risk that, among other things, assess regulatory capital policies and related interpretations, escalate certain interpretations to senior management and/or the appropriate risk committee, and perform calculation testing to corroborate alignment with applicable capital rules.

**Segregation Risk Management**

Assets that FCM customers deposit with GS&Co. are subject to risk of loss, including in the event of insolvency or bankruptcy of GS&Co. Although GS&Co. is obligated to contribute its own funds to satisfy any shortfall in segregated assets, if GS&Co. is unable to do so, the assets available for distribution to customers may not be sufficient to cover their claims.

GS&Co. has established policies and procedures to ensure that it satisfies its segregation obligations, which, in general, require that FCM customer assets (cash and securities) be separately accounted for (separate from the assets of the FCM or of customers other than futures and cleared swaps customers) as belonging solely to the FCM's futures and cleared swaps customers, and prohibit the use of such assets for any purpose unrelated to securing customer obligations, including to finance the FCM itself. These policies and procedures are built around the elements discussed below.

**Separation of Duties.** Three distinct groups, each of which is an independent control and support function, have separate duties and functions for computing segregation requirements and determining that we are in compliance with the segregation requirements, the process of segregating and transferring customer assets and the reconciliation of GS&Co.'s records with those of the applicable depositories and custodians. The three groups are as follows:

- Controllers: Certain members of Controller's staff are solely dedicated to valuing segregated collateral, computing the regulatory segregation requirements and determining that the full segregation requirement is being met.

- Cleared Collateral: Cleared Collateral reconciles customers' futures and cleared swaps positions and tracks and facilitates cash and collateral movements to and from GS&Co. customer futures and cleared swaps accounts. Only individuals with specific system permissions in Cleared Collateral may facilitate the movement of cash and securities in and out of customer accounts. Cleared Collateral provides cash and collateral information to Controllers in order to facilitate Controller's computation of the segregation requirement.

- Global Control: Global Control reconciles all securities held at depositories on behalf of GS&Co. futures and cleared swaps customers and confirms that there are no discrepancies between GS&Co.'s books and records and what the depositories are reporting to GS&Co. as being held in the segregated accounts.

In addition to regulatory and self-regulatory organization examinations, Controllers completes a quarterly review of GS&Co.'s internal controls for segregating customer assets, Goldman Sachs' independent

auditors conduct a quarterly review of GS&Co. to test for internal control weaknesses, and Goldman Sachs' Internal Audit function conducts audits of different units within Goldman Sachs, which include, from time to time, audits of GS&Co.'s segregation functions.

Goldman Sachs' Client Asset Steering Committee sets strategy and develops policies relating to customer asset protection for Goldman Sachs' U.S.-based entities subject to regulation by the CFTC and SEC, including GS&Co. The committee reviews and makes recommendations regarding policies relating to customer assets, reviews compliance with applicable rules and regulations relating to customer asset protection, reviews any incidents or breaches of applicable rules or regulations and reviews the regulatory environment and external events impacting customer asset segregation.

**Selection of Depositories and Custodians.** Independent control and support functions are responsible for the selection and monitoring of depositories and custodians at which customer assets are held. Credit Risk Management reviews the creditworthiness of each depository and custodian, and other factors related to the use of such depositories and custodians, and sets limits on the amount of segregated customer assets that may be maintained at any one depository or custodian. A separate team also conducts ongoing due diligence on depositories and custodians.

**Limitations on Investments of Customer Assets.** GS&Co. strictly limits permissible investments of FCM customer assets to those permitted under CFTC rules, including cash, securities guaranteed by the U.S. government and certain money market mutual funds, and imposes asset-based, issuer-based and counterparty concentration limits. Customer assets are not invested in any obligations of GS&Co.'s affiliates, and are not subject to any resale or repurchase agreements between GS&Co. and any of its affiliates.

As of December 31, 2022, customer assets were invested in U.S. treasury securities or held in cash. The weighted average maturity and weighted average coupon of the U.S. treasury securities were 533 days and 118 basis points (1.18%), respectively. Cash held in a deposit account at a bank is subject to risk of loss in the event of the insolvency of the bank. Segregated assets are also deposited with and held by various clearing houses as margin. See "Credit Risk Management" for information on credit risk related to cash deposits at banks and margin deposited with clearing houses.

**Residual Interest.** In accordance with CFTC rules, GS&Co. has in place policies and procedures to establish a targeted amount of assets in client segregated accounts that exceeds the amount required by CFTC rules. These excess assets are referred to as GS&Co.'s "residual interest."

GS&Co.'s policies and procedures consider the following factors in establishing the amount of residual interest:

- The nature of GS&Co.'s FCM business, including the composition of its customer base, the general trading activity of its customers, the types of markets and products traded by its customers, the volatility and liquidity of the markets and products traded by its customers and the general creditworthiness of its customers;
- GS&Co.'s capital and liquidity; and.
- Historical trends in segregated asset balances, including under-margined accounts and net deficit balances.

The combination of these functions and controls is intended to create a robust set of checks and balances in the process of segregating customer assets.

**Liquidity Risk Management**

Liquidity risk is the risk that we will be unable to fund the firm or meet our liquidity needs in the event of firm-specific, broader industry, or market liquidity stress events. Liquidity is of critical importance to financial institutions, as most failures of financial institutions have occurred in large part due to insufficient liquidity. Accordingly, Goldman Sachs has put in place a comprehensive and conservative set of liquidity and funding policies. Our principal objective is to be able to fund the firm and to enable our core businesses, including those within GS&Co., to continue to serve clients and generate revenues, even under adverse circumstances.

Treasury, which reports to our chief financial officer, has primary responsibility for developing, managing and executing our liquidity and funding strategy within our risk appetite.

Liquidity Risk, which is independent of our revenue-producing units and Treasury, and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our liquidity risk through firmwide oversight across our global businesses and the establishment of stress testing and limits frameworks.

Goldman Sachs manages its overall liquidity risk according to three principles: (i) hold sufficient excess liquidity in the form of Global Core Liquid Assets (GCLA) to cover outflows during a stressed period, (ii) maintain appropriate Asset-Liability Management and (3) maintain a viable Contingency Funding Plan

**Global Core Liquid Assets.** GCLA is liquidity that Goldman Sachs maintains to meet a broad range of potential cash outflows and collateral needs in a stressed environment.

**Asset-Liability Management.** Goldman Sachs' liquidity risk management policies are designed to ensure it has a sufficient amount of financing, even when funding markets experience persistent stress. Goldman Sachs manages the maturities and diversity of its funding across markets, products and counterparties, and seeks to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of its assets.

**Contingency Funding Plan.** Goldman Sachs maintains a Group contingency funding plan, applicable to all subsidiaries, to provide a framework for analyzing and responding to a liquidity crisis situation or periods of market stress.

These principles are discussed in more detail below.

**Global Core Liquid Assets**. Goldman Sachs' primary liquidity principle is to pre-fund estimated potential cash and collateral needs during a liquidity crisis and hold this liquidity in the form of unencumbered, highly liquid securities and cash. We believe that the securities held in the GCLA would be readily convertible to cash in a matter of days, through liquidation, by entering into repurchase agreements or from maturities of resale agreements, and that this cash would allow us to meet immediate obligations without needing to sell other assets or depend on additional funding from credit-sensitive markets.

GCLA reflects the following principles:

- The first days or weeks of a liquidity crisis are the most critical to a company's survival;
- Focus must be maintained on all potential cash and collateral outflows, not just disruptions to financing flows. Our businesses are diverse, and our liquidity needs are determined by many factors, including market movements, collateral requirements and client commitments, all of which can change dramatically in a difficult funding environment;
- During a liquidity crisis, credit-sensitive funding, including unsecured debt, certain deposits and some types of secured financing agreements, may be unavailable, and the terms (e.g., interest rates, collateral provisions and tenor) or availability of other types of secured financing may change and certain deposits may be withdrawn; and
- As a result of our policy to pre-fund liquidity that we estimate may be needed in a crisis, we hold more unencumbered securities and have larger funding balances than our businesses would otherwise require. We believe our liquidity is stronger with greater balances of highly liquid unencumbered securities, even though it increases our total assets and our funding costs.

In order to determine the appropriate size of the GCLA, we model liquidity outflows over a range of scenarios and time horizons. One of our primary internal liquidity risk models, referred to as the Modeled Liquidity Outflow, quantifies our liquidity risk over a 30-day stress scenario. We also consider other factors including, but not limited to, an assessment of our potential intraday liquidity needs through an additional internal liquidity risk model, referred to as the Intraday Liquidity Model, the results of our long-term stress testing models, our resolution liquidity models, other applicable regulatory requirements, and a qualitative assessment of the conditions of the financial markets and the firm. The results of the Modeled Liquidity Outflow, the Intraday Liquidity Model, the long-term stress testing models and the resolution liquidity models are reported to senior management on a regular basis. We also perform firmwide stress tests.

We maintain GCLA across our parent company, Group Inc., Goldman Sachs Funding LLC ("Funding IHC"), and Group Inc.'s major broker-dealer and bank subsidiaries, including GS&CO, asset types and clearing agents to provide us with sufficient operating liquidity to ensure timely settlement in all major markets, even in a difficult funding environrment.

We maintain GCLA to enable us to meet current and potential liquidity requirements of our parent company, Group Inc., and its subsidiaries, including GS&Co. Our Modeled Liquidity Outflow and Intraday Liquidity Model incorporate a requirement for Group Inc., as well as a standalone requirement for each of our major broker-dealer and bank subsidiaries, including GS&Co. Funding IHC is required to provide the necessary liquidity to Group Inc. during the ordinary course of business, and is also obligated to provide capital and liquidity support to major subsidiaries in the event of our material financial distress or failure. Liquidity held directly at GS&Co. is intended for use only by GS&Co. to meet its liquidity requirements and is assumed not to be available to Group Inc. or Funding IHC unless (i) legally provided for and (ii) there are no additional regulatory, tax, or other restrictions. In addition, the Modeled Liquidity Outflow and Intraday Liquidity Model also incorporate a broader assessment of standalone liquidity requirements for GS&Co., and we hold a portion of our GCLA directly at Group Inc. or Funding IHC to support such requirements. Excess liquidity held at Group Inc. or Funding IHC to support the requirements of GS&Co. is accessible via intercompany arrangements the entity has with Group Inc. or Funding IHC.

In addition to the GCLA, we have a significant amount of other unencumbered cash and financial instruments, including other government obligations, high-grade money market securities, corporate obligations, marginable equities and cash deposits not included in the GCLA.

**Modeled Liquidity Outflow.** The Modeled Liquidity Outflow is based on conducting multiple scenarios that include combinations of market-wide and firm-specific stress. These scenarios are characterized by the following qualitative elements:

- Severely challenged market environments, which includes low consumer and corporate confidence, financial and political instability, and adverse changes in market values, including potential declines in equity markets and widening of credit spreads; and
- A firm-specific crisis potentially triggered by material losses, reputational damage, litigation and/or a ratings downgrade.

The following are key modeling elements of the Modeled Liquidity Outflow:

- Liquidity needs over a 30-day scenario;
- A two-notch downgrade of long-term senior unsecured credit ratings;
- Changing conditions in funding markets, which limit the firm's access to unsecured and secured funding;
- No support from additional government funding facilities. Although the Group has access to various central bank funding programs, we do not assume reliance on additional sources of funding in a liquidity crisis; and
- A combination of contractual outflows and contingent outflows arising from both our on-and off-balance sheet arrangements. Contractual outflows include, among other things, upcoming maturities of unsecured debt, term deposits and secured funding. Contingent outflows include, among other things, the withdrawal of customer credit balances in the prime brokerage business, increase in variation margin requirements due to adverse changes in the value of the exchange-traded and OTC-cleared derivatives, draws on unfunded commitments and withdrawals of deposits that have no contractual maturity.

**Intraday Liquidity Model.** The Intraday Liquidity Model measures intraday liquidity needs using a scenario analysis characterized by the same qualitative elements as the Modeled Liquidity Outflow. The model assesses the risk of increased intraday liquidity requirements during a scenario where access to sources of intraday liquidity may become constrained.

**Long-Term Stress Testing.** We utilize longer-term stress tests to take a forward view on our liquidity position through prolonged stress periods in which we experience a severe liquidity stress and recover in an environment that continues to be challenging. We are focused on ensuring conservative asset-liability management to prepare for a prolonged period of potential stress, seeking to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of our assets.

**Resolution Liquidity Models.** In connection with our resolution planning efforts, we have established our Resolution Liquidity Adequacy and Positioning ("RLAP") framework, which estimates liquidity needs of our major subsidiaries, including GS&Co. in a stressed environment. The liquidity needs are measured using our Modeled Liquidity Outflow assumptions and include certain additional inter-affiliate exposures. We have also established our Resolution Liquidity Execution Need ("RLEN") framework, which measures

the liquidity needs of our major subsidiaries, including GS&Co. to stabilize and wind-down following a Group Inc. bankruptcy filing in accordance with our preferred resolution strategy.

In addition, we have established a triggers and alerts framework, which is designed to provide the Board with information needed to make an informed decision on whether and when the commence bankruptcy proceedings for Group Inc.

**Asset-Liability Management** The liquidity risk management policies are designed to ensure we have a sufficient amount of financing, even when funding markets experience persistent stress. We manage the maturities and diversity of our funding across markets, products and counterparties, and seek to maintain a diversified funding profile with an appropriate tenor, taking into consideration the characteristics and liquidity profile of our assets.

Our approach to asset-liability management includes:

- Conservatively managing the overall characteristics of our funding book, with a focus on maintaining long-term, diversified sources of funding in excess of our current requirements;
- Actively managing and monitoring our asset base, with particular focus on the liquidity, holding period and ability to fund assets on a secured basis. We assess our funding requirements and our ability to liquidate assets in a stressed environment while appropriately managing risk. This enables us to determine the most appropriate funding products and tenors; and
- Raising secured and unsecured financing that has a long tenor relative to the liquidity profile of our assets. This reduces the risk that our liabilities will come due in advance of our ability to generate liquidity from the sale of our assets. Because we maintain a highly liquid balance sheet, the holding period of certain of our assets may be materially shorter than their contractual maturity dates.

Our goal is to ensure that we maintain sufficient liquidity to fund our assets and meet our contractual and contingent obligations in normal times, as well as during periods of market stress. Through our dynamic balance sheet management process, we use actual and projected asset balances to determine secured and unsecured funding requirements. Funding plans are reviewed and approved by the Firmwide Asset Liability Committee. In addition, our independent risk oversight and control functions analyze, and the Firmwide Asset Liability Committee reviews, our consolidated total capital position (unsecured long-term borrowings plus total shareholders' equity) so that we maintain a level of long-term funding that is sufficient to meet our long-term financing requirements. In a liquidity crisis, we would first use the GCLA in order to avoid reliance on asset sales (other than the GCLA). However, we recognize that orderly asset sales may be prudent or necessary in a severe or persistent liquidity crisis.

**Contingency Funding Plan.** We maintain a contingency funding plan to provide a framework for analyzing and responding to a liquidity crisis situation or periods of market stress. The contingency funding plan is prepared at the consolidated Group level, but addresses the actions that we would take to manage liquidity across Group Inc.'s subsidiaries, including GS&Co. The contingency funding plan outlines a list of potential risk factors, key reports and metrics that are reviewed on an ongoing basis to assist in assessing the severity of, and managing through, a liquidity crisis and/or market dislocation. The contingency funding plan also describes in detail our potential responses if assessments indicate that we have entered a liquidity crisis, which include pre-funding for what we estimate will be our potential cash and collateral needs, as well as utilizing secondary sources of liquidity. Mitigants and action items to

address specific risks which may arise are also described and assigned to individuals responsible for execution.

The contingency funding plan identifies key groups of individuals and their responsibilities, which include fostering effective coordination, control and distribution of information, implementing liquidity maintenance activities and managing internal and external communications, all of which are critical in the management of a crisis or period of market stress.

**Limits**

We use liquidity risk limits at various levels and across liquidity risk types to manage the size of our liquidity exposures. Limits are measured relative to acceptable levels of risk given our liquidity risk tolerance.

Limits are monitored by Treasury and Liquidity Risk. Liquidity Risk is responsible for identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded.

Goldman Sachs' liquidity risk management policies and processes assist in protecting the assets of FCM customers by facilitating GS&Co.'s ability to satisfy its obligations and commitments, thereby reducing the risk of a failure of GS&Co. to satisfy its obligations in connection with its customers' futures and cleared swap transactions, and protecting the adequacy of the segregated assets.

## Market Risk Management

**Overview**

The principal risk management policies and procedures specifically related to GS&Co.'s custody of segregated assets are addressed above. Market risk is the risk of loss in the value of our inventory, investments, loans and other financial assets and liabilities accounted for at fair value due to changes in market conditions. We hold such positions primarily for market making for our clients and for our investing and financing activities, and therefore, these positions change based on client demands and our investment opportunities. Since these positions are accounted for at fair value, they fluctuate on a daily basis, with the related gains and losses included in the consolidated statements of earnings. We employ a variety of risk measures, each described in the respective sections below, to monitor market risk. Categories of market risk include the following:

- Interest rate risk: results from exposures to changes in the level, slope and curvature of yield curves, the volatilities of interest rates, mortgage prepayment speeds and credit spreads;
- Equity price risk: results from exposures to changes in prices and volatilities of individual equities, baskets of equities and equity indices;
- Currency rate risk: results from exposures to changes in spot prices, forward prices and volatilities of currency rates; and
- Commodity price risk: results from exposures to changes in spot prices, forward prices and volatilities of certain commodities, such as crude oil, petroleum products, natural gas, electricity, and precious and base metals.

Market Risk, which is independent of the revenue-producing units and reports to Goldman Sachs' chief risk officer, has primary responsibility for assessing, monitoring and managing market risk through firmwide oversight across our local businesses.

Managers in revenue-producing units and Market Risk discuss market information, positions and estimated loss scenarios on an ongoing basis. Managers in revenue-producing units are accountable for managing risk within prescribed limits. These managers have in-depth knowledge of their positions, markets and the instruments available to hedge their exposures.

**Market Risk Management Process**

Our process for managing market risk includes the critical components of our risk management framework described in the overview, as well as the following:

- Monitoring compliance with established market risk limits and reporting our exposures;
- Diversifying exposures;
- Controlling position sizes;
- Evaluating mitigants, such as economic hedges in related securities or derivatives; and

Our market risk management systems enable us to perform an independent calculation of VaR and stress measures, capture risk measures at individual position levels, attribute risk measures to individual risk factors of each position, report many different views of the risk measures (e.g., by desk, business, product type or entity) and produce ad hoc analyses in a timely manner.

GS&Co.'s framework for managing market risk is consistent with, and part of, the Goldman Sachs framework, and results are analyzed by business and in the aggregate, at both the Goldman Sachs and GS&Co. levels.

**Risk Measures**

Market Risk produces risk measures and monitors them against established market risk limits. These measures reflect an extensive range of scenarios and the results are aggregated at product, business, entity (eg GS Co.) and firmwide levels.

We use a variety of risk measures to estimate the size of potential losses for both moderate and more extreme market moves over both short-term and long-term time horizons. Our primary risk measures are VaR, which is used for shorter-term periods, and stress tests. Our risk reports detail key risks, drivers and changes for each desk and business, and are distributed daily to senior management of both our revenue-producing units and our independent risk oversight and control functions.

**Value-at-Risk**

VaR is the potential loss in value due to adverse market movements over a defined time horizon with a specified confidence level. We typically employ a one-day time horizon with a 95% confidence level. We use a single VaR model which captures risks including interest rates, equity prices, currency rates and commodity prices. As such, VaR facilitates comparison across portfolios of different risk characteristics. VaR also captures the diversification of aggregated risk across GS&Co.

We are aware of the inherent limitations to VaR and therefore use a variety of risk measures in our market risk management process. Inherent limitations to VaR include:

- VaR does not estimate potential losses over longer time horizons where moves may be extreme;

- VaR does not take account of the relative liquidity of different risk positions; and
- Previous moves in market risk factors may not produce accurate predictions of all future market moves.

To comprehensively capture our exposures and relevant risks in our VaR calculation, we use historical simulations with full valuation of market factors at the position level by simultaneously shocking the relevant market factors for that position. These market factors include spot prices, credit spreads, funding spreads, yield curves, volatility and correlation, and are updated periodically based on changes in the composition of positions, as well as variations in market conditions. We sample from five years of historical data to generate the scenarios for our VaR calculation. The historical data is weighted so that the relative importance of the data reduces over time. This gives greater importance to more recent observations and reflects current asset volatilities, which improves the accuracy of our estimates of potential loss. As a result, even if our positions included in VaR were unchanged, our VaR would increase with increasing market volatility and vice versa.

Given its reliance on historical data, VaR is most effective in estimating risk exposures in markets in which there are no sudden fundamental changes or shifts in market conditions.

Our VaR measure does not include:

- Positions that are best measured and monitored using sensitivity measures; and
- The impact of changes in counterparty, Group Inc.'s and our own credit spreads on derivatives, as well as changes in credit spreads on Group Inc.'s unsecured borrowings for which the fair value option was elected.

We perform daily backtesting of our VaR model (i.e., comparing daily net revenues for positions included in VaR to the VaR measure calculated as of the prior business day) at the firmwide level and for each of our businesses and major regulated subsidiaries.

**Stress Testing**

Stress testing is a method of determining the effect of various hypothetical stress scenarios. We use stress testing to examine risks of specific portfolios as well as the potential impact of significant risk exposures across Goldman Sachs, and the impact specifically on GS&Co. We use a variety of stress testing techniques to calculate the potential loss from a wide range of market moves on GS&Co.'s portfolios, including sensitivity analysis, scenario analysis and stress tests. The results of the various stress tests are analyzed together for risk management purposes. See "Overview" for information about firmwide stress tests.

Sensitivity analysis is used to quantify the impact of a market move in a single risk factor across all positions (e.g., equity prices or credit spreads) using a variety of defined market shocks, ranging from those that could be expected over a one-day time horizon up to those that could take many months to occur. We also use sensitivity analysis to quantify the impact of the default of any single entity, which captures the risk of large or concentrated exposures.

Scenario analysis is used to quantify the impact of a specified event, including how the event impacts multiple risk factors simultaneously. For example, for sovereign stress testing we calculate potential direct exposure associated with our sovereign inventory, as well as the corresponding debt, equity and currency exposures associated with our non-sovereign inventory that may be impacted by the sovereign distress. When conducting scenario analysis, we typically consider a number of possible outcomes for each scenario, ranging from moderate to severely adverse market impacts. In addition, these stress tests are constructed using both historical events and forward-looking hypothetical scenarios.

Unlike VaR measures, which have an implied probability because they are calculated at a specified confidence level, there is generally no implied probability that our stress test scenarios will occur. Instead, stress tests are used to model both moderate and more extreme moves in underlying market factors. When estimating potential loss, we generally assume that our positions cannot be reduced or hedged (although experience demonstrates that we are generally able to do so).

**Limits**

Our market risk limits are monitored by Market Risk, which is responsible for identifying and escalating to senior management and/or the appropriate risk committee, on a timely basis, instances where limits have been exceeded. When a risk limit has been exceeded (e.g., due to positional changes or changes in market conditions, such as increased volatilities or changes in correlations), it is escalated to senior management and/or the appropriate risk committee. Such instances are remediated by an inventory reduction and/or a temporary or permanent increase to the risk limit.

## Credit Risk Management

**Overview**

Credit risk represents the potential for loss due to the default or deterioration in credit quality of a counterparty (e.g., an OTC derivatives counterparty or a borrower) or an issuer of securities or other instruments we hold. Our exposure to credit risk comes mostly from client transactions in OTC derivatives and loans and lending commitments. Credit risk also comes from cash placed with banks, securities financing transactions (i.e., resale and repurchase agreements and securities borrowing and lending activities) and customer and other receivables.Credit Risk, which is independent of the revenue-producing units and reports to Goldman Sachs' chief risk officer, has primary responsibility for assessing, monitoring and managing credit risk at Goldman Sachs. GS&Co.'s framework for managing credit risk is consistent with the framework of Goldman Sachs. Goldman Sachs' Credit Policy Committee and Firmwide Risk Committee establish and review credit policies and parameters for Goldman Sachs as a whole. In addition, GS&Co. holds other positions that give rise to credit risk (e.g., bonds held in inventory). These credit risks are captured as a component of market risk measures, which are monitored and managed by Market Risk, consistent with other inventory positions. We also enter into derivatives to manage market risk exposures. Such derivatives also give rise to credit risk which is monitored and managed by Credit Risk.

Policies authorized by Goldman Sachs' Firmwide Risk Committee and Credit Policy Committee prescribe the level of formal approval required for Goldman Sachs to assume credit exposure to a counterparty across all product areas, taking into account any applicable netting provisions, collateral or other credit risk mitigants. These policies are complemented by specific policies for GS&Co., which are approved by GS&Co. governance bodies, including the US Non-Bank Legal Entity Committee, and oversight provided by other Goldman Sachs-wide committees, including the Clearing House Risk Council.

**Credit Risk Management Process**

Our process for managing credit risk includes the critical components of our risk management framework described in the "Overview," as well as the following:

- Monitoring compliance with established credit risk limits and reporting our exposures and credit concentrations;
- Establishing or approving underwriting standards;
- Assessing the likelihood that a counterparty will default on its payment obligations;
- Measuring our current and potential credit exposure and losses resulting from counterparty default;
- Using credit risk mitigants, including collateral and hedging;
- Maximizing recovery through active workout and restructuring of claims; and

As part of the risk assessment process, Credit Risk performs credit reviews, which include initial and ongoing analyses of our counterparties. For substantially all of our credit exposures, the core of our process is an annual counterparty credit review. A credit review is an independent analysis of the capacity and willingness of a counterparty to meet its financial obligations, resulting in an internal credit rating. The determination of internal credit ratings also incorporates assumptions with respect to the nature of and outlook for the counterparty's industry, and the economic environment. Senior personnel within Credit Risk, with expertise in specific industries, inspect and approve credit reviews and internal credit ratings.

Our risk assessment process may also include, where applicable, reviewing certain key metrics, including, but not limited to, delinquency status, collateral values, Fair Isaac Corporation credit scores and other risk factors.

Our credit risk management systems capture credit exposure to individual counterparties and on an aggregate basis to counterparties and their subsidiaries (economic groups). These systems also provide management with comprehensive information about our aggregate credit risk by product, internal credit rating, industry, country and region.

Goldman Sachs' global credit risk management systems capture credit exposure to individual counterparties and on an aggregate basis to counterparties and their subsidiaries (economic groups). These systems also provide management with comprehensive information on Goldman Sachs' and GS&Co.'s aggregate credit risk by product, internal credit rating, industry, country and region.

**Risk Measures and Limits**

We measure our credit risk based on the potential loss in the event of non-payment by a counterparty using current and potential exposure. For derivatives and securities financing transactions, current exposure represents the amount presently owed to us after taking into account applicable netting and collateral arrangements, while potential exposure represents our estimate of the future exposure that could arise over the life of a transaction based on market movements within a specified confidence level. Potential exposure also takes into account netting and collateral arrangements. For loans and lending commitments, the primary measure is a function of the notional amount of the position.

We use credit limits at various levels, as well as underwriting standards to control the size and nature of our credit exposures. Limits for counterparties and economic groups are reviewed regularly and revised to reflect changing risk appetites for a given counterparty or group of counterparties. Limits for industries and countries are based on our risk appetite and are designed to allow for regular monitoring, review, escalation and management of credit risk concentrations.

Our credit risk limits are monitored by Credit Risk, which is responsible for identifying and escalating, on a timely basis, instances where limits have been exceeded. When a risk limit has been exceeded, it is escalated to senior management and/or the appropriate risk committee.

**Stress Tests/Scenario Analysis**

We conduct regular stress tests to calculate the credit exposures, including potential concentrations that would result from applying shocks to counterparty credit ratings or credit risk factors (e.g., currency rates, interest rates, equity prices). These shocks include a wide range of moderate and more extreme market movements. Some of our stress tests include shocks to multiple risk factors, consistent with the occurrence of a severe market or economic event. In the case of sovereign default, we estimate the direct impact of the default on our sovereign credit exposures, changes to our credit exposures arising from potential market moves in response to the default, and the impact of credit market deterioration on corporate borrowers and counterparties that may result from the sovereign default. Unlike potential exposure, which is calculated within a specified confidence level, with a stress test there is generally no assumed probability of these events occurring.

To supplement these regular stress tests, as described above, we also conduct tailored stress tests on an ad hoc basis in response to specific market events that we deem significant. We also utilize these stress tests to estimate the indirect impact of certain hypothetical events on our country exposures, such as the impact of credit market deterioration on corporate borrowers and counterparties along with the shocks to the risk factors described above. The parameters of these shocks vary based on the scenario reflected in each stress test. We review estimated losses produced by the stress tests in order to understand their magnitude, highlight potential loss concentrations, and assess and mitigate our exposures where necessary.

**Risk Mitigants**

To reduce our credit exposures on derivatives and securities financing transactions, we may enter into netting agreements with counterparties that permit us to offset receivables and payables with such counterparties. We may also reduce credit risk with counterparties by entering into agreements that enable us to obtain collateral from them on an upfront or contingent basis and/or to terminate transactions if the counterparty's credit rating falls below a specified level. We monitor the fair value of the collateral to ensure that our credit exposures are appropriately collateralized. We seek to minimize exposures where there is a significant positive correlation between the creditworthiness of our counterparties and the market value of collateral we receive.

For loans and lending commitments, depending on the credit quality of the borrower and other characteristics of the transaction, we employ a variety of potential risk mitigants. Risk mitigants include collateral provisions, guarantees, covenants, structural seniority of the bank loan claims and, for certain lending commitments, provisions in the legal documentation that allow us to adjust loan amounts, pricing, structure and other terms as market conditions change. The type and structure of risk mitigants employed can significantly influence the degree of credit risk involved in a loan or lending commitment.

When we do not have sufficient visibility into a counterparty's financial strength or when we believe a counterparty requires support from its parent, we may obtain third-party guarantees of the counterparty's obligations. We may also mitigate our credit risk using credit derivatives or participation agreements.

**Credit Exposures**

Our credit exposures are described below.

**Credit Exposures Relating to Receivables.** We are exposed to credit risk from our receivables from brokers, dealers and clearing organizations and customers and counterparties. Receivables from brokers, dealers and clearing organizations are primarily comprised of initial cash margin placed with clearing organizations, variation margin cash related to change in NPV of the trade and receivables related to sales of securities which have traded, but not yet settled. These receivables generally have minimal credit risk due to the low probability of clearing organization default and the short-term nature of receivables related to securities settlements. Receivables from customers and counterparties are generally comprised of collateralized receivables related to customer securities transactions and generally have minimal credit risk due to both the value of the collateral received and the short-term nature of these receivables.

In connection with transactions in futures, options on futures and cleared swaps, we are exposed to credit risk related to receivables arising from our deposits of initial margin and pending receipt of variation margin in the form of cash or securities, with the relevant clearing house in connection with such transactions. Our deposit of margin creates an obligation on the part of the clearing house to return or repay the margin when the obligation that it secures has been satisfied. If a clearing house becomes insolvent or otherwise fails to return or repay margin, we could be exposed to losses. We believe that these credit risks are low, due to the low probability of a clearing house default, but they cannot be eliminated entirely.

We are also exposed to credit risks related to receivables from customers arising in connection with transactions in futures, options on futures and cleared swaps that we clear for such customers. In such instances, if we are required to deposit margin with a clearing house prior to receiving corresponding margin from a customer, we could be exposed to the risk that the customer will default.

**Cash and Cash Equivalents.** Cash and cash equivalents include both interest-bearing and non-interest-bearing deposits. To mitigate the risk of credit loss, we place substantially all of our deposits with highly-rated banks.

**OTC Derivatives.** Our credit exposure on OTC derivatives arises primarily from our market-making activities. As a market maker, we enter into derivative transactions to provide liquidity to clients and to facilitate the transfer and hedging of their risks. We also enter into derivatives to manage market risk exposures. We manage our credit exposure on OTC derivatives using the credit risk process, measures, limits and risk mitigants described above.

We generally enter into OTC derivatives transactions under bilateral collateral arrangements with daily exchange of collateral.

**Securities Financing Transactions.** We enter into securities financing transactions in order to, among other things, facilitate client activities, invest excess cash, acquire securities to cover short positions and finance certain of our activities. We bear credit risk related to resale agreements and securities borrowed only to the extent that cash advanced or the value of securities pledged or delivered to the counterparty exceeds the value of the collateral received. We also have credit exposure on repurchase agreements and securities loaned to the extent that the value of securities pledged or delivered to the counterparty for these transactions exceeds the amount of cash or collateral received. Securities collateral obtained for securities financing transactions primarily includes U.S. government and federal agency obligations and non-U.S. government and agency obligations.

## Operational Risk Management

### Overview

Operational risk is the risk of an adverse outcome resulting from inadequate or failed internal processes, people, systems or from external events. Our exposure to operational risk arises from routine processing errors, as well as extraordinary incidents, such as major systems failures or legal and regulatory matters.

Potential types of loss events related to internal and external operational risk include:

- Clients, products and business practices;
- Execution, delivery and process management;
- Business disruption and system failures;
- Employment practices and workplace safety;
- Damage to physical assets;
- Internal fraud; and
- External fraud.

We maintain a comprehensive control framework designed to provide a well-controlled environment to minimize operational risks. The Firmwide Operational Resilience and Risk Committee is globally responsible for the ongoing approval and monitoring of the frameworks, policies, parameters, limits and thresholds which govern our operational risks.

Operational Risk, which is independent of our revenue-producing units and reports to our chief risk officer, has primary responsibility for developing and implementing a formalized framework for assessing, monitoring and managing operational risk with the goal of maintaining our exposure to operational risk at levels that are within our risk appetite.

### Operational Risk Management Process

Our process for managing operational risk includes:

- Collecting complete, accurate and timely information;
- Training, supervision and development of our people;
- Active participation of senior management in identifying and mitigating our key operational risks;
- Independent risk oversight and control functions that monitor operational risk, and implementation of policies and procedures, and controls designed to prevent the occurrence of operational risk events; and
- Proactive communication between our revenue-producing units and our independent risk oversight and control functions.

We combine top-down and bottom-up approaches to manage and measure operational risk. From a top-down perspective, our senior management assesses firmwide and business-level operational risk profiles. From a bottom-up perspective, our first and second lines of defense are responsible for risk identification and risk management on a day-to-day basis, including escalating operational risks to senior management.

Our operational risk management framework is in part designed to comply with the operational risk measurement rules under the Capital Framework and has evolved based on the changing needs of our businesses and regulatory guidance.

We have established policies that require all employees to report and escalate operational risk events. When operational risk events are identified, our policies require that the events be documented and analyzed to determine whether changes are required in our systems and/or processes to further mitigate the risk of future events.

We use operational risk management applications to capture and organize operational risk event data and key metrics. One of our key risk identification and assessment tools is an operational risk and control self-assessment process, which is performed by our managers. This process consists of the identification and rating of operational risks, on a forward-looking basis, and the related controls. The results from this process are analyzed to evaluate operational risk exposures and identify businesses, activities or products with heightened levels of operational risk.

**Risk Measurement**

We measure our operational risk exposure using both statistical modeling and scenario analyses, which involve qualitative and quantitative assessments of internal and external operational risk event data and internal control factors for each of our businesses. Operational risk measurement also incorporates an assessment of business environment factors, including, but not limited to:

- Evaluations of the complexity of our business activities;
- The degree of automation in our processes;
- New activity information;
- The legal and regulatory environment; and
- Changes in the markets for our products and services, including the diversity and sophistication of our customers and counterparties.

The results from these scenario analyses are used to monitor changes in operational risk and to determine business lines that may have heightened exposure to operational risk. These analyses are used in the determination of the appropriate level of operational risk capital to hold. We also perform firmwide stress tests. See “Overview” for information about firmwide stress tests.

**Model Risk Management**

**Overview**

Model risk is the potential for adverse consequences from decisions made based on model outputs that may be incorrect or used inappropriately. We rely on quantitative models across our business activities primarily to value certain financial assets and financial liabilities, to monitor and manage our risk, and to measure and monitor our regulatory capital.

Model Risk, which is independent of our revenue producing units, model developers, model owners and model users, and reports to our chief risk officer, has primary responsibility for assessing, monitoring and managing our model risk through firmwide oversight across our global businesses, and provides periodic updates to senior management, risk committees and the Risk Committee of the Board.

Our model risk management framework is managed through a governance structure and risk management controls, which encompass standards designed to ensure we maintain a comprehensive model inventory, including risk assessment and classification, sound model development practices, independent review and model-specific usage controls. The Firmwide Model Risk Control Committee oversees our model risk management framework.

**Model Review and Validation**

Model Risk consists of quantitative professionals who perform an independent review, validation and approval of our models. This review includes an analysis of the model documentation, independent testing, an assessment of the appropriateness of the methodology used, and verification of compliance with model development and implementation standards.

We regularly refine and enhance our models to reflect changes in market or economic conditions and our business mix. All models are reviewed on an annual basis, and new models or significant changes to existing models and their assumptions are approved prior to implementation.

The model validation process incorporates a review of models and trade and risk parameters across a broad range of scenarios (including extreme conditions) in order to critically evaluate and verify:

- The model's conceptual soundness, including the reasonableness of model assumptions, and suitability for intended use;
- The testing strategy utilized by the model developers to ensure that the models function as intended;
- The suitability of the calculation techniques incorporated in the model;
- The model's accuracy in reflecting the characteristics of the related product and its significant risks;
- The model's consistency with models for similar products; and
- The model's sensitivity to input parameters and assumptions.

This Disclosure Document was first used on July 12, 2014. This version of the Disclosure Document was first used on January 8, 2024.