

**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 12, 2021. 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 20 years of Goldman Sachs experience (Executive Office, Investment Banking and Securities Divisions)	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.
Scherr, Stephen	Manager	200 West Street New York, NY 10282	More than 26 years of Goldman Sachs experience (Finance, Consumer and Commercial Banking, GS Bank, and Investment Banking Divisions)	Chief Financial Officer of The Goldman Sachs Group, Inc.	Duties of the Chief Financial Officer of The Goldman Sachs Group, Inc.
Waldron, John	Chief Executive Officer	200 West Street New York, NY 10282	More than 19 years of Goldman Sachs experience (Executive Office, Investment Banking Division)	President and Chief Operating Officer of The Goldman Sachs Group, Inc.	Duties of the President and Chief Operating Officer of The Goldman Sachs Group, Inc. and Chief Executive Officer of Goldman Sachs & Co. LLC
Stein, Laurence	Manager	200 West Street New York, NY 10282	More than 23 years of Goldman Sachs experience (Securities and Finance Divisions)	Chief Administrative Officer of The Goldman Sachs Group, Inc.	Duties of the Chief Administrative Officer of The Goldman Sachs Group, Inc.
Doyle, Brian	Chief Financial Officer	200 West Street New York, NY 10282	More than 19 years of Goldman Sachs experience (Finance Division)	Chief Financial Officer for Goldman Sachs & Co. LLC	Duties of the Chief Financial Officer for Goldman Sachs & Co. LLC
Rector, Felicia	Chief Compliance Officer	200 West Street New York, NY 10282	More than 15 years of Goldman Sachs experience (Compliance 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
Barrett, Thomas	Head of Business Unit, Division or Function	200 West Street New York, NY 10282	More than 14 years of Goldman Sachs experience (Securities Division)	Head of global Futures and Derivative Clearing Services and head of the global Clearing business in Prime Services.	Duties of the head of global Futures and Derivative Clearing Services and head of the global Clearing business in Prime Services.
Favia, Thomas	N/A	30 Hudson Street Jersey City, NJ 07302	More than 20 years of Goldman Sachs experience (Finance 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 2019

	<u>Asset Allocation</u>		<u>Capital Employed</u>	
Financing (Resales, Borrows)	58%		8%	
Inventory	32%		41%	
FICC		22%		28%
Equities		10%		11%
Other		0%		2%
Goodwill & Intangible Assets	0%		0%	
Receivables from Brokers Dealers and Customers	8%		20%	
Investments in Subs and Receivables from Affiliates	0%		7%	
Fixed and all Other Assets	2%		24%	

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 Europe	
ICE Futures US, Inc.	
Mexican Derivatives Exchange	
Nasdaq Futures Exchange Inc.	
New York Mercantile Exchange, Inc.	
Nodal Exchange LLC	
OneChicago 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 International (“GSI”)	
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 Canada	No		Societe Generale (SG) Americas Securities, LLC

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)
			(US)
ICE Clear Europe (UK)	Yes	GSI	
ICE Clear Credit	Yes		
Istanbul Stock Exchange Settlement and Custody Bank Inc. (Takasbank)	No		EFG Istanbul Menkul Degerler A.S. (Non-US)
Japan Commodity Clearing House Co., Ltd.	No		Societe Generale Securities Australia Pty Ltd; Credit Suisse AG, Sydney Branch (Non-US)
JSCC	No	Goldman Sachs Japan, Co., Ltd	
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	GSI	
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	

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)
		Co., Ltd.	
Singapore Exchange	No	Goldman Sachs Futures Pte Ltd	
The Thailand Clearing House Company Limited (TCH)	No		Bualuang Securities Public Company Limited; Credit Suisse AG, Sydney Branch (Non-US)
Tokyo Financial Exchange	No	Goldman Sachs Japan, Co., Ltd	
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) and swap dealer and is an indirect, wholly owned subsidiary of Group Inc., except for a de minimis amount of non-voting, non-participating preferred limited partnership 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 or bankruptcy of GS&Co. The principal risks specifically related to GS&Co.'s custody of segregated funds are addressed below. In addition, however, 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.

Our businesses have been and may continue to be adversely affected by conditions in the global financial markets and economic conditions generally.

Our businesses, 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, high business and investor confidence, stable geopolitical conditions, clear regulations and strong business earnings.

Unfavorable or uncertain economic and market conditions can be caused by: declines in economic growth, business activity or investor, business or consumer confidence; 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; concerns about sovereign defaults; uncertainty

concerning fiscal or monetary policy, government shutdowns, debt ceilings or funding; the extent of and uncertainty about tax and other regulatory changes; the imposition of tariffs or other limitations on international trade and travel; outbreaks of domestic or international tensions or hostilities, terrorism, nuclear proliferation, cyber security 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, such as the U.K.'s notification to the European Council of its decision to leave the E.U. (Brexit); corporate, political or other scandals that reduce investor confidence in capital markets; extreme weather events or other natural disasters or pandemics; 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 European sovereign debt risk and its impact on the European banking system, the impact of Brexit, the imposition of tariffs and actions taken by other countries in response, and changes in interest rates and other market conditions or actual changes in interest rates and other market conditions, have resulted, at times, in significant volatility while negatively impacting 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.

Financial institution returns in many countries 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 also been negatively impacted as market participants and market practices and structures continue to adjust to new regulations.

Goldman Sachs' revenues and profitability and those of its competitors have been and will continue to be impacted by requirements relating to capital, additional loss-absorbing capacity, 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 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 adversely affect our ability to fulfill our obligations on behalf of our FCM customers.

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, except to the extent that some of these regulations are modified or otherwise repealed, 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.

If there are new laws or regulations or changes in the 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 could adversely impact levels of market activity more broadly, and thus impact our businesses.

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 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 over-the-counter (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.

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 such regulators and courts 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.

Our businesses have been and may be adversely affected by declining asset values. This is particularly true for those businesses in which 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 basis and declines in asset values directly and immediately 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 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. The inability to sell or effectively hedge assets reduces our ability to limit losses in such positions and the difficulty in valuing assets may negatively affect our and our affiliates’ capital, liquidity or leverage ratios, increase our and our affiliates’ funding costs and generally require us to maintain additional capital.

In our exchange-based market-making activities, we are obligated by stock 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 ordinarily reduce the fees we earn for managing such assets.

We post collateral to support our obligations and receive collateral to support the obligations of our clients and counterparties in connection with our client execution businesses. 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 may, 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 or caused a client or counterparty to go out of business.

Our businesses have been and may be adversely affected by disruptions 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 Goldman Sachs Funding LLC (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 accepting deposits at its bank subsidiaries, by issuing hybrid financial instruments, or 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 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, 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 clearing house could terminate customer positions and apply available customer assets to any required margin or settlement payments. Even when 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 financial 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.

Our market-making activities have been and may 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 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 may be forced to either take on additional risk or to realize losses in order to decrease our VaR.

Our investment banking, client execution, 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 general 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 adverse 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 financial 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.

In certain circumstances, market uncertainty or general declines in market or economic activity may affect our client execution 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 asset management and wealth management businesses. Even if clients do not withdraw their funds, they may invest them in products that generate less fee income.

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 such models may be ineffective, either because of poor design, ineffective testing or improper or flawed inputs, as well as unpermitted access to such 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.

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 bankruptcy or in the event of the insolvency or bankruptcy, or the negligence or misconduct, of a depository or clearing house. In addition, margin assets deposited in connection with cleared 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 clearing house. Margin held at a clearing house is also required to be segregated by the clearing house. However, in certain contexts, the clearing house 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 clearing house 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.

Our liquidity, profitability and businesses may be adversely affected by an inability to borrow from Group Inc. or 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 of Group Inc. to access funds from its subsidiaries or otherwise allocate liquidity optimally, an inability to sell assets or redeem its investments, or unforeseen outflows of cash or collateral. GS&Co.'s liquidity may also be impaired by an inability to borrow from Group Inc. or Funding IHC. Any such constraints on liquidity may arise due to circumstances that we may be unable to control, such as a general market 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.

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. In addition, 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.

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 2019, 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 \$358 million in the event of a one-notch downgrade of its credit ratings and \$1.27 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.

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 clearing houses incurred on behalf of our FCM customers, which in turn could result in termination of positions and other adverse consequences, including the loss of FCM customer assets deposited as margin.

Regulatory changes relating to liquidity may also negatively impact Goldman Sachs' results of operations and competitive position. Numerous regulations have been adopted or proposed to introduce more stringent liquidity requirements for large financial institutions. These regulations address, among other matters, liquidity stress testing, minimum liquidity requirements, wholesale funding, limitations on the issuance of short-term debt and structured notes and prohibitions on parent guarantees that are subject to certain cross-defaults. New and prospective liquidity-related regulations may overlap with, and be impacted by, other regulatory changes, including rules relating to minimum long-term debt requirements and total loss-absorbing capacity, guidance on the treatment of brokered deposits and the capital, leverage and resolution and recovery frameworks applicable to large financial institutions. Given the overlap and complex interactions among these new and prospective regulations, they may have unintended cumulative effects, and their full impact will remain uncertain, while regulatory reforms are being adopted and market practices develop.

We face enhanced risks as new business initiatives and acquisitions lead us and our affiliates to engage in new activities, 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, may 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. 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 and intends to further increase its consumer-oriented deposit-taking and lending activities. For example, during 2019, Goldman Sachs started to issue credit cards to consumers. 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. 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, 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 counterparties. 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, 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 retail 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.

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 expects to continue to make significant investments in technology and human capital resources in connection with its consumer-oriented activities. Such investments may not be successful or have returns similar to its other businesses.

Goldman Sachs' operating expenses and efficiency ratio depend, in part, on its overall headcount and the proportion of its employees that are located in strategic locations. Goldman Sachs' future human capital resource requirements and the benefits provided by strategic locations are uncertain, and Goldman Sachs may not realize the benefits it anticipates.

A failure in our operational systems or infrastructure, or those of third parties, as well as 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 such 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 becomes more challenging, and the risk of systems or human error in connection with such transactions increases, as well as 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. As with other similarly situated institutions, Goldman Sachs utilizes credit

underwriting models in connection with its businesses, including its consumer-oriented activities. Allegations, whether or not accurate, that the ultimate 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.

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. Computers and computer networks are subject to various risks, including, among others, cyber attacks, inherent technological defects, system failures and errors by human operators. 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 be discovered in the future. Cloud technologies are also critical to the operation of our systems and platforms and our reliance on cloud technologies is growing. Service disruptions may lead to delays in accessing, or the loss of, data that is important to our businesses and may hinder our clients' access to our platforms. 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.

Additionally, although the prevalence and scope of applications of distributed ledger technology and similar technologies is growing, the technology is also nascent and may be vulnerable to cyber attacks or have other inherent weaknesses. We may be, or may become, exposed to risks related to distributed ledger technology through our facilitation of clients' activities involving financial products linked to distributed ledger technology, such as blockchain or cryptocurrencies, our investments in companies that seek to develop platforms based on distributed ledger technology, and the use of distributed ledger technology by third-party vendors, clients, counterparties, clearing houses and other financial intermediaries.

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 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 can 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, can result in reputational damage and material losses and liabilities for Goldman Sachs.

In addition, we face the risk of operational failure or significant operational delay, termination or capacity constraints of any of the clearing agents, exchanges, clearing houses 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, clearing houses 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 clearing houses and an increasing number of derivative transactions are now or in the near future will be 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 clearing houses, 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. 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 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.

Nearly all of our employees in our primary locations, including the New York metropolitan area and Salt Lake City, work in close proximity to one another, in one or more buildings. Notwithstanding our efforts to maintain business continuity, given that our headquarters and the largest concentration of our employees are in the New York metropolitan area, and our two principal office buildings in the New York area both are located on the waterfront of the Hudson River, depending on the intensity and longevity of the event, a catastrophic event impacting our New York metropolitan area offices, including a terrorist attack, extreme weather event or other hostile or catastrophic event, could negatively affect our business. If a disruption occurs in one location and our employees in that location are unable to occupy our offices or communicate with or travel to other locations, our ability to service and interact with our clients may suffer, and we may not be able to successfully implement contingency plans that depend on communication or travel.

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, governmental

agencies and other organizations reporting the unauthorized 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 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 may face an increasing number of attempted 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 increasing migration of Goldman Sachs’ communication from devices Goldman Sachs provides to employee-owned devices presents additional risks of cyber attacks. In addition, due to our interconnectivity with third-party vendors (and their respective service providers), central agents, exchanges, clearing houses 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, which could, in turn, interrupt certain of our businesses.

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, especially 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. 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 such events occur, this potentially could jeopardize our or our clients’ or counterparties’ 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 detected, and, following detection, 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.

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. 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.

Our businesses, profitability and liquidity may be adversely affected by deterioration in the credit quality of, or defaults by, third parties who owe us money, securities or other assets or whose securities or obligations we hold.

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 regularly review credit exposures to specific clients, clearing houses 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 concentration of 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 clearing houses, 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, clearing houses, exchanges and investment funds. This has resulted in significant credit concentration with respect to these counterparties.

The financial services industry is both highly competitive and interrelated.

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 recently 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 may not always fully compensate us for the risks we take.

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, 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.

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.

In addition, our status as a subsidiary of a bank holding company subjects us to heightened regulation and increased regulatory scrutiny by the Board of Governors of the Federal Reserve System (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.

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 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.

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 our competitors and such clients have in the past 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 many of our peers and therefore those competitors may benefit more from increased activity by corporate clients.

Derivative transactions and delayed settlements may expose us to unexpected risk and potential losses.

We are party to a large number of derivative transactions, including credit derivatives. 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 may 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 new 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. Various non-U.S. regulators have also proposed regulations contemplated by the International Swaps and Derivatives Association Universal Resolution Stay Protocol, and those implementing regulations may result in additional limitations on our ability to exercise remedies against counterparties. The ISDA Protocols and these rules and regulations extend to repurchase agreements and other instruments that are not derivative contracts, and their impact will depend on the development of market practices and structures.

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 and increase our credit exposure to central clearing platforms.

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

The U.K. Financial Conduct Authority, which regulates LIBOR, has announced that it will not compel panel banks to contribute to LIBOR after 2021. It is likely that banks will not continue to provide submissions for the calculation of LIBOR after 2021 and possibly prior to then. Similarly, it is not possible to know whether LIBOR will continue to be viewed as an acceptable market benchmark, what rate or rates may become accepted alternatives to LIBOR, or what the effect of any such changes in views or alternatives may have on the financial markets for LIBOR-linked financial instruments. Similar statements have been made with respect to other IBORs.

Uncertainty regarding IBORs and the taking of discretionary actions or negotiation of fallback provisions could result in pricing volatility, loss of market share in certain products, adverse tax or accounting impacts, compliance, legal and operational costs and risks associated with client disclosures, as well as systems disruption, model disruption and other business continuity issues. In addition, uncertainty relating to IBORs could result in increased capital requirements for Goldman Sachs given potential low transaction volumes, a lack of liquidity or limited observability for exposures linked to IBORs or any emerging successor rates and operational incidents associated with changes in and the discontinuance of 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. If 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. As a result, there is considerable uncertainty as to how the financial services industry will address the discontinuance of designated rates in contracts and financial instruments or such designated rates ceasing to be acceptable reference rates. This uncertainty could ultimately result in client disputes and litigation surrounding the proper interpretation of our IBOR-based contracts and financial instruments.

Further, the discontinuation of an IBOR, changes in an IBOR or changes in market acceptance of any IBOR as a reference rate may also adversely affect the yield on securities held by us, amounts paid on securities we have issued, amounts received and paid on derivative instruments we have entered into, the value of such securities or derivative instruments, the trading market for securities, our ability to effectively use derivative instruments to manage risk, or the availability or cost of our floating-rate funding and our exposure to fluctuations in interest rates.

Certain of our businesses and our funding 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 issue or offer, such as structured notes, 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, or an index or ETF sponsor materially alters the composition of an index or ETF) or the underlier ceases to be recognized as an acceptable market benchmark, we may experience adverse effects consistent with those described above for IBORs.

Our businesses may 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.

Changes in law or regulation in jurisdictions in which our operations are located that affect taxes on our employees' income, or the amount or composition of compensation, 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.

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 has increased dramatically in the past several years. The financial crisis and the current political and public sentiment regarding financial institutions has resulted 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 over the last several years, and certain regulators have been more likely in recent years to commence enforcement actions or to advance or support legislation targeted at the financial services industry. 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.

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. 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. Our experience has been that legal claims by consumers and clients increase in a market downturn and that employment-related claims increase following periods in which we have reduced our headcount. Additionally, governmental entities have been and are plaintiffs in certain of the legal proceedings in which we are involved, 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 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. Civil cases have been brought against financial institutions (including Goldman Sachs) alleging 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 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.

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 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 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 Federal Reserve Board's 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., thereby increasing the overall level of capital and liquidity required by Goldman Sachs on a consolidated basis.

The requirements for Group Inc. and GS Bank USA 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.

On January 31, 2020, the U.K. left the E.U. We expect considerable change in the regulatory framework that will govern transactions and business undertaken by Goldman Sachs' U.K. subsidiaries in the E.U. As a result, Goldman Sachs faces numerous risks that could adversely affect how it conducts its businesses or its profitability and liquidity.

The growth of electronic trading and the introduction of new trading technology may adversely affect our business and may increase 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 on our investment, particularly given the generally lower commissions arising from electronic trades.

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 in recent years, 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.

We may incur losses as a result of unforeseen or catastrophic events, including the emergence of a pandemic, terrorist attacks, extreme weather events or other natural disasters.

The occurrence of unforeseen or catastrophic events, including the emergence of a pandemic, such as coronavirus, or other widespread health emergency (or concerns over the possibility of such an emergency), terrorist attacks, extreme terrestrial or solar weather events or other natural disasters, could create economic and financial disruptions, and could lead to operational difficulties (including travel limitations) that could impair our ability to manage our businesses.

Climate change concerns could disrupt our businesses, affect client activity levels and creditworthiness and damage 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 may also have a negative impact on the financial condition of our clients, which may decrease revenues from those clients and increase the credit risk associated with credit exposures to those clients. Additionally, our reputation may be damaged as a result of our involvement, or our clients' involvement, in certain industries or projects associated with climate change.

Goldman Sachs' businesses, financial condition, liquidity and results of operations have been, and will likely continue to be, adversely affected by the emergence of the COVID-19 pandemic.

The emergence of the global outbreak of the coronavirus (COVID-19) pandemic has created economic and financial disruptions that during the quarter adversely affected, and are likely to continue to adversely affect, Goldman Sachs' business, financial condition, liquidity and results of operations. The extent to which the COVID-19 pandemic will continue to negatively affect Goldman Sachs' businesses, financial condition, liquidity and results of operations will depend on future developments, which are highly uncertain and cannot be predicted.

The COVID-19 pandemic has contributed to (i) the sudden and significant reduction in the valuation of the equity, fixed-income and commodity markets and the significant increase in the volatility of those markets; (ii) a decrease in the rates and yields on U.S. Treasury securities, in some cases declining below zero; (iii) a major reduction in merger and acquisition activity and significant uncertainty about whether previously announced deals will be completed or restructured; (iv) a major reduction in equity new issue activity; (v) significantly more challenging conditions in the new issue debt market; (vi) significant draws in credit lines, including syndicated credit lines, as clients seek to increase liquidity; (vii) the risk that hedges become less effective, including, for example, due to the movement of short and long positions in U.S. Treasuries and the assets they hedge; (viii) significant increases in collateral calls and disputes as the valuation of derivative positions and, in some cases, collateral has become more challenging; (ix) ratings downgrades, credit deterioration and defaults in many industries, including oil and gas, gaming and lodging, and airlines; (x) a reduction in assets under supervision as the values of assets have declined; and (xi) heightened cybersecurity, information security and operational risks as a result of work-from-home arrangements.

The effects of the COVID-19 pandemic on economic and market conditions have also increased demands on Goldman Sachs' liquidity as it meets client needs. Likewise, these adverse developments have affected Goldman Sachs' capital and leverage ratios. Goldman Sachs has ceased purchases of its common stock in order to deploy more capital and liquidity to meet the needs of its clients. The effects of the COVID-19 pandemic may cause Goldman Sachs to continue to limit future capital distributions.

Governmental authorities worldwide have taken increased measures to stabilize the markets and support economic growth. The success of these measures is unknown and they may not be sufficient to address the market dislocations or avert severe and prolonged reductions in economic activity. Goldman Sachs also faces an increased risk of client disputes, litigation and governmental and regulatory scrutiny as a result of the effects of COVID-19 on economic and market conditions.

The length of the pandemic and the efficacy of the extraordinary measures being put in place to address it are unknown. Until the pandemic subsides, Goldman Sachs expects continued draws on lines of credit, reduced activity levels in investment banking, reduced revenues in its asset management and wealth management businesses and increased client defaults, including defaults in unsecured loans. Even after the pandemic subsides, the U.S. economy, as well as most other major economies, may continue to experience

a recession, and Goldman Sachs anticipates its businesses would be materially and adversely affected by a prolonged recession in the U.S. and other major markets.

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. and Group Inc. are among the defendants named in putative class actions filed in the U.S. District Court for the Southern District of New York beginning in September 2016 on behalf of putative indirect purchasers of foreign exchange instruments. On August 5, 2019, the plaintiffs filed a third consolidated amended complaint generally alleging a conspiracy to manipulate the foreign currency exchange markets, asserting claims under various state antitrust laws and state consumer protection laws and seeking treble damages in an unspecified amount. On July 17, 2020, the court preliminarily approved a settlement in principle. Goldman Sachs has reserved the full amount of its proposed contribution to the settlement.

GS&Co. and Group Inc. are among the defendants named in an action filed in the U.S. District Court for the Southern District of New York on November 7, 2018 by certain direct purchasers of foreign exchange instruments that opted out of a class settlement reached with, among others, GS&Co. and Group Inc. The third amended complaint, filed on August 3, 2020, generally alleges that the defendants violated federal antitrust law and state common law in connection with an alleged conspiracy to manipulate the foreign

currency exchange markets and seeks declaratory and injunctive relief, as well as unspecified amounts of compensatory, punitive, treble and other damages.

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. Certain of these proceedings involve additional allegations.

SunEdison, Inc. GS&Co. is among the underwriters named as defendants in several putative class actions and individual actions filed beginning in March 2016 relating to the August 2015 public offering of \$650 million of SunEdison, Inc. (SunEdison) convertible preferred stock. The defendants also include certain of SunEdison's directors and officers. On April 21, 2016, SunEdison filed for Chapter 11 bankruptcy. The pending cases were transferred to the U.S. District Court for the Southern District of New York and on March 17, 2017, plaintiffs in the putative class action filed a consolidated amended complaint. GS&Co., as underwriter, sold 138,890 shares of SunEdison convertible preferred stock in the offering, representing an aggregate offering price of approximately \$139 million. On April 10, 2018 and April 17, 2018, certain plaintiffs in the individual actions filed amended complaints. The defendants have reached a settlement with certain plaintiffs in the individual actions and a settlement of the class action, which the court approved on October 25, 2019. Goldman Sachs has paid the full amount of its contribution to the settlement.

Valeant Pharmaceuticals International, Inc. GS&Co. and Goldman Sachs Canada Inc. (GS Canada) are among the underwriters and initial purchasers named as defendants in a putative class action filed on March 2, 2016 in the Superior Court of Quebec, Canada. In addition to the underwriters and initial purchasers, the defendants include Valeant Pharmaceuticals International, Inc. (Valeant), certain directors and officers of Valeant and Valeant's auditor. As to GS&Co. and GS Canada, the complaint relates to the June 2013 public offering of \$2.3 billion of common stock, the June 2013 Rule 144A offering of \$3.2 billion principal amount of senior notes, and the November 2013 Rule 144A offering of \$900 million principal amount of senior notes. The complaint asserts claims under the Quebec Securities Act and the Civil Code of Quebec. On August 29, 2017, the court certified a class that includes only non-U.S. purchasers in the offerings. On August 4, 2020, Valeant entered into a settlement agreement with the plaintiffs, which is subject to court approval. Under the terms of the agreement, Goldman Sachs will not be required to contribute to the settlement.

GS&Co. and GS Canada, as sole underwriters, sold 5,334,897 shares of common stock in the June 2013 offering to non-U.S. purchasers representing an aggregate offering price of approximately \$453 million and, as initial purchasers, had a proportional share of sales to non-U.S. purchasers of approximately CAD14.2 million in principal amount of senior notes in the June 2013 and November 2013 Rule 144A offerings.

Snap Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions pending in California Superior Court, County of Los Angeles, and the U.S. District Court for the Central District of California beginning in May 2017, relating to Snap Inc.'s \$3.91 billion March 2017 initial public offering. In addition to the underwriters, the defendants include Snap Inc. and certain of its officers and directors. GS&Co. underwrote 57,040,000 shares of common stock representing an aggregate offering

price of approximately \$970 million. The underwriter defendants, including GS&Co., were voluntarily dismissed from the district court action on September 18, 2018. The state court actions have been stayed. On April 27, 2020, the district court preliminarily approved a settlement among the parties. Also on April 27, 2020, the state court plaintiffs filed a motion for preliminary approval of a settlement of the state court actions. Under the terms of the federal and state court preliminary settlements, Goldman Sachs will not be required to contribute to either settlement.

Altice USA, Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions pending in New York Supreme Court, County of Queens, and the U.S. District Court for the Eastern District of New York beginning in June 2018, relating to Altice USA, Inc.'s (Altice) \$2.15 billion June 2017 initial public offering. In addition to the underwriters, the defendants include Altice and certain of its officers and directors. GS&Co. underwrote 12,280,042 shares of common stock representing an aggregate offering price of approximately \$368 million. On June 26, 2020, the court dismissed the amended complaint in the state court action. Plaintiffs in the district court action filed a second amended complaint on October 7, 2020.

Camping World Holdings, Inc. GS&Co. is among the underwriters named as defendants in several putative securities class actions pending in the U.S. District Court for the Northern District of Illinois, New York Supreme Court, County of New York, and the Circuit Court of Cook County, Illinois, Chancery Division, beginning in December 2018. In addition to the underwriters, the defendants include Camping World Holdings, Inc. (Camping World) and certain of its officers and directors, as well as certain of its stockholders. As to the underwriters, the complaints relate to three offerings of Camping World common stock, a \$261 million October 2016 initial public offering, a \$303 million May 2017 offering and a \$310 million October 2017 offering. GS&Co. underwrote 4,267,214 shares of common stock in the October 2016 initial public offering representing an aggregate offering price of approximately \$94 million, 4,557,286 shares of common stock in the May 2017 offering representing an aggregate offering price of approximately \$126 million and 3,525,348 shares of common stock in the October 2017 offering representing an aggregate offering price of approximately \$143 million. On August 5, 2020, the Illinois district court approved a settlement among the parties to the Illinois district court action. On August 18, 2020, the Illinois state court action was dismissed and on September 8, 2020, the New York state court action was dismissed. Under the terms of the settlement, Goldman Sachs will not be required to contribute to the settlement.

Alnylam Pharmaceuticals, Inc. GS&Co. is among the underwriters named as defendants in a putative securities class action filed on September 12, 2019 in New York Supreme Court, County of New York, relating to Alnylam Pharmaceuticals, Inc.'s (Alnylam) \$805 million November 2017 public offering of common stock. In addition to the underwriters, the defendants include Alnylam and certain of its officers and directors. GS&Co. underwrote 2,576,000 shares of common stock representing an aggregate offering price of approximately \$322 million.

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 February 11, 2020, plaintiffs in the state court action filed a consolidated amended complaint. On August 7, 2020, defendants' motion to dismiss the district court action was denied.

Venator Materials PLC. GS&Co. is among the underwriters named as defendants in putative securities class actions in Texas District Court, Dallas County, New York Supreme Court, New York County, and the U.S. District Court for the Southern District of Texas, filed beginning in February 2019, relating to Venator Materials PLC's (Venator) \$522 million August 2017 initial public offering and \$534 million December 2017 secondary equity offering. In addition to the underwriters, the defendants include Venator, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 6,351,347 shares of common stock in the August 2017 initial public offering representing an aggregate offering price of approximately \$127 million and 5,625,768 shares of common stock in the December 2017 secondary equity offering representing an aggregate offering price of approximately \$127 million. On January 21, 2020, the Texas Court of Appeals reversed the Texas District Court and dismissed the claims against the underwriter defendants, including GS&Co., in the Texas state court action for lack of personal jurisdiction. On July 1, 2020, defendants' motion to stay the New York state court action in favor of the federal action was denied.

XP Inc. GS&Co. is among the underwriters named as defendants in putative securities class actions pending in New York Supreme Court, County of New York, and the U.S. District Court for the Eastern District of York, filed beginning March 19, 2020, relating to XP Inc.'s (XP) \$2.3 billion December 2019 initial public offering. In addition to the underwriters, the defendants include XP, certain of its officers and directors and certain of its shareholders. GS&Co. underwrote 19,326,218 shares of common stock in the December 2019 initial public offering representing an aggregate offering price of approximately \$522 million. On June 22, 2020, plaintiffs in the state court action filed an amended complaint. On July 29, 2020, a consolidated amended complaint was filed in the federal court action. On August 5, 2020, defendants' motion to stay the state court action in favor of the federal court action was denied.

GoHealth, Inc. GS&Co. is among the underwriters named as defendants in two putative securities class actions filed on September 21, 2020 and September 28, 2020 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. A third putative securities class action relating to GoHealth's initial public offering that does not name the underwriters as defendants was filed in the U.S. District Court for the Northern District of Illinois on September 25, 2020.

Securities Lending Antitrust Litigation

Group Inc. and GS&Co. are 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.

Interest Rate Swap Antitrust Litigation

Group Inc., GS&Co., Goldman Sachs International (GSI), Goldman Sachs Bank USA (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 also are 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 2008-2012 conduct, but granted the motion to add limited allegations from 2013-2016, which the plaintiffs added in a fourth consolidated amended complaint filed on March 22, 2019.

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.

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 plaintiff's motion for class certification.

Group Inc., GS&Co., GSI, J. Aron & Company and Metro are among the defendants in an action filed on February 27, 2020 in the High Court of Justice, Business and Property Courts of England and Wales. The particulars of claim seeks unspecified compensatory and exemplary damages based on alleged violations of U.K. and E.U. competition laws in connection with the storage and trading of aluminum.

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.

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 consolidated complaint, filed on July 14, 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.

Employment-Related Matters

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

On March 30, 2018, the district court certified a damages class as to the plaintiffs' disparate impact and treatment claims. On September 4, 2018, the Second Circuit Court of Appeals denied defendants' petition for interlocutory review of the district court's class certification decision and subsequently denied defendants' petition for rehearing. On March 26, 2020, the Magistrate Judge in the district court granted in part a motion to compel arbitration as to class members who are parties to certain agreements with Group Inc. and/or GS&Co. in which they agreed to arbitrate employment-related disputes.

Trading Matters. On October 4, 2019, GS&Co. entered into a settlement with ICE Futures Europe (ICE) to settle charges alleging that the timing and nature of GS&Co.'s trading activity in certain ICE commodity contracts on behalf of a client was disruptive, reckless and disorderly. Under this settlement, GS&Co. paid approximately \$150,000 to ICE.

On November 26, 2019, GS&Co. entered into a consent order with the CFTC to settle charges that, during a number of days in January and February 2014, GS&Co. failed to make and keep certain recordings of oral communications as required under CFTC regulations for swap dealers. Under this consent order, GS&Co. paid \$1 million to the CFTC and agreed to cease and desist from violating certain regulations under the Commodities Exchange Act.

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 currencies² may be held in

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://forms.cftc.gov/fp/complaintform.aspx> 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

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 2020, GS&Co. had total equity of \$10.68 billion included in regulatory capital of \$33.18 billion, as defined by Rule 15c3-1, which exceeded the amount required by \$16.18 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 2020, GS&Co.'s house margin requirements (representing positions carried for the FCM and its affiliates) were approximately

- i) 24% of Segregated Customers' requirements (funds held on behalf of futures customers of GS&Co. for positions on U.S. futures exchange);
- ii) 7% of Cleared Swaps Customers' requirements (funds held on behalf of Cleared Swaps customers of GS&Co); and
- iii) 27% 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 2020, 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)	178
Cleared Swaps Customers	24
Secured Customers (customers with positions on non-U.S. futures exchanges)	49

*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/current/subsidiary-financial-info/gsco/gsco-12-31-2019-file.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 "View Financial Information" 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

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, Operations and Services, 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.

US Non-Bank Legal Entity Committee. The US Non-Bank Legal Entity Committee is responsible for the ongoing monitoring and management of GS&Co.'s risks, including, but not limited to, market risk, credit risk, liquidity and funding risk, foreign currency risk, legal risk, operational risk and settlement risk. This committee approves risk tolerance limits for GS&Co., especially as such risks relate to GS&Co.'s activities as a swap dealer. The US Non-Bank Legal Entity Committee may delegate certain of these functions, and designate subcommittees to review, manage and report on specific issues relating to the firm's activities as an FCM.

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 Committee.** The Firmwide Risk Committee 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 the Global Markets Division, who are appointed as chairs by the chairs of the Firmwide Enterprise Risk Committee.
- **Firmwide Resilience and Operational Risk Committee.** The Firmwide Resilience and Operational Risk Committee is responsible for overseeing operational risk, and for ensuring our business and operational resilience. To assist the Firmwide Operational Resilience and Risk 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 Resilience and Risk 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 Division, the chief debt underwriting officer for EMEA and a managing director in our Investment Banking Division, who are appointed as chairs by the chair of the Firmwide Client and Business Standards Committee.

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

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 the Investment Banking division of Goldman Sachs 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.

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.

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, 2019, customer assets were invested in U.S. treasury securities or held in cash. The weighted average maturity, weighted average coupon and weighted average yield of the U.S. treasury securities were 646 days, 176 basis points (1.76%) and 157 basis points (1.57%), 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 the following principles:

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' most important liquidity policy 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 debt 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, 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 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.

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 consolidated 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, including low consumer and corporate confidence, financial and political instability, 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, such as upcoming maturities of unsecured debt, and contingent outflows, including but not limited to, the withdrawal of customer credit balances in the prime brokerage business or an increase in variation margin requirements due to adverse changes in the value of the exchange-traded and OTC-cleared derivatives 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 to 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 our 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. 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.

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