

VERTEX PHARMACEUTICALS INC / MA  
Form 10-K  
March 01, 2007

# UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

## FORM 10-K

**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934**  
For the Fiscal Year Ended December 31, 2006

or  
**TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934**  
For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number 000-19319

## Vertex Pharmaceuticals Incorporated

(Exact name of registrant as specified in its charter)

**Massachusetts**  
(State or other jurisdiction of  
incorporation or organization)  
**130 Waverly Street**  
**Cambridge, Massachusetts**  
(Address of principal executive offices)

**04-3039129**  
(I.R.S. Employer  
Identification No.)

**02139-4242**  
(Zip Code)

Registrant's telephone number, including area code **(617) 444-6100**

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

**Title of Each Class**  
Common Stock, \$0.01 Par Value Per Share  
Rights to Purchase Series A Junior Participating Preferred Stock

**Name of Each Exchange on Which  
Registered**  
The Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Exchange Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes  No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes  No

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this

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Form 10-K. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of accelerated filer and large accelerated filer in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer  x

Accelerated filer  o

Non-accelerated filer  o

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

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant (without admitting that any person whose shares are not included in such calculation is an affiliate) based on the last reported sale price of the common stock on June 30, 2006 was \$2.3 billion.

As of February 26, 2007, the registrant had 126,650,456 shares of common stock outstanding.

## **DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the definitive Proxy Statement for the 2007 Annual Meeting of Stockholders to be held on May 31, 2007 are incorporated by reference into Part III of this Annual Report on Form 10-K.

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## FORM 10-K

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The Company, Vertex, we and us as used in this Annual Report on Form 10-K, refer to Vertex Pharmaceuticals Incorporated, a Massachusetts corporation, and its subsidiaries.

Vertex is a registered trademark of Vertex. Agenerase, Lexiva and Telzir are registered trademarks of GlaxoSmithKline plc. Other brands, names and trademarks contained in this Annual Report are the property of their respective owners.

**PART I**

**ITEM 1. BUSINESS**

**OVERVIEW**

We are in the business of discovering, developing and commercializing small molecule drugs for the treatment of serious diseases. We have built a drug discovery capability that integrates biology, chemistry, biophysics, automation and information technologies, with a goal of making the drug discovery process more efficient and productive. A Vertex-discovered compound for the treatment of HIV infection, fosamprenavir calcium, is being marketed by our collaborator GlaxoSmithKline plc as Lexiva in the United States and Telzir in Europe. We currently are concentrating most of our drug development resources on four drug candidates: telaprevir (VX-950) for the treatment of hepatitis C virus, or HCV, infection, VX-702 for the treatment of rheumatoid arthritis and other inflammatory diseases, VX-770 for the treatment of cystic fibrosis, or CF, and VX-883 for the treatment of bacterial infection.

Our lead drug candidate is telaprevir, an oral hepatitis C protease inhibitor, and one of the most advanced of a new class of antiviral treatments in development targeting HCV infection, a serious and life-threatening disease. We are conducting three major Phase 2b clinical trials of telaprevir. We expect that these three Phase 2b clinical trials together will evaluate sustained viral response rates in approximately 1,000 patients infected with genotype 1 HCV, the most prevalent form of HCV, including treatment-naïve patients and patients who did not achieve sustained viral response with current therapies. We expect the clinical results from these Phase 2b clinical trials to provide important information supporting the design and initiation in the second half of 2007 of a Phase 3 clinical program for telaprevir. The United States Food and Drug Administration, or FDA, has granted Fast-Track designation to telaprevir. In June 2006, we entered into a collaboration agreement with Janssen Pharmaceutica, N.V., or Janssen, a Johnson & Johnson company, relating to telaprevir. Under our agreement with Janssen, we have retained exclusive commercial rights to telaprevir in North America and will lead the clinical development program. Janssen will be responsible for the commercialization of telaprevir, including the manufacture of its own commercial supply of telaprevir for the Janssen territories, which include the territories outside of North America and the Far East. Janssen has agreed to be responsible for 50% of drug development costs under the development program for North America and the Janssen territories and to make additional contingent milestone payments for the successful development, approval and launch of telaprevir.

In addition to telaprevir, we currently are focusing on:

- VX-702, a p38 MAP kinase inhibitor, which we currently are investigating for the treatment of rheumatoid arthritis, or RA. We are conducting a 12-week, 120 patient Phase 2a clinical trial in patients with RA to evaluate the safety, tolerability and anti-inflammatory effects of VX-702 on a background of methotrexate. In January 2007, we commenced a Thorough QTc study, which is a type of clinical trial required for all small molecule drug candidates prior to the initiation of Phase 3 clinical trials. Depending on the results of the 12-week Phase 2a clinical trial and the Thorough QTc study, we plan to conduct a larger six-month Phase 2 clinical trial of VX-702 on a background of methotrexate.
- VX-770, a cystic fibrosis transmembrane regulator, or CFTR, potentiator, which we are investigating for the treatment of CF. We recently completed a Phase 1 clinical trial of VX-770 in healthy volunteers and in patients with CF and plan to initiate a Phase 2 clinical trial of VX-770 in patients with CF in the second quarter of 2007.
- VX-883, a Vertex-discovered dual-mechanism investigational antibiotic, which is in preclinical development for the treatment of patients with bacterial infection. Depending on the outcomes of our preclinical activities, we plan to initiate a Phase 1 clinical trial of this drug candidate in 2007.

Our pipeline also includes several drug candidates that are being developed by our collaborators. The most advanced of these drug candidates is MK-0457 (VX-680), an Aurora kinase inhibitor that is being

developed by Merck & Co., Inc. for the treatment of cancer. In December 2006, Merck announced results from the Phase 1 clinical trials of MK-0457 (VX-680), which showed that MK-0457 (VX-680) demonstrated clinical activity in select patients with leukemias and myeloproliferative disorders, and initiated a pivotal Phase 2 clinical trial of MK-0457 (VX-680) in patients with treatment-resistant chronic myelogenous leukemia, or CML, and Philadelphia chromosome-positive acute lymphocytic leukemia, or Ph+ ALL, containing the T3151 BCR-ABL mutation. We also are collaborating with Merck on the development of other Aurora kinase inhibitors.

We plan to continue adding promising drug candidates to our development pipeline through our ongoing commitment to discovery research. As we have matured as a company by advancing our drug candidates to later stage development, we have chosen to retain greater development control and commercial rights to some of our drug candidates in order to retain a greater proportion of the potential value of those drug candidates if they are successfully commercialized. In the future, we expect that we will retain control of clinical development and the right to market some of our drug candidates in therapeutic and geographic areas where we have or believe we can build sufficient expertise to independently market the drug candidate, if it is approved, on a cost-effective basis.

In order to complete the clinical development program for telaprevir and prepare to market telaprevir in North America if it is approved, we are investing significant resources to expand our capabilities with respect to clinical development, regulatory affairs and quality control, and to build and manage a commercial supply chain. We also expect to incur significant costs in 2007 to manufacture registration batches of *telaprevir* and build *telaprevir* commercial inventory.

## OUR STRATEGY

Our goal is to become a fully integrated pharmaceutical company with industry-leading capabilities in research, development and commercialization of pharmaceutical products. The key elements of our strategy are:

*Focus on the development and commercialization of telaprevir. We plan to invest significant resources in the clinical development and preparation for launch of telaprevir. We have designed a comprehensive clinical development program for telaprevir consisting of multiple concurrent clinical trials that will study the profile of telaprevir. In addition, we are investing in building and managing a commercial supply chain for telaprevir, including purchasing significant quantities of long lead-time raw materials and identifying and entering into relationships with third-party manufacturers, in order to support a timely launch of telaprevir if we are successful in completing development and obtaining marketing approval.*

*Capitalize on the advances in our telaprevir clinical program to build our general drug development and commercialization capabilities. We believe that the progress we made in 2006 and in particular the advances we made in the development of telaprevir have positioned us to expand our general drug development and commercialization capabilities. In 2007, we plan to invest in key areas including clinical development, regulatory affairs, quality control, commercial operations and commercial supply chain management that will be necessary in order to complete development of telaprevir, to seek approval for telaprevir and to commercialize telaprevir if we are successful in obtaining marketing approval. We expect that these capabilities also will support realization of additional drug candidates that may progress through our pipeline.*

*Invest in research and development and retain a greater proportion of rights to proprietary drug candidates. We intend to continue to invest significant amounts in our research and development programs. In the future, we expect that we will fund a greater proportion of our research programs than in past years, using internal funds rather than collaborator funds. We believe that this strategy will ultimately allow us to retain greater development control of, and commercial rights to, those proprietary drug candidates that may meet our strategic internal investment criteria as in effect from time to time.*

*Support a broad-based portfolio of drug candidates, including the introduction of multiple drug candidates into development. We have elected to diversify our research and development activities across a relatively*



*broad array of investment opportunities, due in part to the high risks associated with the biotechnology and pharmaceutical business. We plan to continue to add promising potential drug candidates to our development pipeline through our continuing commitment to discovery research.*

*Continue existing and establish new collaborations to develop and commercialize selected drug candidates. Collaborations with pharmaceutical companies have played an important role in helping us advance our drug discovery capabilities as well as to grow and advance our drug candidate pipeline. Collaborations provide us with financial support and other valuable resources for our research programs, development resources for our drug candidates and marketing and sales support for our products. We plan to continue to rely on collaborators to develop and commercialize certain of our drug candidates either worldwide, in collaboration with us, or in markets in which we are not currently concentrating our resources.*

*License and acquire technologies, resources and products. In addition to collaborations, we also seek opportunistically to license and acquire technologies, resources and drugs that have the potential to strengthen our drug discovery platform, pipeline and commercial capabilities.*

*Appropriately manage our capital resources in order to execute our strategy. We are focused on maintaining a financial profile that will enable us to execute our business strategy. In 2006, we increased our cash, cash equivalents and marketable securities balance and reduced our outstanding debt as a result of payments received from collaborators and a series of capital transactions that offset significant operating expenses. We expect to continue to pursue a general financing strategy that may lead us to undertake one or more additional capital transactions.*

#### COMMERCIAL PRODUCT AND CLINICAL DEVELOPMENT PROGRAMS

The drug candidates on which we are currently concentrating most of our drug development resources, along with the drugs and drug candidates we have developed or are developing with collaborators, are set forth in the following table. In addition, we are currently conducting clinical trials or engaging in preclinical activities with respect to a number of additional drug candidates.

Drug or Drug Candidate	Clinical Indication(s)	Phase	Marketing Rights (Region)
<i>Principal Areas of Focus</i> telaprevir (VX-950)	Chronic HCV infection	Phase 2b	Vertex (North America); Mitsubishi (Far East); and Janssen (Rest of World)
VX-702	Rheumatoid arthritis and other inflammatory diseases	Phase 2	Vertex (Worldwide, except for Far East); and Kissei (Far East, co-exclusive with Vertex in certain Far East countries)
VX-770	Cystic fibrosis	Phase 1	Vertex (Worldwide)
VX-883	Bacterial infection	Preclinical	Vertex (Worldwide)
<i>Collaborator-Led Programs</i>			
Lexiva/Telzir*	HIV infection and AIDS	Marketed	GlaxoSmithKline (Worldwide)
MK-0457 (VX-680)	Oncology	Phase 2	Merck (Worldwide)
MK-6592 (VX-667)	Oncology	Phase 1	Merck (Worldwide)
AVN-944 (VX-944)	Oncology	Phase 1	Avalon Pharmaceuticals (Worldwide)
VX-409 and backup compounds	Pain	Preclinical	GlaxoSmithKline (Worldwide)

\* Fosamprenavir calcium is marketed under the trade names Lexiva in North America and Telzir in the European Union. Lexiva/Telzir is a prodrug of amprenavir (marketed as Agenerase), our first drug for the treatment of HIV infection and AIDS. Lexiva/Telzir has replaced Agenerase in worldwide markets.

*Principal Areas of Focus*

**Telaprevir (VX-950) (investigational oral hepatitis C protease inhibitor for the treatment of chronic HCV infection)**

Telaprevir, our most advanced drug candidate, is an oral hepatitis C protease inhibitor. Telaprevir is designed to inhibit NS3-4A serine protease, an enzyme thought to be necessary for HCV replication. The FDA has granted Fast-Track designation to telaprevir. We are conducting three major Phase 2b clinical trials of telaprevir, which we refer to as the PROVE clinical trials, as part of a global development program to determine the safety and antiviral activity of telaprevir. We expect the clinical results from these Phase 2b clinical trials to provide important information supporting the design and initiation in the second half of 2007 of a Phase 3 clinical program for telaprevir. We believe that the current PROVE clinical trials have the potential to generate sufficient safety and efficacy data in a broad range of genotype 1 HCV patients, together with safety data from the proposed Phase 3 program, to support a New Drug Application, or NDA, filing in late 2008. If efficacy data from the Phase 3 program is required for the NDA, the NDA filing may be later than 2008.

Under our agreement with Janssen, we have retained exclusive commercial rights to telaprevir in North America and will lead the clinical development program in North America and the Janssen territories. Janssen has the right to market telaprevir in the rest of the world, except for Japan and certain Far East countries, where we are collaborating with Mitsubishi Pharma Corporation. Janssen has agreed to be responsible for 50% of drug development costs under the development program for North America and the Janssen territories and to make additional contingent milestone payments for the successful development, approval and launch of telaprevir. Janssen will be responsible for the commercialization of telaprevir, including the manufacture of its own commercial supply of telaprevir, outside of North America and the Far East.

In 2007, we anticipate a clinical trial exploring twice-daily dosing of telaprevir will be initiated and that Janssen will conduct this clinical trial through Tibotec, a separate Johnson & Johnson company. In addition in 2007, we expect to expand the clinical development of telaprevir into patients with genotype 2 and genotype 3 HCV infection. In 2006, Mitsubishi conducted a Phase 1 clinical trial of telaprevir in the Far East. Mitsubishi is designing a Phase 2 clinical program for telaprevir in the Far East.

We have begun to identify and enter into commercial relationships with third-party manufacturers that will be necessary in order to manufacture commercial quantities of telaprevir. In 2007, we expect to manufacture registration batches of telaprevir, and invest in telaprevir commercial supply in order to support a timely launch if we are successful in obtaining regulatory marketing approval for telaprevir.

Telaprevir was discovered in our collaboration, now ended, with Eli Lilly and Company. We hold worldwide rights to all other second-generation HCV protease inhibitors discovered by us during our collaboration with Eli Lilly. We will owe Eli Lilly royalties on any future sales of telaprevir, if approved, and certain other HCV protease inhibitors.

*Background: Treatment of Chronic Hepatitis C Virus Infection*

HCV infection causes chronic inflammation in the liver. The World Health Organization estimates that there are as many as 170 million people chronically infected with HCV worldwide and that an additional 3 million to 4 million people are infected each year. Reports published by the American Association for the Study of Liver Disease have estimated that approximately 3.4 million people in the United States are chronically infected with HCV, and the American Liver Foundation estimates that 8,000 to 10,000 people in the United States die as a result of HCV infection each year.

Currently, there is no vaccine available to prevent HCV infection. The current standard treatment for genotype 1 HCV infection is a combination of pegylated interferon, or peg-IFN, and ribavirin, or RBV, administered for up to 48 weeks. This treatment regimen is associated with significant side effects, including fatigue, flu-like symptoms, depression and anemia. Among patients who begin treatment, approximately 50% of patients infected with genotype 1 HCV, the most common HCV genotype in the



United States, fail to either complete treatment or show a long-term sustained response to therapy. As a result, we believe new safe and effective treatment options for HCV infection are needed.

*Telaprevir Development Program*

We are conducting three major Phase 2b clinical trials of telaprevir. PROVE 1 is ongoing in the United States and PROVE 2 is ongoing in European Union, both in treatment-naïve patients. PROVE 3 has commenced and is being conducted with patients in North America and the European Union who did not achieve sustained viral response with previous interferon-based treatments. PROVE 1 and PROVE 2 are fully enrolled, and we commenced patient enrollment in PROVE 3 in January 2007.

**PROVE 1 and PROVE 2**

We expect that together, the PROVE 1 and PROVE 2 clinical trials will evaluate rates of sustained viral response, or SVR, in approximately 580 treatment-naïve patients infected with genotype 1 HCV, including patients who will receive telaprevir and patients in the control arms. SVR is defined as undetectable viral levels 24 weeks after all treatment has ceased.

A description of each of the clinical trial arms for the PROVE 1 and PROVE 2 clinical trials, including the intended number of patients in each trial, is set forth in the following table:


Treatment Regimen	Number of Patients (treatment naïve)				
	PROVE 1		PROVE 2		
	PROVE 1	PROVE 2	Total		
12-week regimens of telaprevir in combination with peg-IFN and RBV	20	80	100		
12-week regimens of telaprevir in combination with only peg-IFN	0	80	80	-0.19%	-0.47%
Effective Performance (6 Month)	2.08%	3.81%	10.51%	-6.58%	10.75%
Annualized* Performance (since August 2008)	4.21%	3.16%	5.90%	-11.08%	6.76%
Annualized* Realized Volatility (since August 2008)**	5.09%	4.83%	16.65%	22.48%	30.74%
Return over Risk (since August 2008)***	0.83	0.65	0.35	-0.49	0.22
Maximum Peak-to-Trough Drawdown****	-11.49%	-12.96%	-48.43%	-78.65%	-65.74%

\* Calculated on a per annum percentage basis.  
 \*\* Calculated on the same basis as

realized  
volatility  
used in  
calculating  
the index.

\*\*\* Calculated  
by dividing  
the  
annualized  
performance  
by the  
annualized  
realized  
volatility  
since August  
29, 2008.

\*\*\*\* The largest  
percentage  
decline  
experienced  
in the  
relevant  
measure  
from a  
previously  
occurring  
maximum  
level.

  
Please read the section entitled “Additional Risk Factors Specific to Your Notes” beginning on page PS-17 of this pricing supplement as well as the risks and considerations described in the accompanying prospectus, the accompanying prospectus supplement and the accompanying index supplement.

## Terms AND CONDITIONS

(Terms From Pricing Supplement No. 5,521 Incorporated Into Master Note No. 2)

These terms and conditions relate to pricing supplement no. 5,521 dated April 29, 2019 of GS Finance Corp. and The Goldman Sachs Group, Inc. with respect to the issuance by GS Finance Corp. of its GS Momentum Builder<sup>®</sup> Multi-Asset 5S ER Index-Linked Notes due 2021 and the guarantee thereof by The Goldman Sachs Group, Inc.

The provisions below are hereby incorporated into master note no. 2, dated August 22, 2018. References herein to “this note” shall be deemed to refer to “this security” in such master note no. 2, dated August 22, 2018. Certain defined terms may not be capitalized in these terms and conditions even if they are capitalized in master note no. 2, dated August 22, 2018. Defined terms that are not defined in these terms and conditions shall have the meanings indicated in such master note no. 2, dated August 22, 2018, unless the context otherwise requires.

CUSIP / ISIN: 40056FC52 / US40056FC520

Company (Issuer): GS Finance Corp.

Guarantor: The Goldman Sachs Group, Inc.

Index: GS Momentum Builder<sup>®</sup> Multi-Asset 5S ER Index (current Bloomberg symbol: “GSMBMA5S Index”), or any successor index, as it may be modified, replaced or adjusted from time to time as provided herein

Face amount: \$463,000 in the aggregate on the original issue date; the aggregate face amount may be increased if the company, at its sole option, decides to sell an additional amount on a date subsequent to the trade date.

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

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

Cash settlement amount:

if the index return is positive, the sum of (i) \$1,000 plus (ii) the product of (a) \$1,000 times (b) the upside participation rate times (c) the index return; or  
if the index return is zero or negative, \$1,000.

Initial index level: 102.68

Final index level: the closing level of the index on the determination date, subject to adjustment as provided in “— Consequences of a non-trading day” and “— Discontinuance or modification of the index” below

Index return: the quotient of (i) the final index level minus the initial index level divided by (ii) the initial index level, expressed as a positive or negative percentage

Upside participation rate: 140%

Trade date: April 29, 2019

Original issue date: May 2, 2019

Determination date: October 29, 2021, unless the note calculation agent determines that such day is not a trading day. In that event, the determination date will be the first following trading day. In no event, however, will the determination date be postponed to a date later than the originally scheduled stated maturity date or, if the originally scheduled stated maturity date is not a business day, later than the first business day after the originally scheduled stated maturity date. If the determination date is postponed to the last possible day, but such day is not a trading day, that day will nevertheless be the determination date.

Stated maturity date: November 3, 2021, unless that day is not a business day, in which case the stated maturity date will be the next following business day. If the determination date is postponed as described under “— Determination date” above, the stated maturity date will be postponed by the same number of business day(s) from but excluding the originally scheduled determination date to and including the actual determination date.

Closing level of the index: the official closing level of the index or any successor index published by the index sponsor (including any index calculation agent acting on the index sponsor’s behalf) on any trading day for the index

Level of the index: at any time on any trading day, the official level of the index or any successor index published by the index sponsor (including any index calculation agent acting on the index sponsor’s behalf) at such time on such trading day

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**Business day:** each Monday, Tuesday, Wednesday, Thursday and Friday that is not a day on which banking institutions in New York City generally are authorized or obligated by law, regulation or executive order to close

**Trading day:** a day on which the index is calculated and published by the index sponsor (including any index calculation agent acting on the index sponsor's behalf). For the avoidance of doubt, if the index calculation agent determines that an index market disruption event occurs or is continuing on any day, such day will not be a trading day.

**Index calculation agent:** Solactive AG or any replacement index calculation agent

**Index sponsor:** at any time, the person or entity, including any successor sponsor, that determines and publishes the index as then in effect (current index sponsor: Goldman Sachs & Co. LLC ("GS&Co.")).

**Successor index:** any substitute index approved by the note calculation agent as a successor index as provided under "— Discontinuance or modification of the index" below

**Index ETFs:** with respect to the index, at any time, the exchange traded funds that comprise the index as then in effect, after giving effect to any additions, deletions or substitutions.

**Consequences of a non-trading day:** If a day that would otherwise be the determination date is not a trading day, then the determination date will be postponed as described under "— Determination date" above.

If the note calculation agent determines that the final index level is not available on the last possible determination date because of a non-trading day or for any other reason (other than as described under "— Discontinuance or modification of the index" below), then the note calculation agent will nevertheless determine the level of the index based on its assessment, made in its sole discretion, of the level of the index on that day.

**Discontinuance or modification of the index:** If the index sponsor discontinues publication of the index and the index sponsor or anyone else publishes a substitute index that the note calculation agent determines is comparable to the index, or if the note calculation agent designates a substitute index, then the note calculation agent will determine the cash settlement amount payable on the stated maturity date by reference to the substitute index. We refer to any substitute index approved by the note calculation agent as a successor index.

If the note calculation agent determines on the determination date that the publication of the index is discontinued and there is no successor index, the note calculation agent will determine the amount payable on the stated maturity date by a computation methodology that the note calculation agent determines will as closely as reasonably possible replicate the index.

If the note calculation agent determines that the index or the method of calculating the index is changed at any time in any respect — including any split or reverse split and any addition, deletion or substitution and any reweighting or rebalancing of the index or of the index ETFs and whether the change is made by the index sponsor under its existing policies or following a modification of those policies, is due to the publication of a successor index, is due to events affecting one or more of the index ETFs or its sponsor or is due to any other reason — and is not otherwise reflected in the level of the index by the index sponsor pursuant to the then-current index methodology of the index, then the note calculation agent will be permitted (but not required) to make such adjustments in the index or the method of its calculation as it believes are appropriate to ensure that the level of the index used to determine the cash settlement amount payable on the stated maturity date is equitable.

All determinations and adjustments to be made by the note calculation agent with respect to the index may be made by the note calculation agent in its sole discretion. The note calculation agent is not obligated to make any such adjustments.

Note calculation agent (calculation agent): GS&Co.

Default amount: If an event of default occurs and the maturity of your notes is accelerated, the company will pay the default amount in respect of the principal of your notes at the maturity, instead of the amount payable on the stated maturity date as described earlier. The default amount for your notes on any day (except as provided in the last sentence under “— Default quotation period” below) will be an amount, in the specified currency for the face amount of your notes, equal to the cost of having a qualified financial institution, of the kind and selected as described below, expressly assume all of our payment and other obligations with respect to your notes as of that day and as if no default or acceleration had occurred, or to undertake other obligations providing substantially equivalent economic value to you with respect to your notes. That cost will equal:

the lowest amount that a qualified financial institution would charge to effect this assumption or undertaking, plus the reasonable expenses, including reasonable attorneys’ fees, incurred by the holder of your notes in preparing any documentation necessary for this assumption or undertaking.

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During the default quotation period for your notes, which is described below, the holder of the notes and/or the company may request a qualified financial institution to provide a quotation of the amount it would charge to effect this assumption or undertaking. If either party obtains a quotation, it must notify the other party in writing of the quotation. The amount referred to in the first bullet point above will equal the lowest — or, if there is only one, the only — quotation obtained, and as to which notice is so given, during the default quotation period. With respect to any quotation, however, the party not obtaining the quotation may object, on reasonable and significant grounds, to the assumption or undertaking by the qualified financial institution providing the quotation and notify the other party in writing of those grounds within two business days after the last day of the default quotation period, in which case that quotation will be disregarded in determining the default amount.

**Default quotation period:** The default quotation period is the period beginning on the day the default amount first becomes due and ending on the third business day after that day, unless:

- no quotation of the kind referred to above is obtained, or
- every quotation of that kind obtained is objected to within five business days after the day the default amount first becomes due.

If either of these two events occurs, the default quotation period will continue until the third business day after the first business day on which prompt notice of a quotation is given as described above. If that quotation is objected to as described above within five business days after that first business day, however, the default quotation period will continue as described in the prior sentence and this sentence.

In any event, if the default quotation period and the subsequent two business day objection period have not ended before the determination date, then the default amount will equal the principal amount of your notes.

**Qualified financial institutions:** For the purpose of determining the default amount at any time, a qualified financial institution must be a financial institution organized under the laws of any jurisdiction in the United States of America, Europe or Japan, which at that time has outstanding debt obligations with a stated maturity of one year or less from the date of issue and that is, or whose securities are, rated either:

- A-1 or higher by Standard & Poor's Ratings Services or any successor, or any other comparable rating then used by that rating agency, or
- P-1 or higher by Moody's Investors Service, Inc. or any successor, or any other comparable rating then used by that rating agency.

**Overdue principal rate:** the effective Federal Funds rate

**Defeasance:** not applicable

## HYPOTHETICAL EXAMPLES

The following examples are provided for purposes of illustration only. They should not be taken as an indication or prediction of future investment results and are intended merely to illustrate the impact that the various hypothetical index levels on the determination date could have on the cash settlement amount at maturity assuming all other variables remain constant. The examples below are based on a range of index levels that are entirely hypothetical; no one can predict what the index level will be on any day throughout the life of your notes, and no one can predict what the final index level will be on the determination date. The index has been highly volatile in the past — meaning that the index level has changed considerably in relatively short periods — and its performance cannot be predicted for any future period. The information in the following examples reflects hypothetical rates of return on the offered notes assuming that they are purchased on the original issue date at the face amount and held to the stated maturity date. If you sell your notes in a secondary market prior to the stated maturity date, your return will depend upon the market value of your notes at the time of sale, which may be affected by a number of factors that are not reflected in the examples below such as the volatility of the index, the creditworthiness of GS Finance Corp., as issuer, and the creditworthiness of The Goldman Sachs Group, Inc., as guarantor. In addition, the estimated value of your notes at the time the terms of your notes are set on the trade date (as determined by reference to pricing models used by GS&Co.) is less than the original issue price of your notes. For more information on the estimated value of your notes, see “Additional Risk Factors Specific to Your Notes — The Estimated Value of Your Notes At the Time the Terms of Your Notes Are Set On the Trade Date (as Determined By Reference to Pricing Models Used By GS&Co.) Is Less Than the Original Issue Price Of Your Notes” on page PS-17 of this pricing supplement. The information in the examples also reflects the key terms and assumptions in the box below.

### Key Terms and Assumptions

Face amount	\$1,000
Upside participation rate	140%
No non-trading day occurs on the originally scheduled determination date	
No change in or affecting any of the eligible underlying assets or the method by which the index sponsor calculates the index	
Notes purchased on original issue date and held to the stated maturity date	

For these reasons, the actual performance of the index over the life of your notes, as well as the amount payable at maturity may bear little relation to the hypothetical examples shown below or to the historical index performance information or hypothetical performance data shown elsewhere in this pricing supplement. For information about the historical index performance levels and hypothetical performance data of the index during recent periods, see “The Index — Daily Closing Levels of the Index” on page PS-41. Before investing in the offered notes, you should consult publicly available information to determine the level of the index between the date of this pricing supplement and the date of your purchase of the offered notes.

Any rate of return you may earn on an investment in the notes may be lower than that which you could earn on a comparable investment in the index underlying assets.

Also, the hypothetical examples shown below do not take into account the effects of applicable taxes. Because of the U.S. tax treatment applicable to your notes, tax liabilities could affect the after-tax rate of return on your notes to a comparatively greater extent than the after-tax return on the index ETFs. The levels in the left column of the table



below represent hypothetical final index levels and are expressed as percentages of the initial index level. The amounts in the right column represent the hypothetical cash settlement amounts, based on the corresponding hypothetical final index level (expressed as a percentage of the initial index level), and are expressed as percentages of the face amount of a note (rounded to the nearest one-thousandth of a percent). Thus, a hypothetical cash settlement amount of 100.000% means that the value of the cash payment that we would deliver for each \$1,000 of the outstanding face amount of the offered notes on the stated maturity date would equal 100.000% of the face amount of a note, based on the corresponding hypothetical final index level (expressed as a percentage of the initial index level) and the assumptions noted above.

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Hypothetical Final Index Level (as Percentage of Initial Index Level)	Hypothetical Cash Settlement Amount (as Percentage of Face Amount)
200.000%	240.000%
175.000%	205.000%
150.000%	170.000%
125.000%	135.000%
100.000%	100.000%
75.000%	100.000%
50.000%	100.000%
25.000%	100.000%
0.000%	100.000%

If, for example, the final index level were determined to be 25.000% of the initial index level, the cash settlement amount that we would deliver on your notes at maturity would be 100.000% of the face amount of your notes, as shown in the table above. As a result, if you purchased your notes on the original issue date and held them to the stated maturity date, you would receive no return on your investment. The following chart also shows a graphical illustration of the hypothetical cash settlement amounts (expressed as a percentage of the face amount of your notes) that we would pay on your notes on the stated maturity date, if the final index level (expressed as a percentage of the initial index level) were any of the hypothetical levels shown on the horizontal axis. The chart shows that any hypothetical final index level (expressed as a percentage of the initial index level) of less than 100.000% (the section left of the 100.000% marker on the horizontal axis) would result in a hypothetical cash settlement amount of 100.000% of the face amount of your notes.

The cash settlement amounts shown above are entirely hypothetical; they are based on closing levels of the index that may not be achieved on the determination date and on assumptions that may prove to be erroneous. The actual market value of your notes on the stated maturity date or at any other time, including any time you may wish to sell your notes, may bear little relation to the hypothetical cash settlement amounts shown above, and these amounts should not be

viewed as an indication of the financial return on an investment in the offered notes. The hypothetical cash settlement amounts on notes held to the stated maturity date in the examples above assume you purchased your notes at their face amount and have not been adjusted to reflect the actual issue price you pay for your notes. The return on your investment (whether positive or negative) in your notes will be affected by the amount you pay for your notes. If you purchase your notes for a price other than the face amount, the return on your investment will differ from, and may be significantly lower than, the hypothetical returns suggested by the above examples. Please read “Additional Risk Factors Specific to Your Notes — The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors” on page PS-18.

Payments on the notes are economically equivalent to the amounts that would be paid on a combination of other instruments. For example, payments on the notes are economically equivalent to a combination of an interest-bearing bond bought by the holder and one or more options entered into between the holder and us (with one or more implicit option premiums paid over time). The discussion in this paragraph does not modify or affect the terms of the notes or the U.S. federal income tax treatment of the notes, as described elsewhere in this pricing supplement.

We cannot predict the actual final index level or what the market value of your notes will be on any particular trading day, nor can we predict the relationship between the index level and the market value of your notes at any time prior to the stated maturity date. The actual amount that you will receive at maturity and the rate of return on the offered notes will depend on the actual final index level as determined by the note calculation agent as described above. Moreover, the assumptions on which the hypothetical returns are based may turn out to be inaccurate. Consequently, the amount of cash to be paid in respect of your notes on the stated maturity date may be very different from the information reflected in the examples above.

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## ADDITIONAL RISK FACTORS SPECIFIC TO YOUR NOTES

An investment in your notes is subject to the risks described below, as well as the risks and considerations described in the accompanying index supplement, the accompanying prospectus supplement and the accompanying prospectus. You should carefully review these risks and considerations as well as the terms of the notes described herein and in the accompanying index supplement, the accompanying prospectus supplement and the accompanying prospectus. Your notes are a riskier investment than ordinary debt securities. Also, your notes are not equivalent to investing directly in any eligible underlying asset or the assets held by any eligible ETF or in notes that bear interest at the notional interest rate. You should carefully consider whether the offered notes are suited to your particular circumstances.

Although we have classified the risks described below into two categories (general risks and risks related to the index), and the accompanying index supplement includes a third category of risks (risks related to the eligible ETFs), the order and document in which any category of risks appears is not intended to signify any decreasing (or increasing) significance of these risks. You should read all of the risks described below and in the accompanying index supplement, the accompanying prospectus supplement and the accompanying prospectus.

### General Risks

The Estimated Value of Your Notes At the Time the Terms of Your Notes Are Set On the Trade Date (as Determined By Reference to Pricing Models Used By GS&Co.) Is Less Than the Original Issue Price Of Your Notes

The original issue price for your notes exceeds the estimated value of your notes as of the time the terms of your notes are set on the trade date, as determined by reference to GS&Co.'s pricing models and taking into account our credit spreads. Such estimated value on the trade date is set forth above under "Estimated Value of Your Notes" after the trade date, the estimated value as determined by reference to these models will be affected by changes in market conditions, the creditworthiness of GS Finance Corp., as issuer, the creditworthiness of The Goldman Sachs Group, Inc., as guarantor, and other relevant factors. The price at which GS&Co. would initially buy or sell your notes (if GS&Co. makes a market, which it is not obligated to do), and the value that GS&Co. will initially use for account statements and otherwise, also exceeds the estimated value of your notes as determined by reference to these models. As agreed by GS&Co. and the distribution participants, this excess (i.e., the additional amount described under "Estimated Value of Your Notes") will decline to zero on a straight line basis over the period from the date hereof through the applicable date set forth above under "Estimated Value of Your Notes". Thereafter, if GS&Co. buys or sells your notes it will do so at prices that reflect the estimated value determined by reference to such pricing models at that time. The price at which GS&Co. will buy or sell your notes at any time also will reflect its then current bid and ask spread for similar sized trades of structured notes. In estimating the value of your notes as of the time the terms of your notes are set on the trade date, as disclosed above under "Estimated Value of Your Notes", GS&Co.'s pricing models consider certain variables, including principally our credit spreads, interest rates (forecasted, current and historical rates), volatility, price-sensitivity analysis and the time to maturity of the notes. These pricing models are proprietary and rely in part on certain assumptions about future events, which may prove to be incorrect. As a result, the actual value you would receive if you sold your notes in the secondary market, if any, to others may differ, perhaps materially, from the estimated value of your notes determined by reference to our models due to, among other things, any differences in pricing models or assumptions used by others. See "— The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors" below. The difference between the estimated value of your notes as of the time the terms of your notes are set on the trade date and the original issue price is a result of certain factors, including principally the underwriting discount and commissions, the expenses incurred in creating, documenting and marketing the notes, and an estimate of the difference between the amounts we pay to GS&Co. and the amounts GS&Co. pays to us in connection with your notes. We pay to GS&Co. amounts based on what we would pay to holders of a non-structured note with a similar maturity. In return for such payment, GS&Co. pays to us the amounts we owe under your notes. In addition to the factors discussed above, the value and quoted price of your notes at any time will reflect many factors

and cannot be predicted. If GS&Co. makes a market in the notes, the price quoted by GS&Co. would reflect any changes in market conditions and other relevant factors, including any deterioration in our creditworthiness or perceived creditworthiness or the creditworthiness or perceived creditworthiness of The Goldman Sachs Group, Inc. These changes may adversely affect the value of your notes, including the price you may receive for your notes in any market making transaction. To the extent that GS&Co. makes a market in the notes, the quoted price will reflect the estimated value determined by reference to GS&Co.'s pricing models at that time, plus or minus its then current bid and ask spread for similar sized trades of structured notes (and subject to the declining excess amount described above). Furthermore, if you sell your notes, you will likely be charged a commission for secondary market transactions, or the price will likely reflect a dealer discount. This commission or discount will further reduce the proceeds you would receive for your notes in a secondary market sale.

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There is no assurance that GS&Co. or any other party will be willing to purchase your notes at any price and, in this regard, GS&Co. is not obligated to make a market in the notes. See “— Your Notes May Not Have an Active Trading Market” below.

#### The Notes Are Subject to the Credit Risk of the Issuer and the Guarantor

Although the return on the notes will be based on the performance of the index, the payment of any amount due on the notes is subject to the credit risk of GS Finance Corp., as issuer of the notes, and the credit risk of The Goldman Sachs Group, Inc., as guarantor of the notes. The notes are our unsecured obligations. Investors are dependent on our ability to pay all amounts due on the notes, and therefore investors are subject to our credit risk and to changes in the market’s view of our creditworthiness. Similarly, investors are dependent on the ability of The Goldman Sachs Group, Inc., as guarantor of the notes, to pay all amounts due on the notes, and therefore are also subject to its credit risk and to changes in the market’s view of its creditworthiness. See “Description of the Notes We May Offer — Information About Our Medium-Term Notes, Series E Program — How the Notes Rank Against Other Debt” on page S-4 of the accompanying prospectus supplement and “Description of Debt Securities We May Offer — Guarantee by The Goldman Sachs Group, Inc.” on page 42 of the accompanying prospectus.

#### You May Receive Only the Face Amount of Your Notes at Maturity

If the index return is zero or negative on the determination date, the return on your notes will be limited to the face amount. Even if the amount paid on your notes at maturity exceeds the face amount of your notes, the overall return you earn on your notes may be less than you would have earned by investing in a note with the same stated maturity that bears interest at the prevailing market rate.

#### The Amount Payable on Your Notes Is Not Linked to the Level of the Index at Any Time Other than the Determination Date

The final index level will be based on the closing level of the index on the determination date (subject to adjustment as described elsewhere in this pricing supplement). Therefore, if the closing level of the index dropped precipitously on the determination date, the cash settlement amount for your notes may be significantly less than it would have been had the cash settlement amount been linked to the closing level of the index prior to such drop in the level of the index. Although the actual level of the index on the stated maturity date or at other times during the life of your notes may be higher than the final index level, you will not benefit from the closing level of the index at any time other than on the determination date.

Also, the market price of your notes prior to the stated maturity date may be significantly lower than the purchase price you pay for your notes. Consequently, if you sell your notes before the stated maturity date, you may receive far less than the amount of your investment in the notes.

#### Your Notes Do Not Bear Interest

You will not receive any interest payments on your notes. As a result, even if the cash settlement amount payable on your notes on the stated maturity date exceeds the face amount of your notes, the overall return you earn on your notes may be less than you would have earned by investing in a non-indexed debt security of comparable maturity that bears interest at a prevailing market rate.

#### The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors

When we refer to the market value of your notes, we mean the value that you could receive for your notes if you chose to sell them in the open market before the stated maturity date. A number of factors, many of which are beyond our control, will influence the market value of your notes, including:

the level of the index, including the initial index level

the volatility — i.e., the frequency and magnitude of changes — in the level of the index (even though the index attempts to limit volatility with daily rebalancing), the eligible underlying assets and the assets that comprise the eligible ETFs

the market prices of the eligible ETFs

3-month USD LIBOR

economic, financial, regulatory, political, military and other events that affect markets generally and the assets held by the eligible ETFs, and which may affect the closing levels of the index

other interest rates and yield rates in the market

the time remaining until your notes mature and

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our creditworthiness and the creditworthiness of The Goldman Sachs Group, Inc., whether actual or perceived, including actual or anticipated upgrades or downgrades in our credit ratings or the credit ratings of The Goldman Sachs Group, Inc., or changes in other credit measures.

These factors, and many other factors, will influence the price you will receive if you sell your notes before maturity, including the price you may receive for your notes in any market making transaction. If you sell your notes before maturity, you may receive less than the face amount of your notes.

You cannot predict the future performance of the index based on its historical performance or on any hypothetical performance data. The actual performance of the index over the life of the notes, as well as the cash settlement amount payable on the stated maturity date, may bear little or no relation to the historical index performance information, hypothetical performance data or hypothetical return examples shown elsewhere in this pricing supplement.

**If You Purchase Your Notes at a Premium to Face Amount, the Return on Your Investment Will Be Lower Than the Return on Notes Purchased at Face Amount and the Impact of Certain Key Terms of the Notes Will Be Negatively Affected**

The cash settlement amount will not be adjusted based on the issue price you pay for the notes. If you purchase notes at a price that differs from the face amount of the notes, then the return on your investment in such notes held to the stated maturity date will differ from, and may be substantially less than, the return on notes purchased at face amount. If you purchase your notes at a premium to face amount and hold them to the stated maturity date, the return on your investment in the notes will be lower than it would have been had you purchased the notes at face amount or a discount to face amount.

**Anticipated Hedging Activities by Goldman Sachs or Our Distributors May Negatively Impact Investors in the Notes and Cause Our Interests and Those of Our Clients and Counterparties to be Contrary to Those of Investors in the Notes**

Goldman Sachs expects to hedge our obligations under the notes by purchasing listed or over-the-counter options, futures and/or other instruments linked to the index and the eligible underlying assets. Goldman Sachs also expects to adjust the hedge by, among other things, purchasing or selling any of the foregoing, and perhaps other instruments linked to the index, the eligible underlying assets, 3-month USD LIBOR or assets held by the eligible ETFs, at any time and from time to time, and to unwind the hedge by selling any of the foregoing on or before the determination date for your notes. Alternatively, Goldman Sachs may hedge all or part of our obligations under the notes with unaffiliated distributors of the notes which we expect will undertake similar market activity. Goldman Sachs may also enter into, adjust and unwind hedging transactions relating to other index-linked notes whose returns are linked to the index, the eligible underlying assets, 3-month USD LIBOR or assets held by the eligible ETFs.

In addition to entering into such transactions itself, or distributors entering into such transactions, Goldman Sachs may structure such transactions for its clients or counterparties, or otherwise advise or assist clients or counterparties in entering into such transactions. These activities may be undertaken to achieve a variety of objectives, including: permitting other purchasers of the notes or other securities to hedge their investment in whole or in part; facilitating transactions for other clients or counterparties that may have business objectives or investment strategies that are inconsistent with or contrary to those of investors in the notes; hedging the exposure of Goldman Sachs to the notes including any interest in the notes that it reacquires or retains as part of the offering process, through its market-making activities or otherwise; enabling Goldman Sachs to comply with its internal risk limits or otherwise manage firmwide, business unit or product risk; and/or enabling Goldman Sachs to take directional views as to relevant markets on behalf of itself or its clients or counterparties that are inconsistent with or contrary to the views and objectives of the investors in the notes.



Any of these hedging or other activities may adversely affect the levels of the index — directly or indirectly by affecting the price of the eligible underlying assets — and therefore the market value of your notes and the amount we will pay on your notes, if any, at maturity. In addition, you should expect that these transactions will cause Goldman Sachs or its clients, counterparties or distributors to have economic interests and incentives that do not align with, and that may be directly contrary to, those of an investor in the notes. Neither Goldman Sachs nor any distributor will have any obligation to take, refrain from taking or cease taking any action with respect to these transactions based on the potential effect on an investor in the notes, and may receive substantial returns on hedging or other activities while the value of your notes declines. In addition, if the distributor from which you purchase notes is to conduct hedging activities in connection with the notes, that distributor may otherwise profit in connection with such hedging activities and such profit, if any, will be in addition to the compensation that the distributor receives for the sale of the notes to you. You should be aware that the potential to earn fees in connection with hedging activities may create a further incentive for the distributor to sell the notes to you in addition to the compensation they would receive for the sale of the notes.

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**Goldman Sachs' Trading and Investment Activities for its Own Account or for its Clients, Could Negatively Impact Investors in the Notes**

Goldman Sachs is a global investment banking, securities and investment management firm that provides a wide range of financial services to a substantial and diversified client base that includes corporations, financial institutions, governments and individuals. As such, it acts as an investor, investment banker, research provider, investment manager, investment advisor, market maker, trader, prime broker and lender. In those and other capacities, Goldman Sachs purchases, sells or holds a broad array of investments, actively trades securities, derivatives, loans, commodities, currencies, credit default swaps, indices, baskets and other financial instruments and products for its own account or for the accounts of its customers, and will have other direct or indirect interests, in the global fixed income, currency, commodity, equity, bank loan and other markets. Any of Goldman Sachs' financial market activities may, individually or in the aggregate, have an adverse effect on the market for your notes, and you should expect that the interests of Goldman Sachs or its clients or counterparties will at times be adverse to those of investors in the notes. Goldman Sachs regularly offers a wide array of securities, financial instruments and other products into the marketplace, including existing or new products that are similar to your notes, or similar or linked to the index or the eligible underlying assets. Investors in the notes should expect that Goldman Sachs will offer securities, financial instruments, and other products that will compete with the notes for liquidity, research coverage or otherwise.

**Goldman Sachs' Market-Making Activities Could Negatively Impact Investors in the Notes**

Goldman Sachs actively makes markets in and trades financial instruments for its own account (primarily as a market maker) and for the accounts of customers. These financial instruments include debt and equity securities, currencies, commodities, bank loans, indices, baskets and other products. Goldman Sachs' activities include, among other things, executing large block trades and taking long and short positions directly and indirectly, through derivative instruments or otherwise. The securities and instruments in which Goldman Sachs takes positions, or expects to take positions, include securities and instruments of the index or the eligible underlying assets, securities and instruments similar to or linked to the foregoing or the currencies in which they are denominated. Market making is an activity where Goldman Sachs buys and sells on behalf of customers, or for its own account, to satisfy the expected demand of customers. By its nature, market making involves facilitating transactions among market participants that have differing views of securities and instruments. As a result, you should expect that Goldman Sachs will take positions that are inconsistent with, or adverse to, the investment objectives of investors in the notes.

If Goldman Sachs becomes a holder of any eligible underlying asset in its capacity as a market-maker or otherwise, any actions that it takes in its capacity as securityholder, including voting or provision of consents, will not necessarily be aligned with, and may be inconsistent with, the interests of investors in the notes.

**You Should Expect That Goldman Sachs Personnel Will Take Research Positions, or Otherwise Make Recommendations, Provide Investment Advice or Market Color or Encourage Trading Strategies That Might Negatively Impact Investors in the Notes**

Goldman Sachs and its personnel, including its sales and trading, investment research and investment management personnel, regularly make investment recommendations, provide market color or trading ideas, or publish or express independent views in respect of a wide range of markets, issuers, securities and instruments. They regularly implement, or recommend to clients that they implement, various investment strategies relating to these markets, issuers, securities and instruments. These strategies include, for example, buying or selling credit protection against a default or other event involving an issuer or financial instrument. Any of these recommendations and views may be negative with respect to the index or the eligible underlying assets or other securities or instruments similar to or linked to the foregoing or result in trading strategies that have a negative impact on the market for any such securities or instruments, particularly in illiquid markets. In addition, you should expect that personnel in the trading and

investing businesses of Goldman Sachs will have or develop independent views of the index or the eligible underlying assets, the relevant industry or other market trends, which may not be aligned with the views and objectives of investors in the notes.

Goldman Sachs Regularly Provides Services to, or Otherwise Has Business Relationships with, a Broad Client Base, Which May Include the Sponsors of the Index or the Eligible ETFs or Other Entities That Are Involved in the Transaction

Goldman Sachs regularly provides financial advisory, investment advisory and transactional services to a substantial and diversified client base, and you should assume that Goldman Sachs will, at present or in the future, provide such services or otherwise engage in transactions with, among others, the sponsors of the index or the eligible ETFs, or transact in securities or instruments or with parties that are directly or indirectly related to the foregoing. These services could include making loans to or equity investments in those companies, providing financial advisory or other investment banking services, or issuing research reports. You should expect that Goldman Sachs, in providing such services, engaging in such transactions, or acting for its own account, may take actions that have direct or indirect effects on the index or the

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eligible ETFs, as applicable, and that such actions could be adverse to the interests of investors in the notes. In addition, in connection with these activities, certain Goldman Sachs personnel may have access to confidential material non-public information about these parties that would not be disclosed to Goldman Sachs employees that were not working on such transactions as Goldman Sachs has established internal information barriers that are designed to preserve the confidentiality of non-public information. Therefore, any such confidential material non-public information would not be shared with Goldman Sachs employees involved in structuring, selling or making markets in the notes or with investors in the notes. In this offering, as well as in all other circumstances in which Goldman Sachs receives any fees or other compensation in any form relating to services provided to or transactions with any other party, no accounting, offset or payment in respect of the notes will be required or made. Goldman Sachs will be entitled to retain all such fees and other amounts, and no fees or other compensation payable by any party or indirectly by holders of the notes will be reduced by reason of receipt by Goldman Sachs of any such other fees or other amounts.

#### The Offering of the Notes May Reduce an Existing Exposure of Goldman Sachs or Facilitate a Transaction or Position That Serves the Objectives of Goldman Sachs or Other Parties

A completed offering may reduce Goldman Sachs' existing exposure to the index or the eligible underlying assets, securities and instruments similar to or linked to the foregoing or the currencies in which they are denominated, including exposure gained through hedging transactions in anticipation of this offering. An offering of notes will effectively transfer a portion of Goldman Sachs' exposure (and indirectly transfer the exposure of Goldman Sachs' hedging or other counterparties) to investors in the notes.

The terms of the offering (including the selection of the index or the eligible underlying assets, and the establishment of other transaction terms) may have been selected in order to serve the investment or other objectives of Goldman Sachs or another client or counterparty of Goldman Sachs. In such a case, Goldman Sachs would typically receive the input of other parties that are involved in or otherwise have an interest in the offering, transactions hedged by the offering, or related transactions. The incentives of these other parties would normally differ from and in many cases be contrary to those of investors in the notes.

#### Other Investors in the Notes May Not Have the Same Interests as You

Other investors in the notes are not required to take into account the interests of any other investor in exercising remedies or voting or other rights in their capacity as securityholders or in making requests or recommendations to Goldman Sachs as to the establishment of other transaction terms. The interests of other investors may, in some circumstances, be adverse to your interests. For example, certain investors may take short positions (directly or indirectly through derivative transactions) on assets that are the same or similar to your notes, the index or the eligible underlying assets or other similar securities, which may adversely impact the market for or value of your notes.

#### You Have No Shareholder Rights or Rights to Receive Any Shares or Units of Any Eligible ETF, or Any Assets Held by Any Eligible ETF or the Money Market Position

Investing in the notes will not make you a holder of any shares or units of any eligible ETF or any asset held by any eligible ETF or the money market position. Investing in the notes will not cause you to have any voting rights, any rights to receive dividends or other distributions or any other rights with respect to any eligible ETF, the assets held by any eligible ETF or the money market position. Your notes will be paid in cash, and you will have no rights to receive delivery of any shares or units of any eligible ETF or the assets held by any eligible ETF.

#### The Note Calculation Agent Will Have the Authority to Make Determinations That Could Affect the Market Value of Your Notes, When Your Notes Mature and the Amount You Receive at Maturity

As of the date of this pricing supplement, we have appointed GS&Co. as the note calculation agent. As note calculation agent, GS&Co. will make all determinations and calculations relating to any amount payable on the note, which includes determinations regarding: the initial index level the final index level on the determination date, which we will use to determine the amount we must pay on the stated maturity date whether to postpone the determination date because of a non-trading day the determination date the stated maturity date business days trading days and the default amount. The note calculation agent also has discretion in making certain adjustments relating to a discontinuation or modification of the index. See “Terms and Conditions — Discontinuance or modification of the index” above. The exercise of this discretion by GS&Co. could adversely affect the value of your notes and may present GS&Co. with a conflict of interest. We may change the note calculation agent at any time without notice and GS&Co. may resign as note calculation agent at any time upon 60 days’ written notice to GS Finance Corp.

#### Your Notes May Not Have an Active Trading Market

Your notes will not be listed or displayed on any securities exchange or included in any interdealer market quotation system, and there may be little or no secondary market for your notes. Even if a secondary market for your notes develops, it may not provide significant liquidity and we expect that transaction costs in any secondary market would be

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high. As a result, the difference between bid and asked prices for your notes in any secondary market could be substantial.

#### The Note Calculation Agent Can Postpone the Determination Date if a Non-Trading Day Occurs

If the note calculation agent determines that, on a day that would otherwise be the determination date, such day is not a trading day for the index, the determination date will be postponed until the first following trading day, subject to limitation on postponement as described under “Terms and Conditions — Determination date” on page PS-12. If the determination date is postponed to the last possible day and such day is not a trading day, that day will nevertheless be the determination date. In such a case, the note calculation agent will determine the final index level based on the procedures described under “Terms and Conditions — Consequences of a non-trading day” above.

#### We May Sell an Additional Aggregate Face Amount of the Notes at a Different Issue Price

At our sole option, we may decide to sell an additional aggregate face amount of the notes subsequent to the date of this pricing supplement. The issue price of the notes in the subsequent sale may differ substantially (higher or lower) from the original issue price you paid as provided on the cover of this pricing supplement.

#### Certain Considerations for Insurance Companies and Employee Benefit Plans

Any insurance company or fiduciary of a pension plan or other employee benefit plan that is subject to the prohibited transaction rules of the Employee Retirement Income Security Act of 1974, as amended, which we call “ERISA”, or the Internal Revenue Code of 1986, as amended, including an IRA or a Keogh plan (or a governmental plan to which similar prohibitions apply), and that is considering purchasing the offered notes with the assets of the insurance company or the assets of such a plan, should consult with its counsel regarding whether the purchase or holding of the offered notes could become a “prohibited transaction” under ERISA, the Internal Revenue Code or any substantially similar prohibition in light of the representations a purchaser or holder in any of the above categories is deemed to make by purchasing and holding the offered notes. This is discussed in more detail under “Employee Retirement Income Security Act” in the accompanying index supplement.

#### Your Notes Will Be Treated as Debt Instruments Subject to Special Rules Governing Contingent Payment Debt Instruments for U.S. Federal Income Tax Purposes

The notes will be treated as debt instruments subject to special rules governing contingent payment debt instruments for U.S. federal income tax purposes. If you are a U.S. individual or taxable entity, you generally will be required to pay taxes on ordinary income from the notes over their term based on the comparable yield for the notes, even though you will not receive any payments from us until maturity. This comparable yield is determined solely to calculate the amount on which you will be taxed prior to maturity and is neither a prediction nor a guarantee of what the actual yield will be. In addition, any gain you may recognize on the sale, exchange or maturity of the notes will be taxed as ordinary interest income. If you are a secondary purchaser of the notes, the tax consequences to you may be different. Please see “Supplemental Discussion of Federal Income Tax Consequences” below for a more detailed discussion. Please also consult your tax advisor concerning the U.S. federal income tax and any other applicable tax consequences to you of owning your notes in your particular circumstances.

#### Foreign Account Tax Compliance Act (FATCA) Withholding May Apply to Payments on Your Notes, Including as a Result of the Failure of the Bank or Broker Through Which You Hold the Notes to Provide Information to Tax Authorities

Please see the discussion under “United States Taxation — Taxation of Debt Securities — Foreign Account Tax Compliance Act (FATCA) Withholding” in the accompanying prospectus for a description of the applicability of FATCA to payments made on your notes. The discussion in that section is hereby modified to reflect regulations proposed by the Treasury Department indicating its intent to eliminate the requirements under FATCA of withholding on gross proceeds from the sale, exchange, maturity or other disposition of relevant financial instruments. The Treasury Department has indicated that taxpayers may rely on these proposed regulations pending their finalization.

#### Risks Related to the Index

The Index Measures the Performance of the Index Underlying Assets Less the Sum of the Return on the Notional Interest Rate Plus 0.65% Per Annum (Accruing Daily)

Your notes are linked to the index. The index measures the performance of the underlying assets included in the index plus, with respect to ETFs included in the index, dividends paid on such ETFs, less the sum of the return on the notional interest rate plus 0.65% per annum (accruing daily). Increases in the level of the notional interest rate may offset in whole or in part increases in the levels of the index underlying assets. As a result, any return on the index may be reduced or eliminated, which will have the effect of reducing the amount payable in respect of your notes. Generally speaking, on any

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day the index underlying assets must produce positive returns at least as great as the sum of the return on the notional interest rate plus 0.65% per annum (accruing daily) before the index will have a positive return. Historically, a significant portion of the index exposure has been to the money market position.

#### Your Investment in the Notes May Be Subject to Concentration Risks

The assets underlying an eligible underlying asset may represent a particular market or commodity sector, a particular geographic region or some other sector or asset class. As a result, your investment in the notes may be concentrated in a single sector or asset class even though there are maximum weights for each underlying asset and each asset class. This concentration could occur because of concentration in the investment goals of one or more eligible ETFs. As a result of base index rebalancing, the index may include exposure to as few as three eligible ETFs. However, as a result of total return index rebalancing, the exposure of the index at any time could be limited to the money market position. Although your investment in the notes will not result in the ownership or other direct interest in the assets held by the eligible ETFs, the return on your investment in the notes will be subject to certain risks similar to those associated with direct investments in the market or commodity sector, geographic region, other sector or class represented by the relevant assets.

In addition, in connection with a base index rebalancing, the index may rebalance to include only index underlying assets that represent a limited number of markets or commodity sectors, geographic regions, other sectors or asset classes. If this were to occur, you will be subject to risks similar to those associated with direct investments in these markets or commodity sectors, geographic regions, other sectors or asset classes. These markets, geographic regions, sectors or asset classes may not be diversified.

#### You May Not Have Exposure to One or More of the Eligible Underlying Assets During the Term of the Notes

On any given index business day, the index is expected to have exposure to only a limited subset of the 15 eligible underlying assets (which, including the money market position, initially could be as few as four eligible underlying assets (i.e., as few as three eligible ETFs)) and you may not have any exposure to some of the 15 eligible underlying assets or asset classes during the entire term of the notes. As a result, you should not expect the index to provide a balanced exposure to all of the eligible underlying assets. Further, after a base index rebalancing, if, on such index business day, the realized volatility of the index underlying assets exceeds the volatility cap of 6% for the applicable volatility cap period, the index will ratably rebalance a portion of the exposure to the index ETFs into the money market position to reduce such realized volatility level. This may limit your exposure to the index ETFs during the term of the notes.

#### The Weight of Each Index Underlying Asset Reflects the Average of the Average of the Weights of Such Index Underlying Asset Over Three Potential Portfolios For Each Day in the Applicable Weight Averaging Period

To calculate the weight of each index underlying asset on a daily base index rebalancing day, three potential portfolios are first generated for each day in the applicable weight averaging period related to that base index rebalancing day. Each portfolio is calculated to reflect the highest historical return during three return look-back periods (nine months, six months and three months) subject to a limitation on realized volatility over three related realized volatility look-back periods (the prior six months, three months and one month for the nine-month, six-month and three-month return look-back periods, respectively) and subject to a minimum and maximum weight for each underlying asset and each asset class. Theoretically, all three potential portfolios could be the same, although this is unlikely. The weight of each index underlying asset for a given day in the applicable weight averaging period will equal the average of the weights of such index underlying asset in the three potential portfolios while the weight of each index underlying asset for the daily base index rebalancing will equal the average of such target weights. As a result, the weight of each index underlying asset will be different than it would have been had the index underlying assets been determined based on a



single realized volatility look-back period. In addition, because the weight of each index underlying asset for each base index rebalancing day is the average of the average weights of such underlying asset across three realized volatility look-back periods for each day in the weight averaging period related to that base index rebalancing day, the impact of a low realized volatility for an index underlying asset for one realized volatility look-back period may be lessened by a higher realized volatility for that index underlying asset for one or both of the other realized volatility look-back periods. Also, such impact could be further lessened as a result of averaging over the weight averaging period. For a discussion of how the look-back periods are determined, see “The Index — What is realized volatility and how are the weights of the underlying assets influenced by it?”.

#### The Index May Not Successfully Capture Price Momentum and May Not Achieve its Target Volatility

The index attempts to track the positive price momentum in the eligible underlying assets. As such, on each daily base index rebalancing day, the index is rebalanced by first calculating, for each day in the applicable weight averaging period related to that base index rebalancing day, the portfolio of underlying assets that would have provided the highest historical return during three return look-back periods (nine months, six months and three months) subject to the

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limitations on volatility and the minimum and maximum weights for each underlying asset and each asset class. However, there is no guarantee that trends existing in the preceding nine months, six months and three months, as applicable, or during the related realized volatility look-back periods over which volatility is evaluated will continue in the future. The trend of an eligible underlying asset may change at the end of any measurement period and such change may not be reflected in the return of the eligible underlying asset calculated over the return look-back period.

In addition, the volatility controls and maximum weightings may limit the index's ability to track price momentum. The index is different from an investment that seeks long-term exposure to a constant set of underlying assets. The index may fail to realize gains that could occur as a result of holding assets that have experienced price declines, but after which experience a sudden price spike. As a result, if market conditions do not represent a continuation of prior observed trends, the level of the index, which is rebalanced based on prior trends, may decline. No assurance can be given that the investment methodology used to construct the index will outperform any alternative index that might be constructed from the eligible underlying assets.

No assurance can be given that the investment methodology on which the index is based will be successful or that the index will outperform any alternative methodology that might be employed in respect of the eligible underlying assets. Furthermore, no assurance can be given that the index will achieve its 5% volatility target. The actual realized volatility of the index may be greater or less than 5%.

**Asset Class Maximum Weights Will in Many Cases Prevent All of the Eligible Underlying Assets in an Asset Class From Being Included in the Index at Their Underlying Asset Maximum Weights and May Also Prevent the Index From Having Exposure to Certain Types of Assets At Any Given Time**

The asset class maximum weights will in many cases prevent all of the eligible underlying assets in an asset class from being included in the index at their underlying asset maximum weights. This is due to the fact that, in many cases, the asset class maximum weight is less than the sum of the underlying asset maximum weights in that asset class.

In addition, the three underlying assets that are categorized in the alternatives asset class are not expected to be highly correlated. One underlying asset of that asset class seeks investment results that correspond generally to an index that currently tracks the performance of a select group of exchange-listed, U.S. dollar denominated preferred securities, hybrid securities and convertible preferred securities listed on the New York Stock Exchange or NASDAQ Capital Market, another underlying asset seeks investment results that correspond generally to an index that tracks the real estate sector of the U.S. equity market and the other underlying asset seeks investment results that correspond generally to an index that tracks biotechnology companies. However, each of these three underlying assets is subject to the same asset class maximum weight, which is less than the sum of the three underlying asset maximum weights that relate to these three underlying assets. Therefore, it is possible that the asset class maximum weight restriction for the alternatives asset class alone (as opposed to the other restrictions applicable to the index) will prevent all of these eligible ETFs from being index ETFs simultaneously, which would mean that the index might not have exposure to certain exchange-listed, U.S. dollar denominated U.S. preferred securities, hybrid securities and convertible preferred securities, the real estate sector of the U.S. equity market and biotechnology companies at the same time.

**Each Index Underlying Asset's Weight Is Limited by Its Underlying Asset Maximum Weight, Its Asset Class Maximum Weight and the Volatility Constraint**

On each daily base index rebalancing day, the index sets the weights for the eligible underlying assets to those weights that would have provided the highest historical return during three return look-back periods (nine months, six months and three months), subject to investment constraints on the maximum weights of each eligible underlying asset and each asset class, and the volatility constraint of 5%. These constraints, as well as the use of the weight averaging

period, could lower your return versus an investment that was not limited as to the maximum weighting allotted to any one index underlying asset or asset class or was not subject to the 5% volatility target (or the daily volatility cap of 6%).

The index's 5% volatility target may result in a significant portion of the index's exposure being allocated to the money market position. The 5% volatility target represents an intended trade-off, in which some potential upside is given up in exchange for attempting to limit downside exposure in volatile markets. However, because the notes provide for the repayment of principal at maturity, the incremental benefit to holders of the notes from the index's 5% volatility target may be limited. In other words, the notes themselves limit exposure to decreases in the level of the index by providing for cash settlement amount that will be no less than the face amount of the notes. Due to this feature of the notes, the index's 5% volatility target, which attempts to reduce downside exposure to the eligible ETFs, may not be as beneficial as it otherwise may be (including, for example, when used with notes that provide for a cash settlement amount that could be less than the face amount) and the cost of the index's 5% volatility target, which is reflected in part in the above referenced trade-off, may not be desirable to you.

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#### If the Level of the Index Changes, the Market Value of Your Notes May Not Change in the Same Manner

Your notes may trade quite differently from the performance of the index. Changes in the level of the index may not result in a comparable change in the market value of your notes. Even if the level of the index increases above the initial index level during the life of the notes, the market value of your notes may not increase by the same amount. We discuss some of the reasons for this disparity under “— The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors” above.

#### Past Index Performance is No Guide to Future Performance

The actual performance of the index over the life of the notes, as well as the amount payable at maturity, may bear little relation to the historical index performance information, hypothetical performance data or hypothetical return examples set forth elsewhere in this pricing supplement. We cannot predict the future performance of the index.

#### The Lower Performance of One Index Underlying Asset May Offset an Increase in the Other Index Underlying Assets

Your notes are linked to the index which rebalances daily among 15 eligible underlying assets. Declines in the level of one index underlying asset may offset increases in the levels of the other index underlying assets. As a result, any return on the index may be reduced or eliminated, which will have the effect of reducing the amount payable in respect of your notes at maturity.

#### Because Historical Returns and Realized Volatility Are Measured on an Aggregate Basis, Index Underlying Assets Could Include Eligible Underlying Assets With a High Realized Volatility and Could Exclude Eligible Underlying Assets With a High Historical Return

Because historical return and realized volatility are measured on an aggregate basis within each potential portfolio, index underlying assets could include eligible underlying assets with a high realized volatility and could exclude eligible underlying assets with a high historical return. An eligible underlying asset with a relatively high realized volatility may be included as an index underlying asset because its realized volatility is offset by another eligible underlying asset that is also included as an index underlying asset.

In addition, highly correlated eligible underlying assets may be excluded from a potential portfolio, in whole or in part, on a base index observation day, even if, on an independent basis, such eligible underlying assets have a relatively high nine-month, six-month and three-month historical return or relatively low realized volatility for the applicable volatility look-back period.

#### Correlation of Performances Among the Index Underlying Assets May Reduce the Performance of the Index

Performances of the index underlying assets may become highly correlated from time to time during the term of the notes, including, but not limited to, periods in which there is a substantial decline in a particular sector or asset type containing such correlated index underlying assets. High correlation among index underlying assets representing any one sector or asset type which has a substantial percentage weighting in the index during periods of negative returns could have an adverse effect on the level of the index.

#### The Policies of the Index Sponsor, Index Committee and Index Calculation Agent, and Changes That Affect the Index or the Eligible ETFs, Could Affect the Cash Settlement Amount on Your Notes and Their Market Value

The policies of the index sponsor, index committee and index calculation agent, as applicable, concerning the calculation of the level of the index, additions, deletions or substitutions of eligible underlying assets and the manner

in which changes affecting the eligible underlying assets or, where applicable, their sponsors, such as stock dividends, reorganizations or mergers, are reflected in the level of the index could affect the level of the index and, therefore, the cash settlement amount on your notes at maturity and the market value of your notes prior to maturity.

As further described under “The Index” in this pricing supplement, a comparable ETF may be selected by the index committee, if available, to replace an index ETF and/or eligible ETF. The replacement of any index ETF may have an adverse impact on the value of the index. The cash settlement amount on your notes and their market value could also be affected if the index sponsor, index committee or index calculation agent changes these policies, for example, by changing the manner in which it calculates the level of the index or if the index sponsor discontinues or suspends calculation or publication of the level of the index, in which case it may become difficult to determine the market value of your notes.

If events such as these occur on the determination date, the note calculation agent — which initially will be GS&Co., our affiliate — may determine the closing level of the index on the determination date — and thus the cash settlement amount on the stated maturity date — in a manner it considers appropriate, in its sole discretion.

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The Index Calculation Agent Will Have Authority to Make Determinations that Could Affect the Value of Your Notes and the Amount You Receive at Maturity. The Goldman Sachs Group, Inc. Owns a Non-Controlling Interest in the Index Calculation Agent

The index sponsor has retained Solactive AG to serve as index calculation agent. As index calculation agent, Solactive AG calculates the value of the index and implements the methodology determined by the index committee. As further described under the “The Index” in this pricing supplement, the index calculation agent (in certain cases in consultation with the index committee) has discretion with respect to determining index market disruption events, force majeure events, trading disruptions, exchange disruptions, index dislocations, interest rate disruption events, base index rebalancing days and total return index rebalancing days and with respect to making certain adjustments to the Eligible ETFs upon certain events such as dividend payments, returns of capital and stock splits. The exercise of this discretion by the index calculation agent could adversely affect the value of your notes.

The Goldman Sachs Group, Inc., our affiliate, owns a non-controlling interest in the index calculation agent.

As Index Sponsor, GS&Co. Can Replace the Index Calculation Agent at Any Time

The index sponsor has retained Solactive AG to serve as index calculation agent. The index calculation agent calculates the value of the index and implements the methodology determined by the index committee. The index sponsor can replace the index calculation agent at any time. In the event the index sponsor appoints a replacement index calculation agent, a public announcement will be made via press release. Any replacement of the index calculation agent may result in reporting delays and other disruptions.

The Index Calculation Agent Can Resign Upon Notification to the Index Sponsor

As index calculation agent, Solactive AG can resign upon 60 days’ written notice to the index sponsor. In the event the index sponsor appoints a replacement index calculation agent, a public announcement will be made via press release. Any resignation by the index calculation agent may result in reporting delays and other disruptions.

The Index Weightings May Be Ratably Rebalanced into the Money Market Position on Any or All Days During the Term of the Notes

The index has a daily volatility control feature which can result in a rebalancing (daily total return index rebalancing) between the index ETFs and the money market position. This has the effect of reducing the exposure of the index to the performance of the index ETFs resulting from base index rebalancing by rebalancing a portion of the exposure into the money market position if the historical realized volatility of the index underlying assets for the applicable one-month volatility cap period (observed and calculated by the index calculation agent on each daily total return index rebalancing day) would otherwise exceed the volatility cap of 6%.

During a daily base index rebalancing on an index business day, there is no guarantee that the index will not be rebalanced so that the money market position represents 50% of the index (i.e., the maximum weight for both the cash equivalent asset class and the money market position). Further, there is no guarantee that on such index business day, after the base index rebalancing, the index will not be further rebalanced due to the daily volatility control feature (daily total return index rebalancing) so that the money market position represents 100% of the index. This is because the maximum weight for the cash equivalent asset class and the money market position do not apply to daily total return index rebalancing. Any rebalancing into the money market position will limit your return on the notes.

In addition, there is no guarantee that the 6% volatility cap will successfully reduce the volatility of the index or avoid any volatile movements of any index underlying asset. If there is a rapid and severe decline in the market price of the

index underlying assets, the index may not rebalance into the money market position until the index has declined by a substantial amount.

#### The Index May Perform Poorly During Periods Characterized by Increased Short-Term Volatility

The index's methodology is based on momentum investing. Momentum investing strategies are effective at identifying the current market direction in trending markets. However, in non-trending markets, momentum investment strategies are subject to "whipsaws." A whipsaw occurs when the market reverses and does the opposite of what is indicated by the trend indicator, resulting in a trading loss during the particular period. Consequently, the index may perform poorly in non-trending, "choppy" markets characterized by increased short-term volatility.

#### Index Market Disruption Events Could Affect the Level of the Index on Any Date

If a daily base index rebalancing day or a daily total return index rebalancing day must be effected on an index business day on which an index market disruption event occurs with respect to any index underlying asset, the index calculation agent shall then rebalance the index as described in "The Index — Could index market disruption events or corporate

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events impact the calculation of the index or a daily base index rebalancing or a daily total return index rebalancing by the index calculation agent?" herein. Any index market disruption event may have an adverse impact on the level of the index.

#### The Index Has a Limited Operating History

The notes are linked to the performance of the index, which was launched on May 16, 2016. Because the index has no index level history prior to that date, limited historical index level information will be available for you to consider in making an independent investigation of the index performance, which may make it difficult for you to make an informed decision with respect to the notes.

The hypothetical performance data prior to the launch of the index on May 16, 2016 refers to simulated performance data created by applying the index's calculation methodology to historical prices or rates of the underlying assets that comprise the index. Such simulated hypothetical performance data has been produced by the retroactive application of a back-tested methodology. No future performance of the index can be predicted based on the simulated hypothetical performance data or the historical index performance information described herein.

#### U.K. Regulators Will No Longer Persuade or Compel Banks to Submit Rates for Calculation of LIBOR After 2021; Interest Rate Benchmark May Be Discontinued

On July 27, 2017, the Chief Executive of the U.K. Financial Conduct Authority (FCA), which regulates LIBOR, announced that the FCA will no longer persuade or compel banks to submit rates for the calculation of LIBOR (which includes the 3-month USD LIBOR rate) after 2021. Such announcement indicates that the continuation of LIBOR on the current basis cannot and will not be guaranteed after 2021. Notwithstanding the foregoing, it appears highly likely that LIBOR will be discontinued or modified by 2021. It is not possible to predict the effect that this announcement or any such discontinuance or modification will have on the 3-month USD LIBOR rate, the index or your notes.

In accordance with the index methodology, if the index committee determines on a USD LIBOR interest determination date that 3-month USD LIBOR has been discontinued, then the index committee shall replace 3-month USD LIBOR with a substitute or successor rate that it has determined in its sole discretion is most comparable to 3-month USD LIBOR, provided that if the index committee determines there is an industry-accepted successor rate, then the index committee shall use such successor rate. If the index committee has determined a substitute or successor rate in accordance with the foregoing, the index committee in its sole discretion may determine an alternative to London business day, USD LIBOR interest determination date and notional interest rate reset date to be used, and any other relevant methodology for calculating such substitute or successor rate, including any adjustment factor needed to make such substitute or successor rate comparable to 3-month USD LIBOR, in a manner that is consistent with industry-accepted practices for such substitute or successor rate. See "The Index — General Overview" on page PS-47. As discussed above under "— The Index Measures the Performance of the Index Underlying Assets Less the Sum of the Return on the Notional Interest Rate Plus 0.65% Per Annum (Accruing Daily)", changes in the level of the notional interest rate may offset changes in the levels of the index underlying assets. In addition, historically, a significant portion of the index exposure has been to the money market position, which reflects the notional returns accruing to a hypothetical investor from an investment in a money market account denominated in U.S. dollars that accrues interest at the notional interest rate. As a result, the discontinuance of 3-month USD LIBOR and the use of a substitute or successor rate may affect the performance of the index and the amount payable in respect of your notes.

Regulation and Reform of "Benchmarks", Including LIBOR and Other Types of Benchmarks, May Cause such "Benchmarks" to Perform Differently Than in the Past, or to Disappear Entirely, or Have Other Consequences Which



Cannot be Predicted

LIBOR and other interest rate, equity, foreign exchange rate and other types of indices which are deemed to be “benchmarks” are the subject of recent national, international and other regulatory guidance and proposals for reform.

Some of these reforms are already effective while others are still to be implemented. These reforms may cause such “benchmarks” to perform differently than in the past, or to disappear entirely, or have other consequences which cannot be predicted. Any such consequence could have a material adverse effect on your notes.

Any of the international, national or other proposals for reform or the general increased regulatory scrutiny of “benchmarks” could increase the costs and risks of administering or otherwise participating in the setting of a “benchmark” and complying with any such regulations or requirements. Such factors may have the effect of discouraging market participants from continuing to administer or contribute to certain “benchmarks”, trigger changes in the rules or methodologies used in certain “benchmarks” or lead to the disappearance of certain “benchmarks”. The disappearance of a “benchmark” or changes in the manner of administration of a “benchmark” could result in discretionary valuation by the index sponsor (including any index calculation agent acting on the index sponsor’s behalf) or the note calculation agent or

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other consequence in relation to your notes. Any such consequence could have a material adverse effect on the value of and return on your notes.

**The Historical Levels of the Notional Interest Rate Are Not an Indication of the Future Levels of the Notional Interest Rate**

In the past, the level of the notional interest rate (3-month USD LIBOR) has experienced significant fluctuations. You should note that historical levels, fluctuations and trends of the notional interest rate are not necessarily indicative of future levels. Any historical upward or downward trend in the notional interest rate is not an indication that the notional interest rate is more or less likely to increase or decrease at any time, and you should not take the historical levels of the notional interest rate as an indication of its future performance.

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## THE INDEX

The index and eligible underlying asset descriptions below supplement, and should be read together with, the descriptions in the accompanying index supplement. For more details about each eligible underlying asset, see “The Eligible Underlying Assets” in the accompanying index supplement.

### General Overview

The GS Momentum Builder<sup>®</sup> Multi-Asset 5S ER Index (the index) measures the extent to which the performance of the exchange-traded funds and a money market position (together with the ETFs, the underlying assets) included in the index outperform the sum of the return on the notional interest rate, which is a rate equal to 3-month USD LIBOR, plus 0.65% per annum (accruing daily). The money market position reflects the notional returns accruing to a hypothetical investor from an investment in a money market account denominated in U.S. dollars that accrues interest at the notional interest rate. The index rebalances on each index business day from among 15 underlying assets that have been categorized in the following asset classes: broad-based equities; fixed income; emerging markets; alternatives; commodities; inflation; and cash equivalent. The index attempts to track the positive price momentum in the underlying assets, subject to limitations on volatility and a minimum and maximum weight for each underlying asset and each asset class, each as described below.

On each index business day (in the following context, a base index rebalancing day), the index is rebalanced. For each day in the weight averaging period related to that base index rebalancing day, the portfolio of underlying assets that would have provided the highest historical return during three return look-back periods (nine months, six months and three months) is calculated. Each portfolio is subject to a limit of 5% on the degree of variation in the daily closing prices or closing level, as applicable, of the aggregate of such underlying assets (a measure known as “realized volatility”) over the related realized volatility look-back period (the prior six months, three months and one month for the nine-month, six-month and three-month return look-back periods, respectively) and subject to a minimum and maximum weight for each underlying asset and each asset class. This results in three potential portfolios of underlying assets (one for each return look-back period) for each day in that weight averaging period. The weight of each underlying asset for a given day in a weight averaging period (the “target weight”) will equal the average of the weights of such underlying asset in the three potential portfolios while the weight of each underlying asset for the base index rebalancing will equal the average of such target weights. The weight averaging period for any base index rebalancing day will be the period from (but excluding) the 22nd index business day on which no index market disruption event occurs or is continuing with respect to any underlying asset prior to such day to (and including) such day. As a result of this step, the index may include as few as four eligible underlying assets (as few as three eligible ETFs) and may not include some of the underlying assets or asset classes during the entire term of the notes.

After a base index rebalancing, if on such index business day (in the following context, a daily total return index rebalancing day) the realized volatility of the index underlying assets exceeds the volatility cap of 6% for the applicable volatility cap period (the prior one month), the index will be rebalanced again in order to reduce such realized volatility to 6% by ratably reallocating a portion of the exposure to the index ETFs to the money market position. As a result of this step, the index may not include any ETFs and may allocate its entire exposure to the money market position, which will always be less than the sum of the return on the notional interest rate plus 0.65% per annum (accruing daily). Historically, a significant portion of the index exposure has been to the money market position.

The index reflects the return of the index underlying assets less the sum of the return on the notional interest rate plus 0.65% per annum (accruing daily). Any cash dividend paid on an index ETF is deemed to be reinvested in such index ETF and subject to subsequent changes in the value of the index ETF. In addition, any interest accrued on the money market position is similarly deemed to be reinvested on a daily basis in such money market position and subject to

subsequent changes in the notional interest rate. For further information regarding how the index value is calculated see “— How is the index value calculated on any day?” below.

The notional interest rate is a rate equal to 3-month USD LIBOR, which generally will be the offered rate for 3-month deposits in U.S. dollars, as that rate appears on the Reuters screen 3750 page as of 11:00 a.m., London time, as observed two London business days prior to the relevant notional interest rate reset date (such day, a “USD LIBOR interest determination date”). A notional interest rate reset date will occur daily, or, if such date is not an index business day, on the index business day immediately following such date on which the notional interest rate is reset. A London business day is a day on which commercial banks and foreign currency markets settle payments and are open for general business in London.

If the index committee determines that 3-month USD LIBOR has been discontinued, then the index committee shall replace 3-month USD LIBOR with a substitute or successor rate that it has determined in its sole discretion is most comparable to 3-month USD LIBOR, provided that if the index committee determines there is an industry accepted successor rate, then the index committee shall use such successor rate. If the index committee has determined a

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substitute or successor rate in accordance with the foregoing, the index committee in its sole discretion may determine an alternative to London business day, USD LIBOR interest determination date and notional interest rate reset date to be used and any other relevant methodology for calculating such substitute or successor rate, including any adjustment factor needed to make such substitute or successor rate comparable to 3-month USD LIBOR, in a manner that is consistent with industry-accepted practices for such substitute or successor rate. Unless the index committee replaces 3-month USD LIBOR with a substitute or successor rate as so provided, the following will apply:

If the rate described above does not so appear on the Reuters screen 3750 page, then 3-month USD LIBOR will be determined on the basis of the rates at which three-month deposits in U.S. dollars are offered by four major banks in the London interbank market selected by the index calculation agent at approximately 12:00 p.m., London time, on the relevant USD LIBOR interest determination date, to prime banks in the London interbank market, beginning on the relevant notional interest rate reset date, and in a representative amount. The index calculation agent will request the principal London office of each of these major banks to provide a quotation of its rate. If at least two quotations are provided, 3-month USD LIBOR for the relevant notional interest rate reset date will be the arithmetic mean of the quotations. If fewer than two of the requested quotations described above are provided, 3-month USD LIBOR for the relevant notional interest rate reset date will be the arithmetic mean of the rates quoted by major banks in New York City, selected by the index calculation agent, at approximately 11:00 a.m., New York City time, on the relevant notional interest rate reset date, for loans in U.S. dollars to leading European banks for a period of three months, beginning on the relevant notional interest rate reset date, and in a representative amount.

If no quotation is provided as described in the preceding paragraph, then the index calculation agent, after consulting such sources as it deems comparable to any of the foregoing quotations or display page, or any such source as it deems reasonable from which to estimate 3-month USD LIBOR or any of the foregoing lending rates, shall determine 3-month USD LIBOR for that notional interest rate reset date in its sole discretion.

The value of the index is calculated in U.S. dollars on each index business day by reference to the performance of the total return index value net of the sum of the return on the notional interest rate in effect at that time plus 0.65% per annum (accruing daily). The total return index value on each index business day is calculated by reference to the weighted performance of:

the base index, which is the weighted combination of underlying assets that comprise the index at the applicable time as a result of the most recent daily base index rebalancing; and  
any additional exposure to the money market position resulting from any daily total return index rebalancing.  
The underlying assets that comprise the base index as the result of the most recent daily base index rebalancing may include a combination of ETFs and the money market position, or solely ETFs. A daily total return index rebalancing will occur effective after the close of business on any daily total return index rebalancing day if the realized volatility of the base index exceeds the volatility cap of 6% for the volatility cap period applicable to such index business day. As a result of a daily total return index rebalancing, the index will have exposure to the money market position even if the base index has no such exposure resulting from its most recent daily base index rebalancing.

For the purpose of the index:

an “eligible underlying asset” is one of the ETFs or the money market position that is eligible for inclusion in the index on an index business day;  
an “eligible ETF” is one of the ETFs that is eligible for inclusion in the index on an index business day (when we refer to an “ETF” we mean an exchange traded fund, which for purposes of this pricing supplement includes the following exchange traded products: SPDR® S&P 500® ETF Trust and SPDR® Gold Trust);  
an “index underlying asset” is an eligible underlying asset with a non-zero weighting on any index business day;  
an “index ETF” is an ETF that is an eligible ETF with a non-zero weighting on any index business day; and

an “index business day” is a day on which the New York Stock Exchange is open for its regular trading session. How frequently is the index rebalanced?

On each daily base index rebalancing day, the index rebalances from among the 15 eligible underlying assets by calculating, for each day in the weight averaging period related to that base index rebalancing day, the portfolio of underlying assets that would have provided the highest historical return during three return look-back periods (nine months, six months and three months). Each portfolio is subject to a limit of 5% on the degree of variation in the daily closing prices or closing level, as applicable, of the aggregate of such underlying assets (a measure known as “realized volatility”) over the related realized volatility look-back period (the prior six months, three months and one month for the nine-month, six-month and three-month return look-back periods, respectively) and subject to a minimum and maximum weight for each underlying asset and each asset class. This results in three potential portfolios of underlying assets (one

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for each return look-back period) for each day in that weight averaging period. The weight of each underlying asset for a given day in a weight averaging period will equal the average of the weights of such underlying asset in the three potential portfolios while the weight of each underlying asset for the daily base index rebalancing will equal the average of such target weights. This daily rebalancing is referred to as the base index rebalancing and the resulting portfolio of index underlying assets comprise the base index effective after the close of business on the day such daily rebalancing occurs. The weight averaging period for any base index rebalancing day will be the period from (but excluding) the 22nd index business day on which no index market disruption event occurs or is continuing with respect to any underlying asset prior to such day to (and including) such day. Certain aspects of index business day and base index rebalancing day adjustments are described under “— Could index market disruption events or corporate events impact the calculation of the index or a daily base index rebalancing or a daily total return index rebalancing by the index calculation agent?” below.

After a base index rebalancing, if, on such index business day, the realized volatility of the base index exceeds the volatility cap of 6% for the applicable volatility cap period (the prior one month), the index will be rebalanced again in order to reduce such realized volatility to 6% by ratably reallocating a portion of the exposure to the eligible ETFs to the money market position. This type of rebalancing has the effect of reducing the exposure of the index to the performance of the eligible ETFs. This daily rebalancing is referred to as the daily total return index rebalancing.

For a discussion of how the look-back periods for rebalancing are determined, see “— What is realized volatility and how are the weights of the underlying assets influenced by it?” and “— How do the weights of the index underlying assets change as a result of a daily total return index rebalancing?”, respectively, below.

How is the index value calculated on any day?

The value of the index was set to 100 on the index base date, July 31, 2015. On each index business day, the value of the index changes by reference to the performance of the total return index value net of the sum of the return on the notional interest rate in effect at that time plus 0.65% per annum (accruing daily). The total return index value on each index business day is calculated by reference to the weighted performance of:

the base index, which is the weighted combination of underlying assets that comprise the index at the applicable time as a result of the most recent daily base index rebalancing (whether partially or fully implemented); and any additional exposure to the money market position resulting from any daily total return index rebalancing. The underlying assets that comprise the base index as the result of the most recent daily base index rebalancing may include a combination of ETFs and the money market position, or solely ETFs. A daily total return index rebalancing will occur effective after the close of business on any daily total return index rebalancing day if the realized volatility of the base index exceeds the volatility cap of 6% for the volatility cap period applicable to such daily total return index rebalancing day. As a result of a daily total return index rebalancing, the index will have exposure to the money market position even if the base index has no such exposure resulting from its most recent daily base index rebalancing.

On any index business day, the index value will equal (a) the index value on the immediately preceding notional interest rate reset date multiplied by (b) the return on the total return index on such index business day reduced by the sum of (i) the prorated notional interest rate (compounded daily) and (ii) the prorated 0.65% per annum (accruing daily), with such prorated 0.65% per annum applied after such return on the total return index is reduced by such prorated notional interest rate. The return on the total return index for any such index business day will equal the quotient of the total return index value as of such index business day divided by the total return index value as of the immediately preceding notional interest rate reset date. The prorated notional interest rate and prorated 0.65% per annum are each calculated on an actual/360 day count basis from but excluding the immediately preceding notional interest rate reset date. The notional interest rate is reset on daily notional interest rate reset dates, or, if such date is

not an index business day, on the index business day immediately following such date. Regardless of whether the index underlying assets include the money market position on a base index rebalancing day, if the index has ratably rebalanced into the money market position as a result of the daily volatility control feature, then the index also will include the value of the money market position.

The value of any index ETF is equal to the result of multiplying the weight applicable to such index ETF and the adjusted level of such index ETF. The adjusted level of such index ETF reflects any price change in such index ETF as well as any cash dividend paid on such index ETF. Any cash dividend paid on an index ETF is deemed to be reinvested in such index ETF and subject to subsequent changes in the value of the index ETF.

The value of the money market position reflects, on any day, the amount of interest accrued at the notional interest rate on an investment in a notional U.S. dollar denominated money market account. The money market position will have a positive notional return if the notional interest rate is positive. Any interest accrued on the money market position is deemed to be reinvested on a daily basis in such money market position and subject to subsequent changes in the notional interest rate.

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The contribution of any index underlying asset to the performance of the index will depend on its weight and performance. The effects of potential adjustment events are described under “— Could index market disruption events or corporate events impact the calculation of the index or a daily base index rebalancing or a daily total return index rebalancing by the index calculation agent?” below.

How does the index attempt to provide exposure to price momentum?

The index uses the historical return performance of the eligible underlying assets to determine the composition of the index on a base index rebalancing day. The nine-month, six-month and three-month historical returns are used as an indication of price momentum. Although the index methodology seeks to select index underlying assets with the highest nine-month, six-month and three-month historical return reflecting price momentum, the underlying asset maximum weights, the asset class maximum weights, the 5% volatility target, the averaging of eligible underlying asset weights in the realized volatility look-back periods, the further averaging of such target weights during the applicable weight averaging period and the daily volatility control, as well as how the eligible underlying assets correlate, may limit the exposure to those underlying assets with the highest nine-month, six-month and three-month historical returns.

The nine-month, six-month and three-month historical return for an eligible underlying asset is calculated to include, with respect to the ETFs, price changes and any cash dividends paid during the relevant nine-month, six-month and three-month period being evaluated.

Who calculates and oversees the index?

The index is calculated using a methodology developed by GS&Co., the index sponsor. The complete index methodology, which may be amended from time to time, is available at [solactive.com/indices/](http://solactive.com/indices/). We are not incorporating by reference this website or any material it includes into this pricing supplement.

An index committee is responsible for overseeing the index and its methodology. The index committee may exercise discretion in the case of any changes to the eligible underlying assets and any index market disruption event or potential adjustment event that occurs in relation to one or more eligible underlying assets. The index committee is comprised of employees of The Goldman Sachs Group, Inc. or one or more of its affiliates. At least forty percent of the committee is comprised of employees of control side functions, with at least two members from the compliance department and two members from the legal department. Other members consist of employees of The Goldman Sachs Group, Inc.’s securities division, which includes employees who regularly trade the eligible ETFs. If the index committee exercises any discretion related to the index, it must be approved by 100% of the control side employees present at the relevant index committee meeting.

Changes to the index methodology made by the index committee will be publicly announced on the index calculation agent’s website at least 60 index business days prior to their effective date. Adjustments made by the index calculation agent in response to index market disruption events and potential adjustment events will be publicly announced as promptly as is reasonably practicable on the index calculation agent’s website.

The index committee may exercise limited discretion with respect to the index, including in the situations described below under “— Can the eligible underlying assets change?”. Any such changes or actions are publicly announced as promptly as is reasonably practicable and normally at least five index business days prior to their effective date.

The index sponsor has retained Solactive AG to serve as index calculation agent. The index calculation agent calculates the value of the index and implements the methodology determined by the index committee. The index sponsor can replace the index calculation agent at any time, or the index calculation agent can resign on 60 days notice

to the index sponsor. In the event the index sponsor appoints a replacement index calculation agent, a public announcement will be made via press release.

The index calculation agent is responsible for the day to day implementation of the methodology of the index and for its calculation. The index calculation agent calculates and publishes the value of the index every 15 seconds on each index business day and publishes it on the Bloomberg page GSMBMA5S Index and Reuters page GSMBMA5S. The index calculation agent may from time to time consult the index committee on matters of interpretation with respect to the methodology.

What underlying assets are included in the universe of potential index underlying assets?

As of the date of this pricing supplement, there are 14 eligible ETFs included in the 15 eligible underlying assets. These eligible underlying assets track assets that have been categorized in the following asset classes: broad-based equities; fixed income; emerging markets; alternatives; commodities; inflation; and cash equivalent. The 14 ETFs are as follows:

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SPDR® S&P 500® ETF Trust (SPY) — SPY seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of publicly traded securities in leading industries of the U.S. economy, as measured by the S&P 500® Index. SPY has been categorized in the equities asset class.

iShares® MSCI EAFE ETF (EFA) — EFA seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of publicly traded securities in the European, Australasian and Far Eastern markets, as measured by the MSCI EAFE® Index. EFA has been categorized in the equities asset class.

iShares® MSCI Japan ETF (EWJ) — EWJ seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of publicly traded securities in the Japanese market as measured the MSCI Japan Index. EWJ has been categorized in the equities asset class.

iShares® 20+ Year Treasury Bond ETF (TLT) — TLT seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of public obligations of the U.S. Treasury that have a minimum term to maturity of greater than 20 years, as measured by the ICE U.S. Treasury 20+ Year Bond Index. TLT has been categorized in the fixed income asset class.

iShares® iBoxx \$ Investment Grade Corporate Bond ETF (LQD) — LQD seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of U.S. dollar-denominated, investment grade corporate bonds, as measured by the Markit iBoxx® USD Liquid Investment Grade Index. LQD has been categorized in the fixed income asset class.

iShares® iBoxx \$ High Yield Corporate Bond ETF (HYG) — HYG seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the U.S. dollar-denominated liquid high yield corporate bond market, as measured by the Markit iBoxx® USD Liquid High Yield Index. HYG has been categorized in the fixed income asset class.

iShares® 7-10 Year Treasury Bond ETF (IEF) — IEF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of public obligations of the U.S. Treasury that have a minimum term to maturity of greater than 7 years and less than or equal to 10 years, as measured by the ICE U.S. Treasury 7-10 Year Bond Index. IEF has been categorized in the fixed income asset class.

iShares® MSCI Emerging Markets ETF (EEM) — EEM seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of publicly traded securities in emerging markets, as measured by the MSCI Emerging Markets Index. EEM has been categorized in the emerging markets asset class.

iShares® U.S. Real Estate ETF (IYR) — IYR seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the real estate sector of the U.S. equity market, as represented by the Dow Jones U.S. Real Estate Index. The Dow Jones U.S. Real Estate Index is designed to represent Real Estate Investment Trusts (REITs) and other companies that invest directly or indirectly in real estate through development, management or ownership, including property agencies. IYR has been categorized in the alternatives asset class.

iShares® Preferred and Income Securities ETF (PFF) — PFF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of a select group of exchange-listed, U.S. dollar denominated preferred securities, hybrid securities and convertible preferred securities listed on the New York Stock Exchange or NASDAQ Capital Market, as represented by the ICE Exchange-Listed Preferred & Hybrid Securities Transition Index, which allocates exposure between the ICE US Listed Preferred Securities Index and the ICE Exchange-Listed Preferred & Hybrid Securities Index (the “new index”). PFF has been categorized in the alternatives asset class. During the period from February 1, 2019 to October 31, 2019, the ETF will track the ICE Exchange-Listed Preferred & Hybrid Securities Transition Index. On and after November 1, 2019, the ETF is expected to track in full the new index. Prior to February 1, 2019, the ETF tracked the S&P U.S. Preferred Stock Index™.

iShares® Nasdaq Biotechnology ETF (IBB) — IBB seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of securities listed on The NASDAQ Stock Market that are classified as either biotechnology or pharmaceutical according to the Industry Classification Benchmark, as measured by the NASDAQ Biotechnology Index. IBB has been categorized in the alternatives asset class.

SPDR® S&P® Oil & Gas Exploration & Production ETF (XOP) — XOP seeks investment results that correspond generally to the total return performance, before fees and expenses, of securities listed in the S&P Total Market Index

that are classified under the Global Industry Classification Standard in the oil and gas exploration & production industry group, as measured by the S&P Oil & Gas Exploration & Production Select Industry Index. XOP has been categorized in the commodities asset class.

SPDR® Gold Trust (GLD) — GLD seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of gold bullion held by the SPDR® Gold Trust. GLD has been categorized in the commodities asset class.

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iShares® TIPS Bond ETF (TIP) — TIP seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of inflation-protected public obligations of the U.S. Treasury that have at least one year remaining to maturity, are rated investment grade and have \$250 million or more of outstanding face value, as measured by the Bloomberg Barclays U.S. Treasury Inflation Protected Securities (TIPS) Index (Series-L). TIP has been categorized in the short-term U.S. treasury bills and inflation asset class.

In addition to the above referenced ETFs, the eligible underlying assets also include the money market position. The money market position is included in the cash equivalent asset class and reflects the notional returns accruing to a hypothetical investor from an investment in a money market account denominated in U.S. dollars that accrues interest at the notional interest rate, which is a rate equal to 3-month USD LIBOR.

For further description of these eligible underlying assets, please see “The Eligible Underlying Assets” in the accompanying index supplement.

What are the minimum and maximum potential weights of each eligible underlying asset and each asset class for the base index rebalancing on a base index rebalancing day?

The maximum potential weight and minimum potential weight of each eligible underlying asset and each asset class on each base index rebalancing day is listed below. The maximum weight of each eligible underlying asset and each asset class limits the exposure to each eligible underlying asset and each asset class. Thus, even if the 5% volatility target would be met during each realized volatility look-back period (the prior six months, three months and one month), the index would not allocate its entire exposure to the single eligible underlying asset that has the highest historical return during the related return look-back period (the prior nine months, six months and three months for the six-month, three-month and one-month volatility look-back period, respectively) among all of the eligible underlying assets because of the maximum weight limitations. The minimum weight restricts short exposure to any eligible underlying asset or any asset class. Because of these limitations, after giving effect to a daily base index rebalancing, the index is expected to have exposure to only a limited subset of the 15 eligible underlying assets (which could be as few as four eligible underlying assets) and you may not have any exposure to some of the 15 eligible underlying assets or asset classes during the entire term of the notes. Further, as a result of a daily total return index rebalancing, the index may not include any ETFs and may allocate its entire exposure to the money market position.

Broad-Based Equities	0%	50%	SPDR® S&P 500® ETF Trust	SPY	0%	20%
			iShares® MSCI EAFE ETF	EFA	0%	20%
			iShares® MSCI Japan ETF	EWJ	0%	10%
Fixed Income	0%	50%	iShares® 20+ Year Treasury Bond ETF	TLT	0%	20%
			iShares® iBoxx \$ Investment Grade Corporate Bond ETF	LQD	0%	20%
			iShares® iBoxx \$ High Yield Corporate Bond ETF	HYG	0%	20%
				IEF	0%	20%

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			iShares® 7-10 Year Treasury Bond ETF			
Emerging Markets	0%	20%	iShares® MSCI Emerging Markets ETF	EEM	0%	20%
Alternatives	0%	25%	iShares® U.S. Real Estate ETF	IYR	0%	20%
			iShares® Preferred and Income Securities ETF	PFF	0%	10%
			iShares® Nasdaq Biotechnology ETF	IBB	0%	10%
Commodities	0%	25%	SPDR® S&P® Oil & Gas Exploration & Production ETF	XOP	0%	20%
			SPDR® Gold Trust	GLD	0%	20%
Inflation	0%	10%	iShares® TIPS Bond ETF	TIP	0%	10%
Cash Equivalent	0%	50%**	Money Market Position	N/A	0%	50%**

\* The value of a share of an eligible ETF may reflect transaction costs and fees incurred or imposed by the investment advisor of the eligible ETF as well as the costs to the ETF to buy and sell its assets. These costs and

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fees are not included in the calculation of the index underlying the eligible ETF. For more fee information relating to an eligible ETF, see “The Eligible Underlying Assets” in the accompanying index supplement.

\*\* With respect to the money market position, the related asset class maximum weight and underlying asset maximum weight limitations do not apply to daily total return index rebalancing, and, therefore, as a result of daily total return index rebalancing, the index may allocate its entire exposure to the money market position.

What is realized volatility and how are the weights of the underlying assets influenced by it?

Realized volatility is a measurement of the degree of movement in the price or value of an asset observed over a specified period. Realized volatility is calculated by specifying a measurement period, determining the average value during such measurement period and then comparing each measured point during such measurement period to such average. The index utilizes historical realized volatility over three separate realized volatility look-back periods (six-months, three-months and one-month) for each daily base index rebalancing, which is calculated by the index calculation agent from daily closing net asset prices or the closing level, as applicable, over the prior six month, three month and one month period, as applicable. For example, an eligible underlying asset will have a higher realized volatility during a specific historical period than another eligible underlying asset if such eligible underlying asset has greater price movement (increases or decreases) relative to its average price during the measurement period. An eligible underlying asset with a stable price during a specific historical period will have a lower realized volatility than an eligible underlying asset which has relatively larger price movements during that same period. Further, an eligible underlying asset will have a higher realized volatility with respect to a specific measurement period if such underlying asset has greater price movements (increases and decreases) in such measurement period as compared to the price movements of the same underlying asset in a different measurement period.

In choosing the weights for the index underlying assets for any base index rebalancing day, the 5% volatility target limits the overall level of realized volatility that may be reflected by the index underlying assets. Since the volatility target limits the base index as a whole, when creating the three potential portfolios the realized volatility of each eligible underlying asset for the applicable look-back period needs to be compared relative to the realized volatilities of the remaining eligible underlying assets for the same look-back period. An eligible underlying asset may have a relatively high historical return during one or more return look-back periods relative to other eligible underlying assets, but may be excluded from inclusion as an index underlying asset for a given base index rebalancing day (or may be assigned a weight below its maximum weight) because that eligible underlying asset has a high realized volatility in the related volatility look-back period (or periods) relative to other eligible underlying assets. However, because the weight of each underlying asset for each base index rebalancing will equal the average of the average of the weights of such underlying asset across three potential portfolios (one for each return look-back period) for each day in the weight averaging period related to that base index rebalancing day, the impact of a low realized volatility for one look-back period may be lessened by a higher realized volatility for a different look-back period. In addition, an eligible underlying asset with a relatively high realized volatility may be included as an index underlying asset because its realized volatility is offset by another eligible underlying asset that is also included as an index underlying asset. Because the historical returns and realized volatility are measured on an aggregate basis within each potential portfolio, highly correlated eligible underlying assets may be excluded from a potential portfolio, in whole or in part, on a base index rebalancing day. Such highly correlated eligible underlying assets may be excluded even if, on an independent basis, such eligible underlying assets have a relatively high historical return or relatively low realized volatility for the applicable look-back period. Since realized volatility is based on historical data, there is no assurance that the historical level of volatility of an index underlying asset included in the index in a base index rebalancing day rebalancing will continue.

The look-back period relevant for calculating the applicable historical return and applicable historical realized volatility of each combination of eligible underlying assets is the period beginning on (and including) the day that is

nine, six, three or one calendar months (or, if any such day is not an index business day, the preceding index business day), as applicable, before the third index business day immediately preceding such base index rebalancing day to (but excluding) the third index business day prior to the given index business day. The weight averaging period for any base index rebalancing day will be the period from (but excluding) the 22nd index business day on which no index market disruption event occurs or is continuing with respect to any underlying asset prior to such day to (and including) such day.

With respect to each potential portfolio, if at a base index rebalancing day no combination of eligible underlying assets complies with the 5% volatility target, asset class maximum weights and underlying asset maximum weights, then such portfolio will select, from all combinations of eligible underlying assets that comply with the asset class maximum weights and the underlying asset maximum weights, the combination with the lowest historical realized volatility for the realized volatility look-back period applicable to such potential portfolio, regardless of that combination's nine-month, six-month and three-month performance, as applicable. The particular combination so selected will exceed the 5% volatility target.

How do the weights of the index underlying assets change as a result of a daily total return index rebalancing?

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The index calculation agent calculates the historical realized volatility of the base index for the applicable volatility cap period, which is the prior one month as determined below. As long as, on any given daily total return index rebalancing day, the calculated one-month realized volatility of the base index for the applicable volatility cap period is equal to or less than the volatility cap, no change to the then-current weights of the index underlying assets is made on that daily total return index rebalancing day. However, if on any given daily total return index rebalancing day the calculated volatility of the base index for the volatility cap period exceeds the volatility cap of 6%, the exposure of the index is partially rebalanced into the money market position to reduce the historical realized volatility for such volatility cap period. This is achieved by partially rebalancing, to the money market position, the exposure of the total return index to the base index through a reduction of the base index weight to the percentage that is equal to the volatility cap divided by such calculated volatility. As a result of a daily total return index rebalancing, the index may not include any ETFs (e.g., if the base index weight is reduced to zero) and may allocate its entire exposure to the money market position.

With respect to any given daily total return index rebalancing day, the volatility cap period is the period beginning on (and including) the day which is one calendar month (or, if any such date is not an index business day, the preceding index business day) before the second index business day prior to the given daily total return index rebalancing day to (and including) the third index business day prior to the given daily total return index rebalancing day. The volatility cap period with respect to any given total return index rebalancing day will not be affected by the occurrence of an index market disruption event, and the exposure to the base index will be calculated on the total return index rebalancing day as described under “— Could index market disruption events or corporate events impact the calculation of the index or a daily base index rebalancing or a daily total return index rebalancing by the index calculation agent?” below.

#### Examples of hypothetical daily total return index rebalancing

The following table displays hypothetical one-month realized volatility for the base index and the percent weighting of the base index for purposes of calculating the total return index value as a result of hypothetical daily total return index rebalancing in different situations. You should note that the base index itself may contain exposure to the money market position which would be in addition to any exposure to the money market position that the index reflects as a result of a daily total return index rebalancing. For purposes of highlighting the effect of a daily total return index rebalancing, the table assumes that the base index itself did not contain exposure to the money market position as a result of a daily base index rebalancing. This information is intended to illustrate the operation of the index on each daily total return index rebalancing day and is not indicative of how the index may perform in the future.

Day	1	2	3	4	5	6	7	8	9	10
Historical One-Month Realized Volatility of the Base Index	3.0	4.9	6.1	5.3	6.2	5.6	8.5	6.0	7.4	3.9
Weight of Base Index For Purposes of Calculating the Total Return Index Value	100.00%	100.00%	98.36%	100.00%	96.77%	100.00%	70.59%	100.00%	81.08%	100.00%
Weight of Money Market Position	0.00%	0.00%	1.64%	0.00%	3.23%	0.00%	29.41%	0.00%	18.92%	0.00%

On days 1, 2, 4, 6, 8 and 10 the historical realized volatility of the base index for the applicable volatility cap period is equal to or less than the volatility cap, so the index did not ratably rebalance into the money market position on such daily total return index rebalancing day.

On days 3, 5, 7 and 9, because the historical realized volatility of the base index for the applicable volatility cap period is greater than the volatility cap, then the weight allocated to the base index for such daily total return index rebalancing day is ratably rebalanced into the money market position. Please see “Underlying Asset Weightings” in the

accompanying index supplement. for data regarding the frequency of daily total return index rebalancing.

What is the money market position?

The money market position is a hypothetical investment intended to express the notional returns accruing to a hypothetical investor from an investment in a money market account denominated in U.S. dollars that accrues interest at the notional interest rate, which is a rate equal to 3-month USD LIBOR. Allocation of the index to the money market position is intended to reduce the volatility of the index.

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The index will provide exposure to the money market position (1) if on a daily base index rebalancing day the money market position has a relatively high performance compared to the other eligible underlying assets in a potential portfolio and/or, with respect to a realized volatility look-back period, such index underlying asset has a comparatively low realized volatility compared to the other eligible index underlying assets and is used to reduce the realized volatility of the index underlying assets in a potential portfolio on an aggregate basis and/or (2) on a daily total return index rebalancing day, if the realized volatility of the index underlying assets for the applicable volatility cap period is higher than the volatility cap, resulting in a daily total return index rebalancing.

Can the eligible underlying assets change?

Except as otherwise noted above, the eligible underlying assets and the notional interest rate are not expected to change or be replaced. However, the index committee, in its sole discretion, may eliminate an eligible ETF or notional interest rate (and/or designate a successor) if for any reason any of the following events occur with respect to such ETF or rate, in the determination of the index committee in its sole discretion:

- the ETF ceases to exist, is delisted, terminated, wound up, liquidated or files for bankruptcy, is combined with another ETF that has a different investment objective, or changes its currency of denomination;
- the ETF suspends creations or redemptions for five consecutive index business days or announces a suspension of unlimited or unspecified duration for such creations or redemptions;
- the net asset value of the ETF is not calculated or is not announced by either the ETF or its sponsor for five consecutive index business days, or an index market disruption event occurs and is continuing for five consecutive index business days;
- there has been a material diminution in the daily trading volume of the ETF or the net asset value of such ETF (where net asset value is measured as the value of an entity's assets less the value of its liabilities as publicly disclosed by this ETF or its sponsor);
- the sponsor or investment adviser of the ETF files for bankruptcy and there is no solvent immediate successor;
- limitations on ownership are imposed on the ETF due to a change in law or regulation, loss of regulatory exemptive relief or otherwise, and the index committee, in its sole discretion, determines that such limitations materially adversely affect the ability of holders of the ETF to hold, acquire or dispose of shares of such ETF;
- the tax treatment of the ETF changes in a way that would have a material adverse effect on holders of shares of such ETF;
- there has been a material change to the expense ratio or fee structure of such ETF that is adverse to holders of shares of such ETF;
- the ETF has changed the index underlying or otherwise referenced by such ETF to an index that is materially different, or the methodology for the index is materially modified (other than a modification in the ordinary course of administration of the index underlying or otherwise referenced by such ETF);
  - the index underlying or otherwise referenced by the ETF is no longer compiled, or the closing level of such index is not calculated or published for five consecutive index business days;
- the index sponsor determines in its sole discretion that it is not practicable for the ETF to continue to be included in the index for any reason, including due to:
  - a) a dispute as to whether a license is required to use the ETF or the related index, or
  - b) to the extent there is an agreement in place governing such use, changes in the terms upon which the ETF or related index is made available to the index sponsor for inclusion in the index that the index sponsor, in its sole discretion, determines to be materially adverse to it; or

the notional interest rate has been discontinued.

The successor ETF or rate shall be that which, in the determination of the index committee in its sole discretion, (i) with respect to a successor ETF, most closely replicates the relevant ETF or (ii) with respect to the successor rate, is

determined in accordance with the procedures set forth above under “The Index – General Overview”. If the index committee determines in its sole discretion that no successor ETF exists, such ETF will be removed from the index. No successor ETF or rate may fail to satisfy any of the conditions described above for replacing or removing an ETF or rate at the time the index committee decides to appoint such successor ETF or rate.

Could index market disruption events or corporate events impact the calculation of the index or a daily base index rebalancing or a daily total return index rebalancing by the index calculation agent?

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If a daily base index rebalancing day must be effected on an index business day which corresponds to the first day of a given index market disruption event (as defined below) with respect to any index underlying asset, the index calculation agent shall then rebalance the index as if (i) for each index underlying asset that had not been affected by an index market disruption event, the daily base index rebalancing day occurred on such day and (ii) for each index underlying asset that had been affected by such index market disruption event, such daily base index rebalancing day did not occur on such day. (i.e., each index underlying asset that was affected by such index market disruption event is disregarded for purposes of base index rebalancing). A base index rebalancing day will be deemed not to occur on an index business day if an index market disruption event is continuing (as opposed to occurring for the first time).

If a daily total return index rebalancing day must be effected on an index business day which corresponds to the first day of a given index market disruption event or on which an index market disruption event is continuing from the prior index business day with respect to any index underlying asset, the index calculation agent shall then rebalance the index as if (i) for each index underlying asset that had not been affected by an index market disruption event, the daily total return index rebalancing day occurred on such day and (ii) for each index underlying asset that had been affected by such index market disruption event, the daily total return index rebalancing day did not occur on such day, provided that for purposes of calculating realized volatility the alternative calculations set forth in the next paragraph apply (i.e., other than for purposes of calculating the realized volatility in the manner set forth in the next paragraph, each index underlying asset that was affected by such index market disruption event is disregarded for purposes of daily total return index rebalancing). Consequently, if, for example, an index market disruption event were to occur for the first time on a base index rebalancing day with respect to only one of the index underlying assets, then on the base index rebalancing day on which the index market disruption event occurred the weight of all index underlying assets not affected by the index market disruption event would be determined and the weight of the affected index underlying asset would be disregarded. Further, for purposes of any daily total return index rebalancing, the exposure of the total return index to the affected index underlying asset would not be reduced but the exposure of the total return index to the remainder of the base index would be reduced so that the base index (including the affected index underlying asset) and the money market position together do not exceed the volatility cap. As a result, the weight of an index underlying asset affected by an index market disruption event could be temporarily underrepresented or overrepresented in the base index.

Solely for purposes of calculating realized volatility which includes an index business day on which a market disruption event has occurred or is continuing with respect to any eligible underlying asset, the value of the base index will include any underlying asset that has been affected by an index market disruption event and will be calculated (i) in the event of a trading disruption related to movements in price that exceed limits established by the relevant exchange, by assuming the level of the affected eligible underlying asset is equal to such price limit on such index business day or (ii) in the event of an index market disruption event which is not a trading disruption related to movements in price that exceed limits established by the relevant exchange, by multiplying the level of the affected eligible underlying asset on the immediately preceding relevant index business day by the percentage change (whether positive or negative) of the underlying asset having the largest absolute change in value from the immediately preceding relevant index business day to the relevant index business day; provided, that if a market disruption event has occurred and is continuing with respect to more than one eligible underlying asset on an index business day, then the index calculation agent shall consult with the index committee to determine the values to be used for such disrupted eligible underlying assets for purposes of calculating realized volatility and such determination to be made by the index committee in its sole discretion based on its review of such market and other information as it believes relevant to such determination.

On the sixth index business day following the occurrence of an index market disruption event with respect to any index underlying asset, if such index market disruption event is continuing, the index committee may instruct the index calculation agent to rebalance the index using a specified price. In the event the index committee determines on such sixth index business day, in its sole discretion, that no such instructions should be given to the index calculation

agent, the index committee may revisit such determination on any index business day thereafter on which the index market disruption event is continuing. Notwithstanding the foregoing, in the event of a force majeure event (as defined below) in which all of the index underlying assets are affected, the calculation and publication of the index shall be postponed until, in the determination of the index calculation agent, such force majeure event has been resolved.

An “index market disruption event” will have occurred in any of the following situations: (i) the official closing price, level, rate or other measure of any eligible underlying asset is unavailable on any relevant day on which such measure is scheduled to be published, (ii) a relevant exchange (as defined below) is not open for trading during its regular trading session, or closes prior to its scheduled closing time, on any relevant day or there is a material exchange disruption (as defined below) as determined by the index calculation agent, (iii) upon the occurrence or existence of a trading disruption (as defined below) for more than two hours of trading or at any time during the one-hour period that ends at the scheduled closing time of the exchange, (iv) the net asset value per share of an eligible ETF is not calculated or is not announced by the eligible ETF or the sponsor of such ETF and such event has a material impact on the index as determined by the index sponsor, (v) the eligible ETF or the relevant sponsor of any eligible ETF suspends creations or redemptions of

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shares of such ETF and such event has a material impact on the index as determined by the index sponsor, (vi) upon the occurrence or existence of an index dislocation (as defined below), (vii) upon the occurrence or existence of a force majeure event (as defined below) or (viii) upon the occurrence of an interest rate disruption event (as defined below).

A “trading disruption” means any suspension of or limitation imposed on trading by the exchange or related exchange (as defined below), and whether by reason of movements in price exceeding limits permitted by the exchange or otherwise, relating to the eligible ETF shares, related index or futures or options on the eligible ETF shares or underlying index.

An “exchange disruption” means any event that disrupts or impairs (as determined by the index calculation agent in consultation with the index committee) the ability of market participants in general to effect transactions in, or obtain market values for, the shares of the ETF on the exchange or futures or options on the ETF shares or underlying index, in each case on the relevant related exchange.

An “exchange” means the primary exchange on which shares of an eligible ETF are listed.

A “related exchange” means, in respect of an eligible ETF or underlying index, as the case may be, the primary exchange (or exchanges) or quotation system (or quotation systems) on which futures or options contracts relating to such eligible ETF or underlying index, as the case may be, are traded, if any.

An “index dislocation” means the index calculation agent (in consultation with the index committee) determines that a market participant, as a result of a market-wide condition relating to the index or any eligible underlying asset, would (i) be unable, after using commercially reasonable efforts, to acquire, establish, re-establish, substitute, maintain, unwind, or dispose of all or a material portion of any hedge position relating to the index or an eligible underlying asset or (ii) incur a materially increased cost in doing so, including due to any capital requirements or other law or regulation.

A “force majeure event” will have occurred if the index calculation agent determines that there has been the occurrence of a systems failure, natural or man-made disaster, act of God, armed conflict, act of terrorism, riot or labor disruption or any similar intervening circumstance that is beyond the reasonable control of the index sponsor, index calculation agent or any of their respective affiliates that the index calculation agent determines is likely to have a material effect on an eligible underlying asset, or on its ability to perform its role in respect of the index.

An “interest rate disruption event” means (and an interest rate disruption event shall be deemed to have occurred if), with respect to the notional interest rate and a relevant day: (i) such notional interest rate is not published on a date on which it is scheduled for publication or (ii) such notional interest rate is no longer published.

In the event that an index ETF is affected by a potential adjustment event, the index committee may make adjustments to the level of such index ETF and/or the quantities of the index underlying assets. Any of the following will be a potential adjustment event with respect to an index ETF:

Potential Adjustment Event	Adjustment	Adjustment Description
Cash Dividends	Yes	The dividend is reinvested in that index ETF.
Special / Extraordinary Dividends	Yes	The dividend is reinvested in that index ETF.
Return of Capital	Yes	The capital is reinvested in that index ETF.

Stock Dividend	Yes	Where shareholders receive “B” new shares for every “A” share held, the number of shares is adjusted by multiplying the original number of shares by the quotient of (a) the sum of A and B divided by (b) A.
Stock Split	Yes	Where shareholders receive “B” new shares for every “A” share held, the number of shares is adjusted by multiplying the original number of shares by the quotient of B divided by A.

Potential adjustment events also include any other event that could have a diluting or concentrative effect on the theoretical value of the index ETF shares and would not otherwise be accounted for in the index. The index calculation agent may make adjustments in such cases.

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If the index calculation agent determines that the price made available for an index ETF (or the published level of a notional interest rate) reflects a manifest error, the calculation of the index or level shall be delayed until such time as a corrected price or level is made available. In the event a corrected price or level is not made available on a timely basis or in the event that the price made available for an index ETF (or the published level of a notional interest rate) is subsequently corrected and such correction is published, then the index calculation agent may, if practicable and if the index calculation agent determines acting in good faith that such error is material, adjust or correct the relevant calculation or determination, including the level of the index ETF, as of any index business day to take into account such correction. This convention, however, will not change the starting index value for the notes. However, the note calculation agent may adjust the method of calculation of the level of the index to ensure that the level of the index used to determine the amount payable on the stated maturity date is equitable. See “Terms and Conditions — Discontinuance or modification of the index” above.

On any index business day during which the price for an eligible ETF reflects such an error (and such error has not been corrected), the weights will be calculated using the price made available by the relevant exchange (notwithstanding any manifest error). If the index calculation agent determines that any such error is material (as described above) and if the relevant exchange subsequently corrects such price it has made available, the index value may be calculated using such corrected price, but the quantities of the underlying assets implied by the weights (prior to the error being corrected) will not be adjusted.

What is the historical performance of the index?

The closing level of the index has fluctuated in the past and may, in the future, experience significant fluctuations. Any upward or downward trend in the historical or hypothetical closing level of the index during any period shown below is not an indication that the index is more or less likely to increase or decrease at any time during the life of your notes.

You should not take the historical index performance information or hypothetical performance data of the index as an indication of the future performance of the index. We cannot give you any assurance that the future performance of the index, the index underlying assets, the notional interest rate will result in receiving an amount greater than the outstanding face amount of your notes on the stated maturity date.

Neither we nor any of our affiliates make any representation to you as to the performance of the index. Before investing in the offered notes, you should consult publicly available information to determine the relevant index levels between the date of this pricing supplement and the date of your purchase of the offered notes. The actual performance of the index over the life of the offered notes, as well as the cash settlement amount at maturity, may bear little relation to the historical index performance information or hypothetical performance data shown below.

### Daily Closing Levels of the Index

The following graph shows the daily closing levels of the index from April 29, 2009 to April 29, 2019. As a result, the following graph does not reflect the global financial crisis which began in 2008, which had a materially negative impact on certain of the benchmark ETFs, benchmark indices and eligible underlying assets and would have had a materially negative impact on the index. Since the index was launched on May 16, 2016 and has a limited operating history, the graph includes hypothetical performance data for the index prior to its launch on May 16, 2016.

The historical closing levels from May 16, 2016 (the index launch date) to April 29, 2019 were obtained from Bloomberg Financial Services and Solactive AG, without independent verification. (In the graph, historical closing levels can be found to the right of the vertical solid line marker.) You should not take the historical index performance information as an indication of the future performance of the index.

The hypothetical performance data from April 29, 2009 to May 15, 2016 is based on the historical levels of the eligible underlying assets using the same methodology that is used to calculate the index. The hypothetical performance data prior to the launch of the index on May 16, 2016 refers to simulated performance data created by applying the index's calculation methodology to historical levels of the underlying assets that comprise the index. Such simulated performance data has been produced by the retroactive application of a back-tested methodology, and may reflect a bias towards underlying assets or related indices that have performed well in the past. No future performance of the index can be predicted based on the simulated performance described herein. You should not take the hypothetical performance data as an indication of the future performance of the index.

### Historical Performance of the GS Momentum Builder<sup>®</sup> Multi Asset 5S ER Index

### Examples of Index Return Calculations

The following examples are provided to illustrate how the return on the index is calculated on an index business day given the key assumptions specified below. The examples assume the specified index underlying assets specified below. The return of the index underlying assets will be calculated as the sum of the products, as calculated for each index underlying asset, of the return for each index underlying asset multiplied by its weighting, expressed as a percentage. The examples are based on a range of final levels for the specified index underlying assets that are entirely hypothetical; no one can predict which eligible underlying assets will be chosen as index underlying assets on any day, the weightings of the index underlying assets or what the returns will be for any index underlying assets. The actual performance of the index on any index business day may bear little relation to the hypothetical examples shown below or to the historical index performance information and hypothetical performance data shown elsewhere in this pricing supplement. These examples

should not be taken as an indication or prediction of future performance of the index and investment results. The numbers in the examples below have been rounded for ease for analysis.

Key Assumptions

Index underlying assets during hypothetical period and percentage weighting	EEM 20%
	LQD 5%
	IYR 20%
	PPF 5%
	Money Market Position 50%
Notional interest rate	6% per annum

Neither an index market disruption event nor a non-index business day occurs.  
No change in or affecting any of the index underlying assets, index stocks or the policies of the applicable investment advisor or the method by which the underlying indices are calculated.  
No dividends are paid on any index ETF.

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Example 1: Each index underlying asset appreciates. The sum of the weighted returns of each index underlying asset is greater than the sum of the notional interest rate plus the accrued portion of the 0.65% per annum for the day. The volatility cap is never breached.

	Column A	Column B	Column C	Column D	Column E
Index Underlying Asset (Ticker)	Hypothetical Initial Level	Hypothetical Final Level	Return of Index Underlying Asset (Column B / Column A)-1	Weighting	Column C x Column D
EEM	100.000	100.500	0.500%	20.000%	0.100%
LQD	100.000	100.750	0.750%	5.000%	0.038%
IYR	100.000	101.000	1.000%	20.000%	0.200%
PFF	100.000	101.250	1.250%	5.000%	0.063%
Money Market Position	100.000	100.017	0.017%	50.000%	0.008%
				Return of Index Underlying Assets:	0.408%
				Return of Notional Cash Investment in the Notional Interest Rate:	0.017%
				Accrued Portion of the 0.65% Per Annum:	0.002%
				Index Return:	0.390%

In this example, the index underlying assets all had positive returns. The return of the index underlying assets prior to adjustment for the notional interest rate and the accrued portion of the 0.65% per annum for the day equals 0.408% for the day and, once the notional interest rate for the day and accrued portion of the 0.65% per annum for the day are subtracted, the return of the index for the day equals 0.390%.

Example 2: Each index underlying asset appreciates. The sum of the weighted returns of each index underlying asset is less than the sum of the notional interest rate plus the accrued portion of the 0.65% per annum for the day. The volatility cap is never breached.

	Column A	Column B	Column C	Column D	Column E
Index Underlying Asset (Ticker)	Hypothetical Initial Level	Hypothetical Final Level	Return of Index Underlying Asset (Column B / Column A)-1	Weighting	Column C x Column D
EEM	100.000	100.010	0.010%	20.000%	0.002%
LQD	100.000	100.010	0.010%	5.000%	0.001%
IYR	100.000	100.010	0.010%	20.000%	0.002%
PFF	100.000	100.010	0.010%	5.000%	0.001%
Money Market Position	100.000	100.017	0.017%	50.000%	0.008%
				Return of Index Underlying Assets:	0.013%
				Return of Notional Cash Investment in the Notional Interest Rate:	0.017%
				Accrued Portion of the 0.65% Per Annum:	0.002%
				Index Return:	-0.005%

In this example, the index underlying assets all had positive returns. The return of the index underlying assets prior to adjustment for the notional interest rate equals 0.013% for the day and, since the sum of the notional interest rate plus the accrued portion of the 0.65% per annum for the day is greater than such return, once the notional interest rate for the day and accrued portion of the 0.65% per annum for the day are subtracted, the return of the index for the day is negative and equals -0.005%.

Example 3: Each index underlying asset depreciates. The volatility cap is never breached.

	Column A	Column B	Column C	Column D	Column E
Index Underlying Asset (Ticker)	Hypothetical Initial Level	Hypothetical Final Level	Return of Index Underlying Asset (Column B / Column A)-1	Weighting	Column C x Column D
EEM	100.000	99.500	-0.500%	20.000%	-0.100%
LQD	100.000	99.250	-0.750%	5.000%	-0.038%
IYR	100.000	99.000	-1.000%	20.000%	-0.200%
PFF	100.000	98.750	-1.250%	5.000%	-0.063%
Money Market Position	100.000	100.017	0.017%	50.000%	0.008%

Return of Index Underlying Assets:

-0.392%

Return of Notional Cash Investment in the Notional Interest Rate:

0.017%

Accrued Portion of the 0.65% Per Annum:

0.002%

Index Return:

-0.410%

In this example, the index underlying assets all had negative returns. The return of the index underlying assets prior to adjustment for the notional interest rate and the accrued portion of the 0.65% per annum for the day equals -0.392% for the day and once the notional interest rate for the day and accrued portion of the 0.65% per annum for the day are subtracted the return of the index for the day is further reduced and equals -0.410%.

Example 4: The index underlying assets have mixed returns. The volatility cap is never breached.

	Column A	Column B	Column C	Column D	Column E
Index Underlying Asset (Ticker)	Hypothetical Initial Level	Hypothetical Final Level	Return of Index Underlying Asset (Column B / Column A)-1	Weighting	Column C x Column D
EEM	100.000	100.500	0.500%	20.000%	0.100%
LQD	100.000	100.750	0.750%	5.000%	0.038%
IYR	100.000	99.000	-1.000%	20.000%	-0.200%
PFF	100.000	98.750	-1.250%	5.000%	-0.063%
Money Market Position	100.000	100.017	0.017%	50.000%	0.008%

Return of Index Underlying Assets:

-0.117%

Return of Notional Cash Investment in the Notional Interest Rate:

0.017%

Accrued Portion of the 0.65% Per Annum:

0.002%

Index Return:

-0.135%

In this example, three of the index underlying assets had a negative return and two had positive returns. The return of the index underlying assets prior to adjustment for the notional interest rate and the accrued portion of the 0.65% per annum for the day equals -0.117% for the day and, once the notional interest rate for the day and accrued portion of the 0.65% per annum for the day are subtracted, the return of the index for the day is further reduced and equals -0.135%.

Example 5: As a result of daily total return index rebalancing, the index ratably rebalances into the money market position on an index business day.

		Column A	Column B	Column C	Column D	Column E
	Index Underlying Asset (Ticker)	Hypothetical Initial Level	Hypothetical Final Level	Return of Index Underlying Asset (Column B / Column A)-1	Weighting	Column C x Column D
With Initial Exposure to the Money Market Position (prior to daily total return index rebalancing)	EEM	100.000	100.500	0.500%	20.000%	0.100%
	LQD	100.000	100.750	0.750%	5.000%	0.038%
	IYR	100.000	101.000	1.000%	20.000%	0.200%
	PFF	100.000	101.250	1.250%	5.000%	0.063%
	Money Market Position	100.000	100.017	0.017%	50.000%	0.008%

Return of Index Underlying Assets:

0.408%

Return of Notional Cash Investment in the Notional Interest Rate:

0.017%

Accrued Portion of the 0.65% Per Annum:

0.002%

Index Return:



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		Column A	Column B	Column C	Column D	Column E
	Index Underlying Asset (Ticker)	Hypothetical Initial Level	Hypothetical Final Level	Return of Index Underlying Asset (Column B / Column A)-1	Weighting	Column C x Column D
With Additional Exposure to the Money Market Position (after daily total return index rebalancing)	EEM	100.000	100.500	0.500%	16.000%	0.080%
	LQD	100.000	100.750	0.750%	4.000%	0.030%
	IYR	100.000	101.000	1.000%	16.000%	0.160%
	PFF	100.000	101.250	1.250%	4.000%	0.050%
	Money Market Position	100.000	100.017	0.017%	60.000%	0.010%

Return of Index Underlying Assets:

0.330%

Return of Notional Cash Investment in the Notional Interest Rate:

0.017%

Accrued Portion of the 0.65% Per Annum:

0.002%

Index Return:

0.312%

In this example, in order to highlight the effect of rebalancing into the money market position as a result of daily total return index rebalancing, we have assumed that the realized volatility for the applicable cap period exceeds the volatility cap by 1.5%, thereby reducing the exposure to the base index (and, consequently, each index underlying

asset) by 20%. We have shown what the index underlying assets' returns would have been for the index business day both without and with the daily total return index rebalancing. Since the returns on EEM, LQD, IYR and PFF were higher than the money market position, the increased weighting to the money market position for the index business day caused the return of the index to be lower than it would have been without the daily total return index rebalancing feature.

We cannot predict which eligible underlying assets will be chosen as index underlying assets on any day, the weights of the index underlying assets or what the final levels will be for any index underlying assets or the notional interest rate. The actual amount that you will receive maturity and the rate of return on the offered notes will depend on the performance of the index which will be determined by the index underlying assets chosen and their weightings.

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## SUPPLEMENTAL DISCUSSION OF FEDERAL INCOME TAX CONSEQUENCES

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus.

The following section is the opinion of Sidley Austin LLP, counsel to GS Finance Corp. and The Goldman Sachs Group, Inc. It applies to you only if you hold your notes as a capital asset for tax purposes. This section does not apply to you if you are a member of a class of holders subject to special rules, such as:

- a dealer in securities or currencies;
- a trader in securities that elects to use a mark-to-market method of accounting for your securities holdings;
- a bank;
- a regulated investment company;
- a life insurance company;
- a tax-exempt organization;
- a partnership;
- a person that owns the notes as a hedge or that is hedged against interest rate risks;
- a person that owns the notes as part of a straddle or conversion transaction for tax purposes; or
- a United States holder (as defined below) whose functional currency for tax purposes is not the U.S. dollar.

This section is based on the U.S. Internal Revenue Code of 1986, as amended, its legislative history, existing and proposed regulations under the Internal Revenue Code, published rulings and court decisions, all as currently in effect. These laws are subject to change, possibly on a retroactive basis.

You should consult your tax advisor concerning the U.S. federal income tax and other tax consequences of your investment in the notes, including the application of state, local or other tax laws and the possible effects of changes in federal or other tax laws.

### United States Holders

This subsection describes the tax consequences to a United States holder. You are a United States holder if you are a beneficial owner of notes and you are:

- a citizen or resident of the United States;
- a domestic corporation;
- an estate whose income is subject to U.S. federal income tax regardless of its source; or
- a trust if a United States court can exercise primary supervision over the trust's administration and one or more United States persons are authorized to control all substantial decisions of the trust.

If you are not a United States holder, this section does not apply to you and you should refer to “— United States Alien Holders” below.

Your notes will be treated as debt instruments subject to special rules governing contingent payment debt instruments for U.S. federal income tax purposes. Under those rules, the amount of interest you are required to take into account for each accrual period will be determined by constructing a projected payment schedule for your notes and applying rules similar to those for accruing original issue discount on a hypothetical noncontingent debt instrument with that projected payment schedule. This method is applied by first determining the yield at which we would issue a noncontingent fixed rate debt instrument with terms and conditions similar to your notes (the “comparable yield”) and then determining as of the issue date a payment schedule that would produce the comparable yield. These rules will generally have the effect of requiring you to include amounts in income in respect of your notes, even though you will not receive any payments from us until maturity.

We have determined that the comparable yield for the notes is equal to 2.4917% per annum, compounded semi-annually with a projected payment at maturity of \$1,063.94 based on an investment of \$1,000.

Based on this comparable yield, if you are an initial holder that holds a note until maturity and you pay your taxes on a calendar year basis, we have determined that you would be required to report the following amounts as ordinary income, not taking into account any positive or negative adjustments you may be required to take into account based on the actual payments on the notes, from the note each year:

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Accrual Period	Interest Deemed to Accrue During Accrual Period (per \$1,000 note)	Total Interest Deemed to Have Accrued from Original Issue Date (per \$1,000 note) as of End of Accrual Period
May 2, 2019 through December 31, 2019	\$16.52	\$16.52
January 1, 2020 through December 31, 2020	\$25.48	\$42.00
January 1, 2021 through November 3, 2021	\$21.94	\$63.94

You are required to use the comparable yield and projected payment schedule that we compute in determining your interest accruals in respect of your notes, unless you timely disclose and justify on your U.S. federal income tax return the use of a different comparable yield and projected payment schedule.

The comparable yield and projected payment schedule are not provided to you for any purpose other than the determination of your interest accruals in respect of your notes, and we make no representation regarding the amount of contingent payments with respect to your notes.

If you purchase your notes at a price other than their adjusted issue price determined for tax purposes, you must determine the extent to which the difference between the price you paid for your notes and their adjusted issue price is attributable to a change in expectations as to the projected payment schedule, a change in interest rates, or both, and reasonably allocate the difference accordingly. The adjusted issue price of your notes will equal your notes' original issue price plus any interest deemed to be accrued on your notes (under the rules governing contingent payment debt instruments) as of the time you purchase your notes. The original issue price of your notes will be the first price at which a substantial amount of the notes is sold to persons other than bond houses, brokers or similar persons or organizations acting in the capacity of underwriters, placement agents or wholesalers. Therefore, you may be required to make the adjustments described above even if you purchase your notes in the initial offering if you purchase your notes at a price other than the issue price.

If the adjusted issue price of your notes is greater than the price you paid for your notes, you must make positive adjustments increasing (i) the amount of interest that you would otherwise accrue and include in income each year, and (ii) the amount of ordinary income (or decreasing the amount of ordinary loss) recognized upon maturity by the amounts allocated under the previous paragraph to each of interest and the projected payment schedule; if the adjusted issue price of your notes is less than the price you paid for your notes, you must make negative adjustments, decreasing (i) the amount of interest that you must include in income each year, and (ii) the amount of ordinary income (or increasing the amount of ordinary loss) recognized upon maturity by the amounts allocated under the previous paragraph to each of interest and the projected payment schedule. Adjustments allocated to the interest amount are not made until the date the daily portion of interest accrues.

Because any Form 1099-OID that you receive will not reflect the effects of positive or negative adjustments resulting from your purchase of notes at a price other than the adjusted issue price determined for tax purposes, you are urged to consult with your tax advisor as to whether and how adjustments should be made to the amounts reported on any Form 1099-OID.

You will recognize income or loss upon the sale, exchange or maturity of your notes in an amount equal to the difference, if any, between the cash amount you receive at such time and your adjusted basis in your notes. In general, your adjusted basis in your notes will equal the amount you paid for your notes, increased by the amount of interest you previously accrued with respect to your notes (in accordance with the comparable yield and the projected payment schedule for your notes), and increased or decreased by the amount of any positive or negative adjustment, respectively, that you are required to make if you purchase your notes at a price other than the adjusted issue price determined for tax purposes.

Any income you recognize upon the sale, exchange or maturity of your notes will be ordinary interest income. Any loss you recognize at such time will be ordinary loss to the extent of interest you included as income in the current or previous taxable years in respect of your notes, and, thereafter, capital loss. If you are a noncorporate holder, you would generally be able to use such ordinary loss to offset your income only in the taxable year in which you recognize the ordinary loss and would generally not be able to carry such ordinary loss forward or back to offset income in other taxable years.

Pursuant to recently enacted legislation, for taxable years beginning after December 31, 2018, with respect to a debt instrument issued with original issue discount, such as the notes, an accrual method taxpayer that reports revenues on an applicable financial statement generally must recognize income for U.S. federal income tax purposes no later than the taxable year in which such income is taken into account as revenue in an applicable financial statement of the taxpayer. For this purpose, an “applicable financial statement” generally means a financial statement certified as having been prepared in accordance with generally accepted accounting principles or that is made on the basis of international financial reporting standards and which is used by the taxpayer for various specified purposes. This rule could potentially require

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such a taxpayer to recognize income for U.S. federal income tax purposes with respect to the notes prior to the time such income would be recognized pursuant to the rules described above. Potential investors in the notes should consult their tax advisors regarding the potential applicability of these rules to their investment in the notes.

#### United States Alien Holders

If you are a United States alien holder, please see the discussion under “United States Taxation — Taxation of Debt Securities — United States Alien Holders” in the accompanying prospectus for a description of the tax consequences relevant to you. You are a United States alien holder if you are the beneficial owner of the notes and are, for U.S. federal income tax purposes:

a nonresident alien individual;  
a foreign corporation; or  
an estate or trust that in either case is not subject to U.S. federal income tax on a net income basis on income or gain from the notes.

The Treasury Department has issued regulations under which amounts paid or deemed paid on certain financial instruments (“871(m) financial instruments”) that are treated as attributable to U.S.-source dividends could be treated, in whole or in part depending on the circumstances, as a “dividend equivalent” payment that is subject to tax at a rate of 30% (or a lower rate under an applicable treaty), which in the case of amounts you receive upon the sale, exchange or maturity of your notes, could be collected via withholding. If these regulations were to apply to the notes, we may be required to withhold such taxes if any U.S.-source dividends are paid on any ETFs included in the index during the term of the notes. We could also require you to make certifications (e.g., an applicable Internal Revenue Service Form W-8) prior to the maturity of the notes in order to avoid or minimize withholding obligations, and we could withhold accordingly (subject to your potential right to claim a refund from the Internal Revenue Service) if such certifications were not received or were not satisfactory. If withholding was required, we would not be required to pay any additional amounts with respect to amounts so withheld. These regulations generally will apply to 871(m) financial instruments (or a combination of financial instruments treated as having been entered into in connection with each other) issued (or significantly modified and treated as retired and reissued) on or after January 1, 2021, but will also apply to certain 871(m) financial instruments (or a combination of financial instruments treated as having been entered into in connection with each other) that have a delta (as defined in the applicable Treasury regulations) of one and are issued (or significantly modified and treated as retired and reissued) on or after January 1, 2017. In addition, these regulations will not apply to financial instruments that reference a “qualified index” (as defined in the regulations). We have determined that, as of the issue date of your notes, your notes will not be subject to withholding under these rules. In certain limited circumstances, however, you should be aware that it is possible for United States alien holders to be liable for tax under these rules with respect to a combination of transactions treated as having been entered into in connection with each other even when no withholding is required. You should consult your tax advisor concerning these regulations, subsequent official guidance and regarding any other possible alternative characterizations of your notes for U.S. federal income tax purposes.

#### Foreign Account Tax Compliance Act (FATCA) Withholding

Pursuant to Treasury regulations, Foreign Account Tax Compliance Act (FATCA) withholding (as described in “United States Taxation—Taxation of Debt Securities—Foreign Account Tax Compliance Act (FATCA) Withholding” in the accompanying prospectus) will generally apply to obligations that are issued on or after July 1, 2014; therefore, the notes will generally be subject to the FATCA withholding rules. Pursuant to recently proposed regulations, the Treasury Department has indicated its intent to eliminate the requirements under FATCA of withholding on gross proceeds from the sale, exchange, maturity or other disposition of relevant financial instruments. The Treasury Department has indicated that taxpayers may rely on these proposed regulations pending their finalization



#### DEFAULT AMOUNT ON ACCELERATION

If an event of default occurs and the maturity of your notes is accelerated, the company will pay the default amount in respect of the principal of your notes at the maturity, instead of the amount payable on the stated maturity date as described earlier. We describe the default amount under “Terms and Conditions” above.

For the purpose of determining whether the holders of our Series E medium-term notes, which include your notes, are entitled to take any action under the indenture, we will treat the outstanding face amount of your notes as the outstanding principal amount of that note. Although the terms of the offered notes differ from those of the other Series E medium-term notes, holders of specified percentages in principal amount of all Series E medium-term notes, together in some cases with other series of our debt securities, will be able to take action affecting all the Series E medium-term notes, including your notes, except with respect to certain Series E medium-term notes if the terms of such notes specify that the holders of specified percentages in principal amount of all of such notes must also consent to such action. This action may involve changing some of the terms that apply to the Series E medium-term notes, accelerating the maturity of the Series E medium-term notes after a default or waiving some of our obligations under the indenture. In addition, certain changes to the indenture and the notes that only affect certain debt securities may be made with the approval of holders of a majority in principal amount of such affected debt securities. We discuss these matters in the accompanying prospectus under

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“Description of Debt Securities We May Offer — Default, Remedies and Waiver of Default” and “Description of Debt Securities We May Offer — Modification of the Debt Indentures and Waiver of Covenants”.

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Supplemental plan of distribution; conflicts of interest

See “Supplemental Plan of Distribution” in the accompanying index supplement and “Plan of Distribution — Conflicts of Interest” on page 94 of the accompanying prospectus; GS Finance Corp. estimates that its share of the total offering expenses, excluding underwriting discounts and commissions, will be approximately \$20,000.

GS Finance Corp. will sell to GS&Co., and GS&Co. will purchase from GS Finance Corp., the aggregate face amount of the offered notes specified on the front cover of this pricing supplement. GS&Co. proposes initially to offer the notes to the public at the original issue price set forth on the cover page of this pricing supplement.

GS&Co. is an affiliate of GS Finance Corp. and The Goldman Sachs Group, Inc. and, as such, will have a “conflict of interest” in this offering of notes within the meaning of Financial Industry Regulatory Authority, Inc. (FINRA) Rule 5121. Consequently, this offering of notes will be conducted in compliance with the provisions of FINRA Rule 5121. GS&Co. will not be permitted to sell notes in this offering to an account over which it exercises discretionary authority without the prior specific written approval of the account holder.

We will deliver the notes against payment therefor in New York, New York on May 2, 2019. Under Rule 15c6-1 of the Securities Exchange Act of 1934, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade notes on any date prior to two business days before delivery will be required to specify alternative settlement arrangements to prevent a failed settlement.

We have been advised by GS&Co. that it intends to make a market in the notes. However, neither GS&Co. nor any of our other affiliates that makes a market is obligated to do so and any of them may stop doing so at any time without notice. No assurance can be given as to the liquidity or trading market for the notes.

The notes will not be listed on any securities exchange or interdealer quotation system.

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## VALIDITY OF THE NOTES AND GUARANTEE

In the opinion of Sidley Austin LLP, as counsel to GS Finance Corp. and The Goldman Sachs Group, Inc., when the notes offered by this pricing supplement have been executed and issued by GS Finance Corp., the related guarantee offered by this pricing supplement has been executed and issued by The Goldman Sachs Group, Inc., and such notes have been authenticated by the trustee pursuant to the indenture, and such notes and the guarantee have been delivered against payment as contemplated herein, (a) such notes will be valid and binding obligations of GS Finance Corp., enforceable in accordance with their terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability (including, without limitation, concepts of good faith, fair dealing and the lack of bad faith), provided that such counsel expresses no opinion as to the effect of fraudulent conveyance, fraudulent transfer or similar provision of applicable law on the conclusions expressed above and (b) such related guarantee will be a valid and binding obligation of The Goldman Sachs Group, Inc., enforceable in accordance with its terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability (including, without limitation, concepts of good faith, fair dealing and the lack of bad faith), provided that such counsel expresses no opinion as to the effect of fraudulent conveyance, fraudulent transfer or similar provision of applicable law on the conclusions expressed above. This opinion is given as of the date hereof and is limited to the laws of the State of New York and the General Corporation Law of the State of Delaware as in effect on the date hereof. In addition, this opinion is subject to customary assumptions about the trustee's authorization, execution and delivery of the indenture and the genuineness of signatures and certain factual matters, all as stated in the letter of such counsel dated July 10, 2017, which has been filed as Exhibit 5.6 to the registration statement on Form S-3 filed with the Securities and Exchange Commission by GS Finance Corp. and The Goldman Sachs Group, Inc. on July 10, 2017.

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We have not authorized anyone to provide any information or to make any representations other than those contained or incorporated by reference in this pricing supplement, the accompanying index supplement, the accompanying prospectus supplement or the accompanying prospectus. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This pricing supplement, the accompanying index supplement, the accompanying prospectus supplement and the accompanying prospectus is an offer to sell only the notes offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this pricing supplement, the accompanying index supplement, the accompanying prospectus supplement and the accompanying prospectus is current only as of the respective dates of such documents.

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\$463,000

GS Finance Corp.

GS Momentum Builder® Multi-Asset 5S ER Index-Linked Notes due 2021

guaranteed by

The Goldman Sachs Group, Inc.