GOLDMAN SACHS GROUP INC
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The information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to Completion. Dated April 30, 2019.

GS Finance Corp.

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Autocallable Motif Capital Artificial Intelligence 8 ER Index-Linked Notes due

guaranteed by

The Goldman Sachs Group, Inc.

The notes will not bear interest. Unless your notes are automatically called on any annual call observation date, the amount that you will be paid on your notes on the stated maturity date (expected to be June 11, 2026) will be based on the performance of the Motif Capital Artificial Intelligence 8 ER Index as measured from the trade date (expected to be May 28, 2019) to and including the determination date (expected to be May 28, 2026). If the final level on the determination date is greater than the initial level (set on the trade date), the return on your notes will be the index return (the percentage increase or decrease in the final level from the initial level) times 2. If the final level is equal to or less than the initial level, you will receive the face amount of your notes at maturity. The index measures the extent to which the stocks (including ADRs) and any money market position (described below) outperform 3-month USD LIBOR plus 0.75% per annum (accruing daily). If the index fails to outperform 3-month USD LIBOR plus 0.75% per annum (accruing daily) you will receive no return on your investment. LIBOR is being modified, see page S-24.

Your notes will be automatically called if the closing level of the index on any call observation date is greater than or equal to the applicable call level, resulting in a payment on the corresponding call payment date (the tenth business day after the call observation date) equal to the face amount of your notes plus the product of $1,000 times the applicable call return. See page S-4 for call observation dates, call levels and call returns.

The index attempts to track the common equity of U.S. and non-U.S. companies listed on U.S. exchanges that either develop or use artificial intelligence technology, subject to a limitation on volatility described below. The index rebalances annually and the stocks eligible for inclusion in the index are identified based solely on a relevance score determined by an established word search algorithm utilizing terms from the Association for Computing Machinery Computing Classification 2012 taxonomy. To be included in the index, a company must (i) be classified in the technology sector, (ii) have a minimum relevance score and (iii) meet minimum market capitalization, price, price availability and average daily dollar volume thresholds. If there are more than 100 eligible companies, only those with the 100 highest relevance scores are included in the index. The weight of each stock is determined by reference to its relevance score, market capitalization and average daily dollar volume, subject to minimum and maximum weight constraints of 0.1% and 5% of the index. For a full list of index stocks, see page S-53. There are very significant risks associated with the methodology used to select and weight index constituents. See pages S-22 and S-31.

As of the close of business on each index business day, realized volatility (measuring the degree of variation in the daily closing prices of stocks included in the index) is calculated using a 20 index business day look-back period. If such realized volatility exceeds 8%, the index will be rebalanced as of the opening of business on the next index business day by ratably reallocating the exposure of the index from stocks to the money market position in an amount sufficient to reduce such realized volatility to 8%. As of the close of business on the next index business day, the index reverts to the stock weightings as of the most recent annual index rebalancing date and the realized volatility for the 20 index business day look-back period is again calculated at such time. If realized volatility as calculated at the end of an index business day does not exceed 8%, there will be no allocation to the money market position with respect to the next index business day. The money market position reflects the returns accruing on a hypothetical cash investment in a notional money market account denominated in U.S. dollars that accrues interest at the notional interest rate, which is equal to 3-month USD LIBOR. The index may allocate its entire exposure to the money market position, the return on which will always be less than the sum of the return on 3-month USD LIBOR plus 0.75% per annum (accruing daily).

The greater the percentage of the index allocated to the money market position, the higher the return that will be required on the stocks in order to have a return on your investment. Historically, a very significant portion (up to approximately 78.6%) of the index consistently has been allocated to the money market position. If your notes are not automatically called, at maturity, for each $1,000 face amount of your notes you will receive an amount in cash equal to:

- if the index return is positive (the final level is greater than the initial level), the sum of (i) $1,000 plus (ii) the product of (a) $1,000 times (b) 2 times (c) the index return; or
- if the index return is zero or negative (the final level is equal to or less than the initial level), $1,000.

You should read the disclosure herein to better understand the terms and risks of your investment, including the credit risk of GS Finance Corp. and The Goldman Sachs Group, Inc. See page S-11.

The estimated value of your notes at the time the terms of your notes are set on the trade date is expected to be between $890 and $930 per $1,000 face amount. For a discussion of the estimated value and the price at which Goldman Sachs & Co. LLC would initially buy or sell your notes, if it makes a market in the notes, see page S-3.

| | | | |
|---|---|---|---|
| Original issue date: | expected to be May 31, 2019 | Original issue price: | 100% of the face amount* |
| Underwriting discount: | % of the face amount* | Net proceeds to the issuer: | % of the face amount |

* The original issue price will be % for certain investors; see "Supplemental Plan of Distribution" on page S-65.

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

Goldman Sachs & Co. LLC

Prospectus Supplement No. dated , 2019.

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

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

## Estimated Value of Your Notes

The estimated value of your notes at the time the terms of your notes are set on the trade date (as determined by reference to pricing models used by Goldman Sachs & Co. LLC (GS&Co.) and taking into account our credit spreads) is expected to be between $890 and $930 per $1,000 face amount, which is less than the original issue price. The value of your notes at any time will reflect many factors and cannot be predicted; however, the price (not including GS&Co.'s customary bid and ask spreads) at which GS&Co. would initially buy or sell notes (if it makes a market, which it is not obligated to do) and the value that GS&Co. will initially use for account statements and otherwise is equal to approximately the estimated value of your notes at the time of pricing, plus an additional amount (initially equal to $ per $1,000 face amount).

Prior to , the price (not including GS&Co.'s customary bid and ask spreads) at which GS&Co. would buy or sell your notes (if it makes a market, which it is not obligated to do) will equal approximately the sum of (a) the then-current estimated value of your notes (as determined by reference to GS&Co.'s pricing models) plus (b) any remaining additional amount (the additional amount will decline to zero on a straight-line basis from the time of pricing through ). On and after , the price (not including GS&Co.'s customary bid and ask spreads) at which GS&Co. would buy or sell your notes (if it makes a market) will equal approximately the then-current estimated value of your notes determined by reference to such pricing models.

## About Your Prospectus

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

- Prospectus supplement dated July 10, 2017

- Prospectus dated July 10, 2017

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

We refer to the notes we are offering by this prospectus supplement as the "offered notes" or the "notes". Each of the offered notes has the terms described below. Please note that in this prospectus supplement, references to "GS Finance Corp.", "we", "our" and "us" mean only GS Finance Corp. and do not include its subsidiaries or affiliates, references to "The

Goldman Sachs Group, Inc.", our parent company, mean only The Goldman Sachs Group, Inc. and do not include its subsidiaries or affiliates and references to "Goldman Sachs" mean The Goldman Sachs Group, Inc. together with its consolidated subsidiaries and affiliates, including us. The notes will be issued under the senior debt indenture, dated as of October 10, 2008, as supplemented by the First Supplemental Indenture, dated as of February 20, 2015, each among us, as issuer, The Goldman Sachs Group, Inc., as guarantor, and The Bank of New York Mellon, as trustee. This indenture, as so supplemented and as further supplemented thereafter, is referred to as the "GSFC 2008 indenture" in the accompanying prospectus supplement. The notes will be issued in book-entry form and represented by a master global note.

TERMS AND CONDITIONS

(Terms From Prospectus Supplement No. Incorporated Into Master Note No. 2)

These terms and conditions relate to prospectus supplement no. dated , 2019 of GS Finance Corp. and The Goldman Sachs Group, Inc. with respect to the issuance by GS Finance Corp. of its Autocallable Motif Capital Artificial Intelligence 8 ER Index-Linked Notes due 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: 40056FDL6 / US40056FDL67

Company (Issuer): GS Finance Corp.

Guarantor: The Goldman Sachs Group, Inc.

Index: Motif Capital Artificial Intelligence 8 ER Index (current Bloomberg symbol: "MCAIE Index"), or any successor index, as it may be modified, replaced or adjusted from time to time as provided herein

Face amount: $ 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: Subject to redemption by the company as provided under "— Company's redemption right

(automatic call feature)" below, 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 (set on the trade date):

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: 200%

Company's redemption right (automatic call feature): If a redemption event occurs, then the outstanding face amount will be automatically redeemed in whole and the company will pay an amount in cash on the following call payment date for each $1,000 of the outstanding face amount equal to the sum of (i) $1,000 plus (ii) the product of $1,000 times the applicable call return specified under "Call observation dates" below.

Redemption event: a redemption event will occur if, as measured on any call observation date, the closing level of the index is greater than or equal to the applicable call level set forth below under "— Call observation dates"

Call level: with respect to any call observation date, the applicable call level specified in the table set forth under "Call observation dates" below; as shown in such table, the call level increases the longer the notes are outstanding

Call return: with respect to any call payment date, the applicable call return specified in the table set forth under "Call observation dates" below; as shown in such table, the call return increases the longer the notes are outstanding

Call payment dates (set on the trade date): expected to be the tenth business day after each call observation date. If a call observation date is postponed as described under "— Call observation dates" below, such postponement of the call observation date will not postpone the related call payment date.

Call observation dates (set on the trade date): expected to be the dates specified as such in the table below, commencing May 2020 and ending May 2025, unless the note calculation agent determines that such day is not a trading day. In that event, the applicable call observation date will be the first following trading day. In no event, however, will the applicable call observation date be postponed more than five scheduled trading days. If a call observation date is postponed to the last possible day for that period, but that day is not a trading day, that day will nevertheless be the applicable call observation date.

[redacted]

| | | |
|---|---|---|
| May 28, 2020 | 102.4% | 6.5% |
| May 28, 2021 | 104.8% | 13% |
| May 31, 2022 | 107.2% | 19.5% |
| May 30, 2023 | 109.6% | 26% |
| May 28, 2024 | 112% | 32.5% |
| May 28, 2025 | 114.4% | 39% |

Trade date: expected to be May 28, 2019

Original issue date (set on the trade date): expected to be May 31, 2019

Determination date (set on the trade date): expected to be May 28, 2026, 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 by more than five scheduled trading days. 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 (set on the trade date): expected to be June 11, 2026, 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, such postponement of the determination date will not postpone the stated maturity 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

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. A day is a scheduled trading day with respect to the index if, as of the trade date, the index is expected to be calculated and published by the index sponsor (including any index calculation agent acting on the index sponsor's behalf) on such 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: Motif Capital Management, Inc.). The notes are not sponsored, endorsed, sold or promoted by the index sponsor or any of its affiliates and the index sponsor and its affiliates make no representation regarding the advisability of investing in the notes.

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

Underlying stocks: with respect to the index, at any time, the stocks (and, if applicable, the exchange-traded fund) 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 applicable originally scheduled call observation date or the originally scheduled determination date, as applicable, is not a trading day, then such call observation date or the determination date, as applicable, will be postponed as described under "— Call observation dates" or "— Determination date" above.

If the note calculation agent determines that the closing level of the index is not available on the last possible applicable call observation date or 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 or the amount payable on a call payment date, as applicable, 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 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 applicable call payment date or on the stated maturity date, as applicable, 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, the underlying stocks 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 underlying stocks 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 underlying stocks or their issuers, 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 amount payable on a call payment date or the stated maturity date, as applicable, 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): Goldman Sachs & Co. LLC ("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.

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 closing levels of the index on a call observation date and on the determination date could have on the amount of cash payable on a call payment date or on the stated maturity date, as the case may be, 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 closing level of the index will be on any call observation date or 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 assumes that the offered notes are purchased on the original issue date at the face amount and held to a call payment date or the stated maturity date, as the case may be. 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 S-11 of this prospectus 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 | 200% |
| No non-trading day occurs on any originally scheduled call observation date or the originally scheduled determination date | |
| No change in or affecting any of the underlying stocks or the method by which the index sponsor calculates the index | |
| Notes purchased on original issue date and held to a call payment date or the stated maturity date | |

Moreover, we have not yet set the initial index level that will serve as the baseline for determining if the notes will be automatically called and the amount that we will pay on your notes on a call payment date or at maturity. We will not do so until the trade date. As a result, the initial index level may differ substantially from the index level prior to the trade date. For these reasons, the actual performance of the index over the life of your notes, particularly on each call observation date and the determination date, as well as the amount payable on a call payment date or 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 prospectus supplement. For historical index performance information and hypothetical performance data of the index during recent periods, see "The Index —Closing Levels of the Index" on page S-50. Before investing in the offered notes, you should consult publicly available information to determine the level of the index between the date of this prospectus 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 underlying stocks.

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 underlying stocks.

Hypothetical Amount In Cash Payable on a Call Payment Date

The following examples reflect hypothetical amounts that you could receive on the applicable call payment dates. While there are six potential call payment dates with respect to your notes, the examples below only illustrate the amount you will receive, if any, on the first and second call payment date.

If, for example, your notes are automatically called on the first call observation date (i.e., on the first call observation date the closing level of the index is greater than or equal to 102.4% of the initial index level), the amount in cash that we would deliver for each $1,000 face amount of your notes on the applicable call payment date would be the sum of $1,000 plus the product of the applicable call return times $1,000. Therefore, for example, if the closing level of the index on the first call observation date were determined to be 120% of the initial index level, your notes would be automatically called and the amount in cash that we would deliver on your notes on the corresponding call payment date would be 106.5% of the face amount of your notes or $1,065 for each $1,000 face amount of your notes. Even if the closing level of the index on a call observation date exceeds the applicable call level, causing the notes to be automatically called, the amount in cash payable on the call payment date will be limited due to the applicable call return.

If, for example, the notes are not automatically called on the first call observation date and are automatically called on the second call observation date (i.e., on the first call observation date the closing level of the index is less than 102.4% of the initial index level and on the second call observation date the closing level of the index is greater than or equal to 104.8% of the initial index level), the amount in cash that we would deliver for each $1,000 face amount of your notes on the applicable call payment date would be the sum of $1,000 plus the product of the applicable call return times $1,000. Therefore, for example, if the closing level of the index on the second call observation date were determined to be 140% of the initial index level, your notes would be automatically called and the amount in cash that we would deliver on your notes on the corresponding call payment date would be 113% of the face amount of your notes or $1,130 for each $1,000 face amount of your notes. Even if the closing level of the index on a call observation date exceeds the applicable call level, causing the notes to be automatically called, the amount in cash payable on the call payment date will be limited due to the applicable call return.

Hypothetical Cash Settlement Amount at Maturity

If the notes are not automatically called on any call observation date (i.e., on each call observation date the closing level of the index is less than the applicable call level), the cash settlement amount we would deliver for each $1,000 face amount of your notes on the stated maturity date will depend on the performance of the index on the determination date, as shown in the table below. The table below shows the hypothetical cash settlement amounts that we would deliver on the stated maturity date in exchange for each $1,000 face amount of the notes if the final index level (expressed as a percentage of the initial index level) were any of the hypothetical levels shown in the left column.

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-hundredth of a percent). Thus, a hypothetical cash settlement amount of 100.00% 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 100.00% 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.

| The Notes Have Not Been Automatically Called | |
|---|---|
| Hypothetical Final Index Level (as Percentage of Initial Index Level) | Hypothetical Cash Settlement Amount (as Percentage of Face Amount) |
| 175.00% | 250.00% |
| 150.00% | 200.00% |
| 140.00% | 180.00% |
| 130.00% | 160.00% |
| 110.00% | 120.00% |
| 100.00% | 100.00% |
| 90.00% | 100.00% |
| 75.00% | 100.00% |
| 50.00% | 100.00% |
| 25.00% | 100.00% |
| 0.00% | 100.00% |

If, for example, the notes have not been automatically called on a call observation date and the final index level were determined to be 25.00% of the initial index level, the cash settlement amount that we would deliver on your notes at maturity would be 100.00% 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 100.00% (the section left of the 100.00% marker on the horizontal axis) would result in a hypothetical cash settlement amount of 100.00% of the face amount of your notes.

The amounts shown above are entirely hypothetical; they are based on closing levels of the index that may not be achieved on a call observation date or the determination date, as the case may be, and on assumptions that may prove to be erroneous. The actual market value of your notes on a call payment date, 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 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 amounts on notes held to a call payment date or the stated maturity date, as the case may be, 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 S-25.

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 a zero coupon 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 prospectus supplement.

We cannot predict the actual closing levels of the index on each of the call observation dates or final index level on the determination date 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 in cash that you will receive and the rate of return on the offered notes will depend on whether or not the notes are automatically called, the actual initial index level, which we will set on the trade date, and the actual closing level of the index on each call observation date and the actual final index level on the determination date, each as determined by the note calculation agent as described above. Moreover, the assumptions on which the hypothetical examples are based may turn out to be inaccurate. Consequently, the amount in cash to be paid in respect of your notes on a call payment date or the stated maturity date, as the case may be, may be very different from the information reflected in the examples above.

ADDITIONAL RISK FACTORS SPECIFIC TO YOUR NOTES

An investment in your notes is subject to the risks described below, as well as the risks and considerations described in the accompanying prospectus and in the accompanying prospectus supplement. You should carefully review these risks and considerations as well as the terms of the notes described herein and in the accompanying prospectus and the accompanying prospectus supplement. Your notes are a riskier investment than ordinary debt securities. Also, your notes are not equivalent to investing directly in any underlying stocks, i.e., the stocks comprising the index to which your notes are linked. You should carefully consider whether the offered notes are suited to your particular circumstances.

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.

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.

Your Notes Do Not Bear Interest

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

The Amount In Cash That You Will Receive on a Call Payment Date or on the Stated Maturity Date is Not Linked to the Closing Level of the Index at Any Time Other Than on the Applicable Call Observation Date or the Determination Date, as the Case May Be

The amount in cash that you will receive on a call payment date, if any, will be paid only if the closing level of the index on the applicable call observation date is greater than or equal to the applicable call level. Therefore, the closing level of the index on dates other than the call observation dates will have no effect on any amount paid in respect of your notes on the call payment date. In addition, the cash settlement amount you will receive on the stated maturity date (if the notes were not previously automatically called) will be based on the closing level of the index on the determination date and, therefore, the closing level of the index on dates other than the determination date will have no effect on any cash settlement amount paid in respect of your notes on the stated maturity date. Therefore, for example, if the closing level of the index dropped precipitously on the determination date, the cash settlement amount for the notes may be significantly less than it otherwise would have been had the cash settlement amount been linked to the closing level of the index prior to such drop. Although the actual closing level of the index on the applicable call payment dates, the stated maturity date or at other times during the life of the notes may be higher than the closing level of the index on the call observation dates or the final index level on the determination date, you will not benefit from the closing level of the index at any time other than on the call observation dates or on the determination date.

The Amount You Will Receive on a Call Payment Date Will Be Limited

Regardless of the closing level of the index on each of the call observation dates, the amount in cash that you may receive on a call payment date is limited. Even if the closing level of the index on a call observation date exceeds the applicable call level, causing the notes to be automatically called, the amount in cash payable on the call payment date will be limited due to the applicable call return. If your notes are automatically called on a call observation date, the maximum payment you will receive for each $1,000 face amount of your notes will depend on the applicable call return.

Your Notes Are Subject to Automatic Redemption

We will automatically call and redeem all, but not part, of your notes on a call payment date, if, as measured on any call observation date, the closing level of the index is greater than or equal to the applicable call level. Therefore, the term for your notes may be reduced and you will not receive any further payments on the notes since your notes will no longer be outstanding. You may not be able to reinvest the proceeds from an investment in the notes at a comparable return for a similar level of risk in the event the notes are called prior to maturity.

The Index Measures the Performance of the Total Return Index Less the Sum of the Return on the Notional Interest Rate Plus 0.75% Per Annum (Accruing Daily)

Your notes are linked to the index. The index measures the performance of the total return index, which includes the underlying stocks and the money market position, less the sum of the return on the notional interest rate plus 0.75% 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 underlying stocks. As a result, any return on the index — and thus on your notes — may be reduced or eliminated, which will have the effect of reducing the amount payable in respect of your notes. The total return index must produce positive returns at least as great as the sum of the return on the notional interest rate plus 0.75% per annum (accruing daily) before the index will have a positive return. If the index fails to outperform 3-month USD LIBOR plus 0.75% per annum (accruing daily) you will receive no return on your investment.

The index, through the total return index, may allocate its entire exposure to the money market position, the return on which will always be less than the sum of the return on 3-month USD LIBOR plus 0.75% per annum (accruing daily). The greater the percentage of the index allocated to the money market position, the higher the return that will be required on the underlying stocks in order to have a return on your investment. Historically, a very significant portion (up to approximately 78.6%) of the index exposure consistently has been to the money market position.

The Underlying Stocks are All in the Technology Sector, and the Index Attempts to Provide Exposure to Companies Developing Artificial Intelligence Services and Companies Using Artificial Intelligence Technology

The index is comprised of U.S. and non-U.S. equity securities listed on U.S. exchanges (either directly or through American Depositary Receipts (ADRs)) of companies classified in the technology sector under the Thomson Reuters Business Classification system (the “technology sector”) and attempts to include stocks and ADRs of companies that develop and/or use artificial intelligence technology, and that may benefit from the further development of artificial intelligence. A “U.S. exchange” for purposes of the index is the NYSE, NYSE Arca, NYSE American (formerly NYSE MKT), NASDAQ Global Select Market, NASDAQ Select Market, NASDAQ Capital Market or IEX. For purposes of the index, “artificial intelligence” is the ability of a machine to perform cognitive tasks typically associated with human brains, such as perception, reasoning, learning, interacting with the environment and problem solving. Because these companies are all in the technology sector, the index is more likely to be adversely affected by the negative performance of such sector than an index that has more diversified holdings across a larger number of sectors. In addition, 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 stocks and ADRs that comprise the index (the “underlying stocks”), the return on your investment in the notes will be subject to certain risks and other factors similar to those associated with direct investments in stocks and ADRs of companies in the technology sector and also will be subject to reduction by the sum of the return on the notional interest rate plus 0.75% per annum (accruing daily). In addition, your exposure to stocks and ADRs of companies in the technology sector will be reduced to the extent that the index is invested in the money market position. Factors affecting companies in the technology sector include, for example, rapid changes in technology product cycles, rapid product obsolescence, government regulation, funding and spending and competition, both domestically and internationally, including competition from foreign competitors with lower production costs. Legal and regulatory changes, particularly related to information privacy and data protection, may have an impact on technology companies’ products or services. In addition, these companies typically engage in significant amounts of spending on research and development and there is no guarantee that the products or services produced by these companies will be successful. Stocks of technology companies and companies that rely heavily on technology, especially those of smaller, less-seasoned companies, tend to be more volatile than companies that do not rely heavily on technology. Technology companies are also heavily dependent on patent and intellectual property rights, the loss or impairment of which may adversely affect profitability. Additionally, companies in the technology sector may face dramatic and often unpredictable changes in growth rates and competition for the services of qualified personnel.

In addition to the business risks outlined above, risks relating to artificial intelligence in particular include concerns regarding the displacement of human labor, security threats and regulations focused on data privacy and strategy implementation issues.

The Index May Not Successfully Capture Exposure to Companies That May Benefit From the Development of Artificial Intelligence

The index attempts to track the common equity of U.S. and non-U.S. companies listed on U.S. exchanges that either develop or use artificial intelligence technology, subject to a limitation on volatility. The index rebalances annually and the underlying stocks included in the index and their weights are determined based solely on the use of an established word search algorithm utilizing terms from the Association for Computing Machinery (ACM) Computing Classification 2012 taxonomy (with such weights also adjusted for market capitalization). Such word search algorithm calculates the number of times specified search phrases appear in such a company's annual regulatory filing, as well as the length of such filing (in each case, excluding exhibits, information incorporated by reference and any amendments to such filing), and compares these metrics to those of each other annual regulatory filing in the search corpus. The search corpus consists of all annual regulatory filings — across all sectors — filed with the SEC within the 15 months prior to the applicable annual rebalancing (in each case, excluding exhibits, information incorporated by reference and amendments). However, there is no guarantee that the methodology the index sponsor has implemented — which is heavily dependent on whether companies in the technology sector use certain search phrases in their annual regulatory filings — will capture (i) all such companies that are developing artificial intelligence technology, (ii) all such companies that are using artificial intelligence technology in their business or (iii) the relevance of artificial intelligence to any such company's business. The index will not include any companies outside of the technology sector, regardless of how they describe their business and therefore may exclude companies that are very significantly involved in the development or use of artificial intelligence technology.

Also, the volatility control may limit the index's ability to track the performance of such companies, particularly as the stocks in the index could, given the new technologies involved, be potentially more likely to be subject to price volatility. The index may fail to realize gains that could occur as a result of reducing the exposure of the total return index to stocks that have experienced price volatility. As a result, the level of the index, which is rebalanced into the money market position based on prior volatility trends, may decline. If the index declines you will have a zero return on your investment; however, you will receive at least the face amount of your notes on the stated maturity date, subject to our credit risk. No assurance can be given that the investment methodology used to construct the index will outperform any alternative index or basket of stocks that might be constructed from the underlying stocks or that otherwise attempts to invest in companies involved in the development or use of artificial intelligence technology solutions, particularly if such index or basket includes stocks outside of the technology sector. The index is different from an investment that seeks long-term exposure to a constant set of underlying stocks because of the annual rebalancing feature and the volatility control limit.

In addition, pursuant to its methodology and among other rules, the index performs relevant phrase searches of companies' annual regulatory filings to exclude companies that have few or no relevant search phrases related to artificial intelligence. Thus, companies that develop or use artificial intelligence technology will be excluded from the index if such companies' annual regulatory filings do not contain a significant number of specified search phrase matches. A lack of matches in a company's annual regulatory filing results in a low thematic exposure score (a measure of relevance to the artificial intelligence theme, as discussed under "The Index" below), even if the products or services provided by such company are significantly connected to the development or use of artificial intelligence. A lack of matches could be due to, among other things, a company's use of alternative terminology when describing its development or use of artificial intelligence or its use of mainly "common" phrases that occur in more than 4% of all annual regulatory filings in the search corpus (as such "common" phrases are consequently removed from the search phrase list pursuant to the index methodology). Furthermore, as a result of the index methodology, companies that use artificial intelligence technology solutions to solve business problems and would benefit from the development of artificial intelligence may not be included in the index for other reasons. In particular, the index will exclude:

- companies in sectors outside of the technology sector, such as financial companies, telecommunications services companies, healthcare companies and utilities companies, which may rely heavily on artificial intelligence in their businesses;
- private companies, which may include joint ventures between two or more public companies;
- non-U.S. and U.S. companies that are not listed on a U.S. exchange, regardless of whether their common equity is listed on a non-U.S. exchange; and
- other companies not meeting the selection criteria or eligibility screens set forth in the index methodology.

Further, index market disruption events, particularly during the implementation of annual base index rebalancing, may cause the underlying stocks to be overweighted or underweighted relative to what their weight otherwise would have been and this overweighting or underweighting of underlying stocks will determine an underlying stock's weight in the index until the next annual base index rebalancing. This may further limit the extent to which the index captures exposure to certain companies developing and/or using artificial intelligence technology solutions and also may have an adverse impact on the level of the index. See " Index Market Disruption Events Could Affect the Level of the Index on Any Date" and "The Index Index Market Disruptions" below.

In addition, while the index attempts to track U.S. exchange-listed stocks of companies in the technology sector that develop and/or use artificial intelligence technology solutions that may benefit from the development of artificial intelligence, any such effect may not occur during the term of the notes. Therefore, even if the products and services provided by such companies and the companies themselves do ultimately benefit from the development of artificial intelligence, this benefit may not be realized fully, or at all, during the term of the notes.

The Index Excludes Companies that Develop or Use Artificial Intelligence But Are Not in the Technology Sector

In order for a company to be eligible for inclusion in the index, such company must be classified in the technology sector under the Thomson Reuters Business Classification system. A company that develops or uses artificial intelligence technology solutions, but that is classified under any sector other than the technology sector, will not be included in the index, even if that company includes specified search phrases in its annual regulatory filing with the SEC, even if such company's development or use of artificial intelligence is significant and/or revenue-producing and even though that company's annual regulatory filings were included in the search corpus. For example, Tesla, Inc., a company that designs, develops, manufactures and sells electric vehicles, energy generation and energy storage systems, states in its 2017 10-K that it is integrating machine learning technology in the software underlying its self-driving cars, and has introduced object detection capability in its vehicles. However, Tesla, Inc. is not included in the index because it is not formally classified in the technology sector. As a further example, TiVo Corporation, a media and entertainment products company that provides cloud-based services, embedded software solutions and other intellectual property relating to online content, states in its 2017 10-K that its technology platform uses machine learning techniques. While its platform uses machine learning technology, TiVo Corporation is not included in the index because it is not formally classified in the technology sector. Although companies may develop or use artificial intelligence technology in their business, and such companies could benefit from the further development of artificial intelligence, you may not have exposure to such companies in the index due to the technology sector screen. See "The Index — List of Index Constituents as of March 31, 2019" below for a full list of index constituents as of March 31, 2019.

The Index May Not Include, or May Not Heavily Weight, Companies in the Technology Sector That Could Benefit from the Development of Artificial Intelligence

In order for a company to be eligible for inclusion in the index, it must include, in its most recent annual regulatory filing with the SEC within the 15 months prior to the annual rebalancing, at least one of the specific search phrases determined by the index sponsor that are associated with artificial intelligence and machine learning as identified in the most recent ACM Computing Classification taxonomy (ACM taxonomy). A company that develops or uses artificial intelligence technology solutions but that contains no key search phrases due to the use of alternative terminology in its annual regulatory filing or other reasons (including the insignificance of such business relative to the company's other businesses) will not be included in the index, even if such company's development or use of artificial intelligence is or may be significant. In addition, even if a company is classified in the technology sector and its annual regulatory filing contains one or more search phrases, it will not be included in the index if it does not meet minimum market capitalization, price, average daily dollar volume and historical price availability thresholds. See "The Index Base Index Composition Apply underlying stock screens" below for a description of the stock screens. Further, even if a company's annual regulatory filing contains one or more search phrases and such company is ultimately included in the index, such company's weighting in the index may not be reflective of its relevance to the development or use of artificial intelligence since index weightings are determined based on scores attributed to each annual regulatory filing that take into account search phrase frequency within the document (relative to its frequency in other documents comprising the full search corpus) as well as such document's length (relative to the average document length within the search corpus).

The Index Will Include, and May Heavily Weight, Companies That Provide Products and Services Not Related to Artificial Intelligence

A company's weight in the index is based, in part, on its exposure to the artificial intelligence theme. The index constituents are selected using, in part, a keyword search of companies' annual regulatory filings using specified search phrases. The relevant search phrases were selected with the intent of identifying companies that develop artificial intelligence technology solutions and sell those solutions as products or services or deploy artificial intelligence solutions to solve business problems. However, a company that develops and/or uses artificial intelligence technology but does not include at least one of the specified search phrases in its most recent annual regulatory filing (filed with the SEC within the 15 months preceding the annual index rebalancing) is not included in the index. Further, the index includes, and may heavily weight, companies that derive significant revenue from non-artificial intelligence related products and services. A company is included in the index so long as it includes at least one specified search phrase in its applicable annual regulatory filing and meets the other threshold criteria (e.g., sector, stock and low theme relevance screens), even if the company does not use artificial intelligence solutions to solve business problems or derives the majority of its revenue from products and services unrelated to artificial intelligence. The inclusion of companies that derive the majority of their revenue from non-artificial intelligence related products and services could cause the level of the index to decrease even if such companies' revenue from artificial intelligence-related products or services increases or the performance of the technology sector generally increases. With respect to any such company, this could be due to slower growth, or even a decline, in earnings from businesses that do not relate to artificial intelligence offsetting the impact on the stock price of any increase in earnings from businesses that relate to artificial intelligence.

Moreover, even if a company develops and/or uses products and services related to artificial intelligence and includes a robust discussion of artificial intelligence (including a large number of search phrase hits) in its most recent annual regulatory filing, there is no guarantee that such artificial intelligence business will develop or contribute to earnings over time, therefore influencing the stock of such company. There is no direct correlation between any single metric of a company's performance and the price of its stock. Even if a company in the index is focused solely on artificial intelligence, the price of its stock will be affected by many factors related to markets, the relative performance of competitors and the anticipated performance of the company, in addition to the actual earnings of such company.

As discussed above, the appearance of at least one specified search phrase in a company's annual regulatory filing is required for a company to be considered for inclusion in the index. However, the appearance of one or more search phrases in a company's annual regulatory filing may have no connection to the revenue or earnings, if any, that the company derives from the development or use of artificial intelligence technology or to the future performance of such company's stock. A company included in the index may have little or no revenue or earnings derived from artificial intelligence technology, and any artificial technology it develops may not produce revenue or earnings in the future. As a result, certain companies included in the index may not benefit from the development of artificial intelligence to any meaningful degree or at all.

A Company's Weighting in the Index is Based on the Occurrence of Relevant Search Phrases in the Company's Annual Regulatory Filing, Measured Using the BM25 Algorithm (an Established Word Search Algorithm), and Not Based on Revenue or Earnings Derived from Artificial Intelligence Related Products and Services

A company's weight in the index is based, in part, on the number of specified search phrase hits in its annual regulatory filing, which is used to assign a score to such document. Such document score is calculated based on the occurrence of the specified search phrases in the document, using an established word search algorithm that takes into account the frequency with which each search phrase is used in the document, the document length (relative to the average document length across all documents in the search corpus) and the rareness of the search phrase (measured by the frequency with which the search phrase appears across all documents in the search corpus) (the BM25 algorithm). The BM25 algorithm (in which the "BM" refers to "best match") is a method that can be used in probabilistic information retrieval and is based on the idea that assigning a score to reflect how relevant something is to a particular search query ought to reflect the probability that a person will consider the result relevant. The index does not weight companies based on revenue or earnings derived from artificial intelligence related products and services, but determines weights based, in part, on the frequency and variety of search phrases that occur in a company's most recent annual regulatory filing. As a result, a company's weight in the index is essentially based on the number of times specified search phrases are used in such company's annual regulatory filing, taking into account the length of the document and the rareness of such phrases relative to other documents.

The index sponsor utilizes the BM25 algorithm to attempt to identify companies that are relevant to the artificial intelligence theme based on whether and the extent to which a company uses one or more of the identified search phrases in its annual regulatory filing. By incorporating a concept of probability of relevance, the BM25 algorithm attempts to estimate how likely it is that a document is relevant to the artificial intelligence theme based on calculations that take into account the frequency with which a search phrase (or phrases) is used in the document, the document length (relative to the average document length across all documents in the search corpus) and the rareness of the search phrase(s) (measured by the frequency with which the search phrase(s) appears across all documents in the search corpus). The BM25 algorithm generally (i) gives more importance to documents which contain a higher number of search matches, (ii) gives more importance to search matches in shorter documents than longer documents (based on the idea that the search phrases are more "concentrated" in a shorter document and therefore more likely to be relevant), (iii) gives less importance to documents that contain phrases that are commonly used across the search corpus (based on the idea that common words are less important to the calculation of relevance) and (iv) gives less importance to the repetition of a single search phrase throughout a document as compared to matches of several different search phrases in a document.

Balancing these competing objectives through the BM25 algorithm means that a high number of search hits alone does not necessarily translate into a high BM25 score or a high level of relevance for a document. This measurement may not provide an accurate representation of a company's relevance to the artificial intelligence theme and there may not be a strong correlation between the frequency of the specified search phrases in an annual regulatory filing and a company's document score, theme exposure or resulting index weight. Further, this measurement may be less successful at identifying relevance to the artificial intelligence theme than an index which determines constituent weightings based on identified revenue derived from products and services related to such theme. For example, a large market capitalization company with broad or diversified revenue streams may significantly rely on artificial intelligence technology in its business, but discuss it very little in its annual regulatory filing or discuss it using alternate terminology (and not the specified search phrases).

In addition, the BM25 score for a document may also be affected by other features of the index methodology. For example, when the search phrase list is created using the ACM taxonomy and any overlap exists between phrases (but they are not identical), both phrases are included in the search phrase list, which may ultimately lead to a higher BM25 score for an annual regulatory filing containing such overlapping phrases. The index sponsor then tokenizes, filters and stems the search phrase list and all annual regulatory filings by, among other things, separating such phrase list and filings into words and removing all symbols, punctuation, possessive endings and common inflexional endings. See " The Search Phrases and Annual Regulatory Filings Are Tokenized, Filtered and Stemmed Before the Index Sponsor Performs Searches of Such Annual Regulatory Filings" below. For instance, if a company's annual regulatory filing mentions the stemmed search phrase "machin learn algorithm" twice, such mentions will count as four matches — two matches for each of the stemmed search phrases "machin learn algorithm" and "machin learn" — because the latter phrase is included in the former. As a result, the BM25 score for such document will be calculated as the sum of its score for "machin learn algorithm" plus its score for "machin learn", rather than taking into account only the matches for one of those search phrases. If a company's annual regulatory filing contains overlapping search phrases, such document could receive an inflated score, resulting in a higher weight for such company in the index, as compared to companies with annual regulatory filings containing no overlapping search phrases.

Further, while the BM25 algorithm is the method chosen by the index sponsor to measure relevance to the artificial intelligence theme, the BM25 algorithm may not be successful in measuring a company's relevance to such theme. In addition, there may be alternate algorithms or index or basket methodologies that would be more accurate in capturing companies that would benefit from the development of artificial intelligence than the BM25 algorithm and methodology used in this index. Furthermore, investment research analysts utilizing available data, as well as their knowledge of companies, industries and equity investors and markets, may be able to create investment baskets or stock recommendations that embody the artificial intelligence theme and which outperform the index, particularly if such baskets or recommendations do not include any type of volatility control limit.

The Rareness of a Search Phrase Will Affect the Calculation of a Company's Annual Regulatory Filing Score and Such Company's Weight in the Index

A company's weight in the index is based, in part, on a document score assigned to its most recent annual regulatory filing, which is intended to measure such company's relevance to the artificial intelligence theme. As discussed above, in addition to search phrase frequency within a document and such document's length, a document score takes into account the rareness of the search phrase, measured by the frequency with which the search phrase appears across all documents in the search corpus. The index methodology gives less importance (and consequently, lower document scores) to documents that contain more common search phrases by "penalizing" documents with search phrases that are used in 5% or more of the documents in the search corpus. Such methodology assumes that common words are less important to the calculation of relevance and that matches for rarer search phrases are an indication of more specific descriptions that are more relevant to the artificial intelligence theme. For example, if Company A's annual regulatory filing mentions "artifici intellig" (the stemmed version of "artificial intelligence") several times, and Company B's annual regulatory filing mentions "robot plan" (the stemmed version of "robotic planning") several times, but "artifici intellig" is a very common match across the majority of documents in the search corpus while "robot plan" is only used in one or two other documents in the search corpus, Company B's annual regulatory filing may receive a higher document score and Company B a higher weight in the index, even if Company A's annual regulatory filing had a higher number of search phrase matches overall. A high number of search hits alone does not necessarily translate into a high document score and the uniqueness of a search phrase, measured relative to its use across all documents in the search corpus, could have a significant impact on a company's weight in the index.

The ACM Taxonomy Used to Determine the Relevant Search Phrases and Base Index Universe Is Not Expected to Be From the Same Time Period as the Annual Regulatory Filing Used to Determine a Company's Weight in the Index

The index sponsor reviews all annual regulatory filings filed with the SEC by a company within the 15 months prior to an annual index rebalancing in order to determine such company's index eligibility and weight in the index. All phrases listed under the “Artificial Intelligence” and “Machine Learning” categories in the ACM taxonomy are used to conduct a keyword search, assign document scores and determine index weights.

The ACM taxonomy used for purposes of determining the applicable search phrases generally has not been, and it (or any successor) is not expected to be, from the same period as the revenue period covered by a company’s annual regulatory filing. For example, for the June 2018 base index rebalancing day, the ACM taxonomy used by the index sponsor was published in 2012, whereas, generally, the company annual regulatory filings were for the 2017 fiscal year. Further, if a new ACM taxonomy were to be released 14 or fewer index business days before an annual base index rebalancing day, such taxonomy would not be used for purposes of the search phrase list for such base index rebalancing day and instead would be expected to be used on the next following annual base index rebalancing day (i.e., more than a year later). Similarly, if a new ACM taxonomy is released shortly after an annual base index rebalancing day, such taxonomy would be expected to be used to create the applicable search phrase list on the next following annual base index rebalancing day (i.e., almost a year later).

While the ACM taxonomy may be updated from time to time, it has historically been updated very infrequently and may not reflect current or recent developments in the artificial intelligence and machine learning areas. Further, in the event that the ACM taxonomy is no longer published (including by any successor to ACM) or becomes unavailable, the index committee will continue to use the most recent list of search phrases created based upon the last available ACM taxonomy. Artificial intelligence is a relatively new and developing technology. Historically, new technologies have adopted new “technical jargon” at a much higher rate than older technologies or more mature businesses. This trend, if it continues, could increase the impact of the less frequent adoption of a new ACM taxonomy.

As a result, the ACM taxonomy referenced for purposes of determining the base index and constituent weightings may include outdated or irrelevant terms/phraseology, which may lead to less success in identifying companies developing and/or using artificial intelligence technology. In the case that a new ACM taxonomy or successor thereto is released, the index committee will update the applicable search phrase list and such updated phrases will be included in the determination of the base index at the next index rebalancing. However, even if the ACM taxonomy is updated, it is likely that the taxonomy referenced will always be from a different time period than the regulatory filings of the companies being analyzed for index inclusion and weighting.

The Search Phrases and Annual Regulatory Filings Are Tokenized, Filtered and Stemmed Before the Index Sponsor Performs Searches of Such Annual Regulatory Filings

After obtaining a list of search phrases using the “Artificial Intelligence” and “Machine Learning” categories of the ACM taxonomy, the index sponsor uses a tokenizing, filtering and stemming process to separate the search phrase list and all annual regulatory filings into words (“tokens”) and removes all symbols and punctuation before searching for phrase matches. In addition, as part of this tokenization, filtering and stemming process, the index sponsor removes possessive endings, converts such tokens to lowercase, removes all English “stop words” (specifically, “a”, “an”, “and”, “are”, “as”, “at”, “be”, “but”, “by”, “for”, “if”, “in”, “into”, “is”, “it”, “no”, “not”, “of”, “on”, “or”, “such”, “that”, “the”, “their”, “the “will" and “with”) and stems such tokens by removing common inflexional endings. For example, the search phrase “artificial intelligence” would become “artifici intellig” in its stemmed form and the search phrase “activity recognition and understanding” would become “activ recognit understand” in its stemmed form. Using tokenized and stemmed versions of the search phrases when searching for matches in a company’s annual regulatory filing increases the possibility that even if a specified search phrase occurs in such filing, it may be used in a way that is unrelated to the development or use of artificial intelligence. The appearance of a specified search phrase in a company’s annual regulatory filing does not necessarily mean such phrase is being used in the context of artificial intelligence technology or, if it is, in the context of the development or use of artificial intelligence by the company.

In connection with the tokenizing, filtering and stemming process, any formatting in an annual regulatory filing (e.g., bulleting, table formatting or line breaks) is removed. Further, when a “stop word” is removed from a search phrase or annual regulatory filing, the relative positioning of the “stop word” within such phrase or document is maintained for purposes of the search and such search includes matches that have a word in place of the “stop word” that was previously removed. For example, the tokenized and stemmed version of the “planning and scheduling” search phrase is “plan ? schedul” rather than simply “plan schedul", in which the “?” represents any single word between any form of “plan” and “schedul”. Thus, any phrase in an annual regulatory filing that begins with a form of “plan” and ends with a form of “schedul” and (i) has one word between, regardless of what that word is, or (ii) formerly contained a “stop word” between, regardless of what that “stop word” was, will be included in the search hit results. As a result of the above steps, a search hit may occur for a phrase that does not actually match the original search phrase or is not used in the context of artificial technology as the original phrase (prior to tokenizing, filtering and stemming, including the removal of “stop words”) intended, and a search phrase match may not occur at all for a phrase that appears in an annual regulatory filing and that would otherwise have matched if not for the removal of formatting in such document.

In addition, the specified search phrases range from a single word to several words in length. A document score for a company's annual regulatory filing is calculated by taking into account both search phrase frequency (relative to its frequency in other documents comprising the search corpus) and document length (relative to the average document length within the search corpus). Due to the formula used to determine a frequency score for a search term, the occurrence of a search phrase in an annual filing counts as a single match, regardless of how many words that particular search phrase may contain. In addition, the use of longer search phrases may contribute to longer document length. Shorter documents contain fewer total terms, which means that a larger number of search phrase matches in a shorter document increases the probability that such matches are relevant (which leads to a higher document score). In general, the more words in common with the search phrases a document has, the higher such document's score will be. However, assuming all other variables remain the same, a document score would decrease if the document length increases. Therefore, if a company has search phrase matches in its annual regulatory filing but such search phrases are comprised of several words each, it may have a magnified negative effect on the comparison to document length and could lead to a lower document score than a company whose search phrase matches each consist of a single word.

The Index Sponsor Reviews All Annual Regulatory Filings Filed with the SEC Within the Prior 15 Months When Determining a Company's Weight in the Index; the Index Sponsor's Review Does Not Include Exhibits, Amendments or Information Incorporated by Reference in the Annual Regulatory Filing and the Index Sponsor Does Not Screen for Context Except for a Limited Company Relevance Screen

The index sponsor reviews all annual regulatory filings filed with the SEC by a company within the 15 months prior to an annual index rebalancing in order to determine such company's index eligibility and weight in the index. Although only the score assigned to the most recent annual regulatory filing of a company is used for purposes of weighting such company in the index, the 15 month inclusion period will lead to many companies having more than one annual regulatory filing considered in the full search corpus, which will impact certain aspects of the document scoring and stock weighting process, such as the determination of the average document length in the search corpus to which each individual document is compared.

In addition, while the index sponsor considers the annual regulatory filing (excluding exhibits to such filing, any information incorporated by reference in such filing and any amendments to such filing) when determining a document score, it does not screen for context except in the case of a limited company relevance screen described below. For example, a company's annual regulatory filing may contain specified search phrases in its business or risk factor sections because the company is comparing itself to competitors or describing what others in its industry are doing, even if the context of the discussion is that the company lags behind its competitors in its use or development of artificial intelligence, that the company's customers want artificial intelligence solutions that the company cannot provide, that the company may not have the research and development resources necessary to compete in the artificial intelligence space or even that the company is against the use of artificial intelligence in aspects of its business because of security concerns, labor relations concerns or otherwise. This could result in a higher document score and index weight that do not accurately represent any such company's relevance to the artificial intelligence theme.

Pursuant to the methodology, if, after identifying search phrase matches for all documents in the corpus and applying several other screens, the index sponsor reasonably believes that all of the search phrase matches included in a company's annual regulatory filing are patently unrelated to either (i) developing artificial intelligence technology solutions and selling those solutions as products or services or (ii) deploying artificial intelligence to solve business problems, it will remove such company from the base index universe (the "company relevance screen"). For example, according to the index sponsor, six companies were removed from the base index universe during the June 2018 annual rebalancing as a result of the company relevance screen. However, the company relevance screen is not a screen for context or relevance of search phrase hits of companies that remain in the index. If a company remains in the index, all of its search hits are assumed to be relevant. For example, if a company is not excluded based on the company relevance screen and such company's annual regulatory filing contains many search phrase matches, but only one or a few of such matches are contextually related to the development or use of artificial intelligence, all of the company's search phrase matches will nonetheless be included in the calculation of its document score. Further, there is no guarantee that the company relevance screen applied by the index sponsor will successfully remove companies that do not develop or use artificial intelligence technology or that any such determinations will be accurate.

The Index Weightings May Be Ratably Rebalanced into the Money Market Position on Any or All Days During the Term of the Notes and, Historically, a Very Significant Portion of the Index's Exposure Consistently Has Been Allocated to the Money Market Position

The index has a daily volatility control feature which can result in a rebalancing between the underlying stocks and the money market position. This has the effect of reducing the exposure of the index to the performance of the underlying stocks by rebalancing a portion of the exposure into the money market position if the annualized historical realized volatility of the underlying stocks for the applicable 20 index business day volatility cap period would otherwise exceed the volatility cap of 8%. See "The Index Total Return Index Rebalancing" below.

On any index business day, the weight of the underlying stocks in the total return index can be rebalanced into the money market position, but there is no guarantee any such rebalancing into the money market position will occur. Any rebalancing into the money market position will limit your return on the notes. Historically, a very significant portion (up to approximately 78.6%) of the index's exposure consistently has been allocated to the money market position. See "The Index – Average Allocation Between the Base Index and the Money Market Position for Each Month" below for hypothetical and historical data regarding the index's exposure to the money market position.

In addition, there is no guarantee that the volatility cap will successfully reduce the volatility of the index or avoid any volatile movements of any underlying stock. If there is a rapid and severe decline in the market prices of the underlying stocks, the index may not rebalance into the money market position until the index has declined by a substantial amount.

The historical realized volatility of the base index is measured based on the actual historical composition of the base index during the applicable 20 index business day volatility cap period. As a result, the volatility of underlying stocks included in the base index during the 20 index business day volatility cap period will continue to influence the measurement of annualized historical realized volatility for a period of time during and following the annual five-day base index rebalancing period, even if such underlying stocks are no longer included in the base index on the measurement date. Furthermore, the volatility of underlying stocks included, or included with increased target weightings, during the five-day base index rebalancing period may not be fully reflected in the measurement of annualized historical realized volatility.

The Index Has a Limited Operating History

The notes are linked to the performance of the index, which was launched on October 30, 2018. 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 October 30, 2018 refers to performance data that was derived using the index rules as of October 30, 2018, but applied retroactively using historical underlying stock and notional interest rate levels. No future performance of the index can be predicted based on the hypothetical performance data or the historical index performance information described herein.

In addition, the hypothetical performance data reflects a significant increase in the number of index constituents over time and the composition of the current index is materially different from that of the hypothetical index for prior years. As a result, such hypothetical performance data should not be relied upon when making your investment decision.

Each Underlying Stock's Weight Is Limited by the Weight Constraint and the Daily Volatility Constraint

Each year on the base index observation date, the index sponsor sets the target weights for the underlying stocks based on such stock's exposure to the artificial intelligence theme (determined using keyword searches of companies' annual regulatory filings and the BM25 algorithm), subject to constraints on the minimum and maximum weight of each underlying stock. From the target weight, a set number of shares of the underlying stock is determined, and the change to the number of shares of the underlying stock tracked by the index is implemented incrementally over the five-day base index rebalancing period to match the number set on the base index observation date. The calculation of an underlying stock's weight in the index is impacted by its closing price, which means market movement during the rebalancing period will likely result in actual weights at the end of such rebalancing period (and afterward) being higher or lower than the target weights. The minimum and maximum weight constraints could lower your return versus an investment that was not subject to the minimum and maximum weighting allotted to any one underlying stock.

In addition, the index's daily volatility target may result in a very significant portion of the index's exposure being allocated to the money market position. Historically, a very significant portion (up to approximately 78.6%) of the index's exposure consistently has been allocated to the money market position. The 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 volatility target may be limited (though a note without the volatility control feature would also not likely provide the same level of principal protection). In other words, the notes themselves limit exposure to decreases in the level of the index by providing for a 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 volatility target, which attempts to reduce downside exposure to the underlying stocks, may not be as beneficial as it otherwise may be (including, for example, when used with securities that provide for a cash settlement amount that could be less than the face amount) and the cost of the index's volatility target, which is reflected in part in the above referenced trade-off, may not be desirable to you.

Correlation of Performances Among the Underlying Stocks May Reduce the Performance of the Index

Performances of the underlying stocks 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 the technology sector. High correlation among underlying stocks during periods of negative returns could have an adverse effect on the level of the index.

The Selection Criteria Used to Select the Underlying Stocks May Result in Larger Declines in the Value of the Index Than Those Experienced by Other Stock Indices

The index sponsor determines the U.S. exchange listed securities included in the index and their weightings based, in part, on a methodology for identifying those companies that may benefit from the development of artificial intelligence. Such index methodology determines exposure to the artificial intelligence theme based on the relevant keyword searches of companies' most recent annual regulatory filings, taking into account search phrase frequency within the document, document length (relative to the average document length across all documents in the search corpus) and the rareness of search phrases (measured by the frequency with which the search phrase appears across all documents in the search corpus). This means that a company can be included in the index even if it derives a majority of its revenue from, or focuses the majority of its business on, products and services that do not relate to the development or use of artificial intelligence. Therefore, even if the performance of a company's products and services relating to artificial intelligence is positive, the performance of the company as a whole may be negative due to the performance of products and services not related to artificial intelligence.  The metrics used to select the companies may lead to a company being included in the index that ultimately does not have sustainable growth – due to factors relating to the development of artificial intelligence or changes thereto, due to factors relating to a company's products and services that do not relate to the development of artificial intelligence or due to other factors – which could negatively affect the level of the index and, therefore, the cash settlement amount on your notes on the stated maturity date and the market value of your notes before that date.

The index may not perform as well as a broad-based stock index or a stock index selected using different criteria, and as a result the cash settlement amount may be less than it would have been if your notes were linked to a different index. For example, see "The Index – Comparative Performance of the Index and Two Broad-Based Stock Indices" below for hypothetical and historical data regarding the index's performance relative to the Russell 3000® Index and the S&P 500® Index.

While the Weight of Each Underlying Stock for Each Annual Rebalancing Will Be Determined on a Single Day (the Base Index Observation Day), the Rebalancing Based on Such Revised Weights Will Be Implemented Over a Base Index Rebalancing Period

For purposes of each annual base index rebalancing, the target weight of each underlying stock will be determined on a related base index observation day. While the target weight of each underlying stock for each annual base index rebalancing will be determined on a single day (i.e., such base index observation day), the rebalancing of the number of shares of each underlying stock based on such revised target weights will be implemented over a base index rebalancing period comprised of five base index rebalancing days, which consist of the day that is three index business days after the applicable base index observation day and the four following index business days, subject to adjustment. As a result, for the first four days of the base index rebalancing period, the composition of the index will contain a mix of underlying stocks, share numbers and weights that is different than the underlying stocks and their respective share numbers and weights at the end of such base index rebalancing period. Therefore, the composition of the index will be materially different during the base index observation days as compared to the composition of the index after the annual base index rebalancing takes effect, and the levels of the index on such base index observation days may be lower than such levels would have been if the annual base index rebalancing had been implemented in full in one day, which could have an adverse impact on any payments on, and the value of, your notes and the trading market for your notes. For a discussion of how the index is rebalanced, see "The Index" below.

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

If a base index rebalancing day or a 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 underlying stock, the index calculation agent shall then rebalance the index as described in "The Index — Index Market Disruptions" herein.

In particular, if an index market disruption event occurs with respect to an underlying stock on a base index rebalancing day, such affected underlying stock will not be rebalanced based on its target weight during the applicable base index rebalancing period. Instead, the number of shares of such underlying stock will remain the same as the number of shares of such underlying stock on the index business day prior to the base index rebalancing day on which it was first affected by such index market disruption event. The weights of all other underlying stocks not affected by an index market disruption event will be updated such that each underlying stock not affected by an index market disruption event will have a weight within the remaining weight of the base index not allocated to the weight of the underlying stock(s) affected by an index market disruption event that is proportional to its original target weight relative to the original target weights of all other underlying stocks not affected by an index market disruption event. Further, the target weights of the underlying stocks will not be recalculated until the next base index observation day (i.e., a year later).

Thus, an underlying stock that was to have its target weight increased relative to the prior year may not realize an increase to such degree or at all. Similarly, an underlying stock that was to have its target weight decreased relative to the prior year may not realize a decrease to such degree or at all. In all cases, an index market disruption event will affect the weights of all of the underlying stocks (due to the update made to the weights of all underlying stocks not affected by an index market disruption event through a proportional reallocation of the remaining weight of the base index not allocated to the weight of the underlying stock or underlying stocks affected by an index market disruption event), and may have an adverse impact on the level of the index, potentially for a year until the next annual base index rebalancing.

Further, if on a base index observation day, a stock that was not included in the index on the previous index business day is affected by an index market disruption event, such stock will be excluded from the index, regardless of its exposure to the artificial intelligence theme. Therefore, if a stock would have been included in the base index except for the fact that it was affected by an index market disruption event on the base index observation date, the underlying stocks included in the index would have a higher target weight in the index than if such excluded stock had not been affected by an index market disruption event on the base index observation date and was therefore included in the index.

An Investment in the Offered Notes Is Subject to Risks Associated with Non-U.S. Securities

The value of your notes is linked to an index that includes or may include ADRs representing interests in shares of companies from one or more non-U.S. securities markets. Investments linked to the value of non-U.S. equity securities involve particular risks. Any non-U.S. securities market may be less liquid, more volatile and affected by global or domestic market developments in a different way than are the U.S. securities market or other non-U.S. securities markets. Both government intervention in a non-U.S. securities market, either directly or indirectly, and cross-shareholdings in non-U.S. companies, may affect trading prices and volumes in that market.

The prices of securities in a non-U.S. country are subject to political, economic, financial and social factors that are unique to such non-U.S. country’s geographical region. These factors include: recent changes, or the possibility of future changes, in the applicable non-U.S. government’s economic and fiscal policies; the possible implementation of, or changes in, currency exchange laws or other laws or restrictions applicable to non-U.S. companies or investments in non-U.S. equity securities; fluctuations, or the possibility of fluctuations, in currency exchange rates; and the possibility of outbreaks of hostility, political instability, natural disaster or adverse public health developments. For example, the United Kingdom has voted to leave the European Union (popularly known as “Brexit”). The effect of Brexit is uncertain, and Brexit has and may continue to contribute to volatility in the prices of securities of companies located in Europe and currency exchange rates, including the valuation of the euro and British pound in particular. Any one of these factors, or the combination of more than one of these factors, could negatively affect such non-U.S. securities market and the price of securities therein. Further, geographical regions may react to global factors in different ways, which may cause the prices of securities in a non-U.S. securities market to fluctuate in a way that differs from those of securities in the U.S. securities market or other non-U.S. securities markets. Non-U.S. economies may also differ from the U.S. economy in important respects, including growth of gross national product, rate of inflation, capital reinvestment, resources and self-sufficiency, which may have a positive or negative effect on non-U.S. securities prices.

In addition, to the extent that companies in the index are non-U.S. companies or engage in manufacturing outside of the United States, the imposition of tariffs on imports from such countries or taxes on operations outside of the United States can affect the profitability of such companies and the price of their shares.

There are Important Differences Between ADRs and the Shares the ADRs Represent

There are important differences between the rights of holders of ADRs and the rights of holders of the shares the ADRs represent. ADRs are typically issued pursuant to a deposit agreement, which sets forth the rights and responsibilities of the ADR depositary, the company issuing the shares the ADRs represent, and the holders of the ADRs. The rights of the holders of the ADRs may be different from the rights of the holders of the shares the ADRs represent. For example, a company may make distributions in respect of its shares that are not passed on to the holders of its ADRs. Any such differences between the rights of holders of the ADRs and the rights of holders of the shares the ADRs represent may be significant and may materially and adversely affect the value of the ADRs, the performance of the index and, as a result, the notes.

The Level of the Index is Subject to Non-U.S. Currency Exchange Rate Risk

ADRs that may be included in the index are quoted and traded in U.S. dollars on a U.S. stock exchange, while the shares represented thereby are quoted and traded in the relevant non-U.S. currency on other stock exchanges. Therefore, fluctuations in the exchange rate between currencies in which the relevant shares are quoted and traded and the U.S. dollar will likely affect the relative value of the ADRs. As a result, the market price of the ADRs, which trade on a

U.S. stock exchange, will likely be affected. These trading differences and currency exchange rates may affect the closing prices of the ADRs and, as a result, the level of the index and the value of the notes. Currency exchange rates vary over time, and may vary considerably during the life of your notes. Changes in a particular exchange rate result from the interaction of many factors directly or indirectly affecting economic and political conditions. Of particular importance are:

- rates of inflation;
- interest rate levels;
- the balance of payments among countries;
- the extent of government surpluses or deficits in the relevant non-U.S. country and the United States; and
- other financial, economic, military and political factors.

All of these factors are, in turn, sensitive to the monetary, fiscal and trade policies pursued by the governments of the relevant non-U.S. countries and the United States and other countries important to international trade and finance.

The level of the index and any payment on the notes could also be adversely affected by delays in, or refusals to grant, any required governmental approval for conversions of a local currency and remittances abroad with respect to the ADRs or other de facto restrictions on the repatriation of U.S. dollars.

The Index May Include Exposure to the Short-Term Treasury Bond ETF Position

If, on a base index observation day, in the very unlikely circumstance that the sum of the target weights for the underlying stocks is less than 1, the base index will include the short-term treasury bond ETF position at a target weight equal to the difference between 1 and the target weights of all underlying stocks included in the base index. The short-term treasury bond ETF position is intended to express the notional returns accruing to a hypothetical investor from an investment in the iShares Short Treasury Bond ETF (the "underlying ETF"), which is comprised of publicly-issued U.S. Treasury securities that have a remaining maturity of greater than one month and less than or equal to one year. If the index includes the short-term treasury bond ETF position in the limited circumstance described above, the notes will be subject to certain risks similar to those associated with a direct investment in U.S. Treasury bonds, including, among others, risks associated with a downgrade of the credit rating of the U.S. government, risks associated with an increase in possibility that the U.S. Treasury may default on its obligations (whether for credit or legislative process reasons) and risks associated with any market events that create a decrease in demand for U.S. Treasury bonds. Any of these risks would significantly adversely affect the underlying ETF, especially if the risks are concentrated in U.S. Treasury bonds with short-term maturities. Further, the value of a share of the underlying ETF may reflect transaction costs and fees incurred or imposed by the investment advisor of the underlying ETF as well as the costs to the underlying ETF to buy and sell its assets. These costs and fees are not included in the calculation of the index.

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 appointed Solactive AG as the index calculation agent. As index calculation agent, Solactive AG calculates the value of the index and, as further described under the "The Index" in this prospectus supplement, has discretion with respect to determining index market disruption events and with respect to making certain adjustments to the underlying stocks upon corporate events. The exercise of this discretion by the index calculation agent could adversely affect the value of your notes.

The Goldman Sachs Group, Inc., our parent company and the guarantor of the notes, owns a non-controlling interest in the index calculation agent.

The Policies of the Index Sponsor and Changes That Affect the Index or the Underlying Stocks Could Affect the Cash Settlement Amount on Your Notes and Their Market Value. The Goldman Sachs Group, Inc. Owns a Non-Controlling Interest in the Index Sponsor

The policies of the index sponsor concerning the calculation of the level of the index, additions, deletions or substitutions of underlying stocks and the timing and manner in which changes affecting the underlying stocks or their issuers, 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 on a call payment date or the stated maturity date and the market value of your notes before that date. For example, the index sponsor will not make an adjustment as a result of a dividend on an underlying stock until the ex-date. Therefore, if a dividend is declared on an underlying stock and, due to an annual rebalancing, such underlying stock is subsequently removed from the index before the applicable ex-date, the declared dividend will never be reinvested in the underlying stock, and therefore the level of the index will not benefit from such dividend.

The cash settlement amount on your notes and their market value could also be affected if the index sponsor changes these policies, for example, by changing the manner in which it calculates the level of the index or the method by which it constructs 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. In addition, an index committee is responsible for overseeing the index, its methodology and the implementation thereof, and may make determinations about the index that affect your notes. None of us, The Goldman Sachs Group, Inc., the index calculation agent or the note calculation agent (which initially will be GS&Co., our affiliate) appoints, or advises on the appointment of, index committee members.

If events such as these occur, or if the closing level of the index is not available on the determination date because of an index market disruption event or for any other reason, the note calculation agent may determine the closing level of the index on the determination date — and thus the cash settlement on the stated maturity date — in a manner it considers appropriate, in its sole discretion. We describe the discretion that the note calculation agent will have in determining the closing level of the index on the determination date and the cash settlement on your notes more fully under "Specific Terms of Your Notes — Discontinuance or Modification of the Index" and "— Role of Note Calculation Agent" below.

The Goldman Sachs Group, Inc., our parent company and the guarantor of the notes, owns a non-controlling interest in Motif Investing Inc., the index sponsor's ultimate parent company.

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" on page S-32. As discussed above under "— The Index Measures the Performance of the Total Return Index Less the Sum of the Return on the Notional Interest Rate Plus 0.75% 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 very significant portion (up to approximately 78.6%) of the index exposure consistently has been to the money market position, which reflects the notional returns accruing to a hypothetical investor from an investment in a notional 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 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.

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

The following factors, among others, many of which are beyond our control, may influence the market value of your notes:

- the volatility – i.e., the frequency and magnitude of changes – in the level of the index;
- the level of the index, including the initial index level;
- dividend rates of the underlying stocks;
- 3-month USD LIBOR;
- economic, financial, regulatory, political, military and other events that affect stock markets generally, or the sectors and sub-industries included in the index, and the underlying stocks in particular, and which may affect the closing levels of the index;
- interest rates and yield rates in the market;
- the time remaining until your notes mature; and
- our creditworthiness and the creditworthiness of The Goldman Sachs Group, Inc., whether actual or perceived, 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 prospectus 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 amount in cash that you will be paid for your notes on a call payment date or the stated maturity date 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 a call payment date or 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 a call payment date or 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.

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 on a call payment date or the stated maturity date, as the case may be, may bear little relation to the historical index performance information, hypothetical performance data or hypothetical return examples set forth elsewhere in this prospectus supplement. We cannot predict the future performance of the index.

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, the underlying stocks and 3-month USD LIBOR. 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 underlying stocks or 3-month USD LIBOR, 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 underlying stocks or 3-month USD LIBOR.

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 underlying stocks — and therefore the market value of your notes and the amount we will pay on your notes, if any. 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.

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, the underlying stocks or 3-month USD LIBOR. 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, the underlying stocks or 3-month USD LIBOR, 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 underlying stock 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 , the underlying stocks or 3-month USD LIBOR, 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, the underlying stocks or 3-month USD LIBOR, 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 Underlying Stock Issuers 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 underlying stock issuers, 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 underlying stocks, 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



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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, the underlying stocks or 3-month USD LIBOR, 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, the underlying stocks or 3-month USD LIBOR, 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, the underlying stocks or 3-month USD LIBOR 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 Underlying Stock

Investing in the notes will not make you a holder of any of the underlying stocks. Neither you nor any other holder or owner of the notes will have any rights with respect to the underlying stocks, including any voting rights, any right to receive dividends or other distributions, any rights to make a claim against the underlying stocks or any other rights of a holder of the underlying stocks. The notes will be paid in cash and you will have no right to receive delivery of any underlying stocks.

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 prospectus 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 closing level of the index on the call observation dates, which we will use to determine whether your notes will be automatically called the final index level on the determination date, which we will use to determine the amount we must pay on the stated maturity date the index return; the call observation dates; whether to postpone any call observation date or 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 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 Any Call Observation Date or the Determination Date if a Non-Trading Day Occurs

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

There Is No Affiliation Between the Underlying Stock Issuers and Us

Other than as specified above, we are not affiliated with the issuers of the underlying stocks (the “underlying stock issuers”), the index sponsor or the index calculation agent. As we have told you above, however, we or our affiliates may currently or from time to time in the future own securities of, or engage in business with, the index sponsor, the underlying stock issuers or the index calculation agent. Neither we nor any of our affiliates have participated in the preparation of any publicly available information or made any “due diligence” investigation or inquiry with respect to the underlying stock issuers. You, as an investor in your notes, should make your own investigation into the underlying stock issuers. See “The Index” below for additional information about the index.

Neither the index sponsor, the index calculation agent nor any of the underlying stock issuers are involved in this offering of the notes in any way and none of them have any obligation of any sort with respect to the notes. Thus, neither the index sponsor, the index calculation agent nor any of the underlying stock issuers have any obligation to take your interests into consideration for any reason, including in taking any corporate actions that might affect the market value of your notes.

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 prospectus 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 prospectus 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” on page S-63 of this prospectus 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 generally 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, redemption 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.

Use of Proceeds

We intend to lend the net proceeds from the sale of the offered notes to The Goldman Sachs Group, Inc. or its affiliates. The Goldman Sachs Group, Inc. expects to use the proceeds from such loans for the purposes we describe in the accompanying prospectus under "Use of Proceeds". We or our affiliates may also use those proceeds in transactions intended to hedge our obligations under the offered notes as described below.

HEDGING

In anticipation of the sale of the offered notes, we and/or our affiliates expect to enter into cash-settled hedging transactions involving purchases of listed or over-the-counter options, futures and/or other instruments linked to the index or the underlying stocks. In addition, from time to time after we issue the offered notes, we and/or our affiliates expect to enter into additional hedging transactions and to unwind those we have entered into, in connection with the offered notes and perhaps in connection with other index-linked notes we issue, some of which may have returns linked to the index, the underlying stocks or 3-month USD LIBOR. Consequently, with regard to your notes, from time to time, we and/or our affiliates:

- expect to acquire, or dispose of, cash-settled positions in listed or over-the-counter options, futures or other instruments linked to the index or some or all of the underlying stocks or 3-month USD LIBOR,
- may take or dispose of positions in listed or over-the-counter options or other instruments based on indices designed to track the performance of components of the U.S. equity market,
- may take short positions in the underlying stocks or other securities of the kind described above — i.e., we and/or our affiliates may sell securities of the kind that we do not own or that we borrow for delivery to purchaser, and/or
- may take or dispose of positions in interest rate swaps, options swaps and treasury bonds.

We and/or our affiliates may acquire a long or short position in securities similar to the offered notes from time to time and may, in our or their sole discretion, hold or resell those securities.

In the future, we and/or our affiliates expect to close out hedge positions relating to the notes and perhaps relating to other notes with returns linked to the index, the underlying stocks or 3-month USD LIBOR. We expect our affiliates' steps to involve sales of instruments linked to the index, the underlying stocks or 3-month USD LIBOR on or shortly before any call observation date or the determination date, as applicable. Our affiliates' steps also may involve sales and/or purchases of some or all of the listed or over-the-counter options, futures or other instruments linked to the index.

The hedging activity discussed above may adversely affect the market value of your notes from time to time and the value of the consideration that we will deliver on your notes at maturity. See "Additional Risk Factors Specific to Your Notes" above for a discussion of these adverse effects.

THE INDEX

The Motif Capital Artificial Intelligence 8 ER Index (the "index") attempts to track the common equity (including ADRs) of U.S. and non-U.S. companies listed on U.S. exchanges that either develop or use artificial intelligence technology, subject to a limitation on volatility described below. For purposes of the index, "artificial intelligence" is the ability of a machine to perform cognitive tasks typically associated with human brains, such as perception, reasoning, learning, interacting with the environment and problem solving. The index attempts to provide exposure to companies that may benefit from the development of artificial intelligence (the "artificial intelligence theme"). The index is calculated by measuring the extent to which (a) (i) such U.S. exchange-listed common equity securities and (ii) in certain circumstances, a money market position outperform (b) the sum of (i) the return on a notional cash deposit at a notional interest rate of 3-month USD LIBOR plus (ii) 0.75% per annum (accruing daily). Each U.S. exchange-listed common equity security included in the index generally will be subject to a maximum and a minimum weight constraint. In addition, the index is subject to a 8% volatility control. As explained in more detail below, if with respect to any index business day (as defined below) the volatility of the equity securities over a look-back period is greater than 8%, the weight assigned to the equity securities within the index will be rebalanced into the money market position in order to comply with the volatility control. Historically, a very significant portion (up to approximately 78.6%) of the index consistently has been allocated to the money market position.

The index was first launched on October 30, 2018 and based on an initial value for the base index (as defined below under "Base Index Composition") of 100 on June 21, 2013.  The level of the index is calculated and published by Solactive AG and is reported by Bloomberg under the symbol "MCAIE Index". The index is sponsored by Motif Capital Management, Inc.  Additional information about the index may be obtained from the index calculation agent's website at solactive.com/indices/?se=1&index=DE000SLA6PU6. We are not incorporating by reference the website or any material it includes in this document.

As of April 26, 2019, there were 99 constituent stocks in the index and the top ten constituent stocks, by weight, were: Adobe Inc. (2.70%); Alibaba Group Holding Limited (2.46%); Microsoft Corporation (2.35%); NVIDIA Corporation (2.33%); SAP SE (2.18%); Intel Corporation (2.13%); Baidu, Inc. (2.08%); Alphabet Inc. Class A (2.04%); Mastercard Incorporated Class A (2.03%) and International Business Machines Corporation (1.95%). As of that same date, 31.47% of the index was comprised of the money market position. For hypothetical and historical data regarding the index's monthly average exposure to the money market position, see "— Average Allocation Between the Base Index and the Money Market Position for Each Month" below. A full list of index constituents as of March 31, 2019 can be found under "— List of Index Constituents as of March 31, 2019" below. A full list of index constituents as of the last calendar day of each month is also available on the index sponsor's website, which will be updated intramonth in the event that there is a change in the index constituents (such as may result from a corporate event). We are not incorporating by reference the website or any materials it includes in this document.

All of the stocks in the index are classified in the technology sector. Further, companies within the technology sector are classified into industry groups. The industry groups are (with the approximate percentage of underlying stocks in the technology sector included in such industry groups as of April 26, 2019 indicated in parentheses) (percentages may not sum to 100% due to rounding): communications and networking (5.7%); computers, phones & household electronics (2.9%); electronic equipment & parts (1.7%); semiconductors & semiconductor equipment (15.6%); software & IT services (73.0%) and office equipment (1.0%). Index sponsors may use very different standards for determining sector and group designations. In addition, many companies operate in a number of different sectors or groups, but are listed in only one sector or group and the basis on which that sector or group is selected may also differ. As a result, sector and group comparisons between indices with different index sponsors may reflect differences in methodology as well as actual differences in the sector and group composition of the indices.

Base Index Composition

On the third Friday of each June (the "base index observation day"), the index sponsor determines the U.S. exchange listed common equity securities (including ADRs) included in the base index (the "underlying stocks"), and their exposure to the artificial intelligence theme, by calculating the number of times specified search phrases appear in a company's annual regulatory filing and assigning scores to each document based on the frequency of such specified search phrases in such document and the document length (as discussed below). Then, the index calculation agent determines the target weight of each of the underlying stocks (as defined below under "Determining the weight of each underlying stock in the base index – Target weights"). If the limited circumstance described under "Determining the weight of each underlying stock in the base index    Short-term treasury bond ETF position" below applies, on that date the index calculation agent will also determine the target weight of the iShares Short-Term Treasury Bond ETF (the "underlying ETF") in the index.

The rebalancing of the underlying stocks and the underlying ETF, if applicable (together, the "underlying equities"), and their weights by changing the respective number of shares will be implemented over a five day period (the "base index rebalancing period") beginning on the day that is three index business days after the applicable base index observation day and including the four following index business days (each, a "base index rebalancing day"). The underlying equities together comprise the "base index".

Determining the underlying stocks

Identify the underlying stock universe

The index sponsor aims to identify companies that develop artificial intelligence technology solutions and sell those solutions as products or services, as well as companies that deploy artificial intelligence to solve business problems.

Determine the search corpus

A "search corpus" is determined by compiling all annual regulatory filings (i.e., Forms 10-K, 40-F and 20-F, excluding exhibits to such filings, any information incorporated by reference in such filings and any amendments to such filings) of all companies — across all sectors — with U.S. exchange-listed common equity (including ADRs) filed with the SEC within the 15 month period preceding the applicable base index observation day.

Determine a search phrase list

In order to identify the universe of relevant companies that may benefit from the development of artificial intelligence, the index sponsor references the most recent ACM Computing Classification taxonomy or any successor thereto (as of the date of the current index rulebook, the ACM Computing Classification 2012 taxonomy) and creates a list of relevant search phrases (the "search phrase list") by including all distinct phrases listed under the "Artificial Intelligence" and "Machine Learning" categories, including the titles "Artificial Intelligence" and "Machine Learning", in such taxonomy. A full list of such phrases can be found under "— List of Search Phrases from ACM Computing Classification 2012 Taxonomy". Phrases mentioned more than once are only included once in the list of relevant search phrases. When there is overlap between phrases, but they are not identical, both phrases are included in the search phrase list. The index committee will update the search phrase list when any new ACM Computing Classification taxonomy is released and such updated phrases will be included in the determination of the base index as described below. In the event that the ACM Computing Classification taxonomy is no longer published (including by any successor to ACM which may continue publication of the taxonomy) or becomes unavailable, the index committee will continue to use the most recent search phrase list created based upon the last available ACM Computing Classification taxonomy.

The index sponsor then excludes from the search phrase list all phrases that are in common usage in the search corpus by removing phrases that occur in more than 4% of the filings that comprise the search corpus.

Conduct a keyword search

First, each annual regulatory filing and the search phrase list are tokenized, filtered and stemmed using the following process:

(i) the annual regulatory filings and search phrase list are tokenized by separating the documents into words ("tokens") and removing all symbols and punctuations. In connection with this process, any formatting in a document (e.g., bulleting, table formatting or line breaks) is removed when the searches are performed;
(ii) any possessive endings are removed from the tokens;
(iii) all tokens are converted to lower case;
(iv)

all English “stop words” are removed from each document (specifically, “a”, “an”, “and”, “are”, “as”, “at”, “be”, “but”, “b
“into”, “is”, “it”, “no”, “not”, “of”, “on”, “or”, “such”, “that”, “the”, “their”, “then”, “there”, “these”, “they”, “this”, “to”, “

(v) all tokens are “stemmed” by removing common morphological and inflexional endings from words in English (e.g., the search phrase “artificial intelligence” becomes “artifici intellig” in its stemmed form and the search phrase “activity recognition and understanding” becomes “active recognit understand” in its stemmed form).

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Further, when a "stop word" is removed from a search phrase or annual regulatory filing, the relative positioning of the "stop word" within such phrase or document is maintained for purposes of the search and such search includes matches that have a word in place of the "stop word" that was previously removed. For example, the tokenized and stemmed version of the "planning and scheduling" search phrase is "plan ? schedul" rather than simply "plan schedul", in which the "?" represents any single word between any form of "plan" and "schedul". Thus, any phrase in an annual regulatory filing that begins with a form of "plan" and ends with a form of "schedul" and (i) has one word between, regardless of what that word is, or (ii) formerly contained a "stop word" between, regardless of what that "stop word" was, will be included in the search hit results.

Next, searches are conducted over each annual regulatory filing in the search corpus in order to identify companies with a positive match for one or more search phrase(s). For the avoidance of doubt, when the search phrase list is created using the ACM Computing Classification taxonomy and any overlap exists between phrases (but they are not identical), both phrases are included in the list. Therefore, for example, if a company's annual regulatory filing mentions 'machin learn algorithm' 2 times, such mentions will count as 4 matches — 2 matches for each of 'machin learn algorithm' and 'machin learn' — because the latter phrase is included in the former.

Determine BM25 score

The index sponsor utilizes the BM25 algorithm to attempt to identify companies that are relevant to the artificial intelligence theme based on whether and the extent to which a company uses one or more of the identified search phrases in its annual regulatory filing. By incorporating a concept of probability of relevance, the BM25 algorithm attempts to estimate how likely it is that a document is relevant to the artificial intelligence theme based on calculations that take into account the frequency with which a search phrase (or phrases) is used in the document, the document length (relative to the average document length across all documents in the search corpus) and the rareness of the search phrase(s) (measured by the frequency with which the search phrase(s) appears across all documents in the search corpus).

The BM25 algorithm generally (i) gives more importance to documents which contain a higher number of search matches, (ii) gives more importance to search matches in shorter documents than longer documents (based on the idea that the search phrases are more "concentrated" in a shorter document and therefore more likely to be relevant), (iii) gives less importance to documents that contain phrases that are commonly used across the search corpus (based on the idea that common words are less important to the calculation of relevance) and (iv) gives less importance to the repetition of a single search phrase throughout a document as compared to matches of several different search phrases in a document. Balancing these competing objectives through the BM25 algorithm means that a high number of search hits alone does not necessarily translate into a high BM25 score or a high level of relevance for a document.

In order to determine the BM25 score for a document, an annual filing score is calculated for each search phrase within the document, and the BM25 score is the aggregate of the annual filing scores for all of the search phrases in the document. An annual filing score for a particular search phrase is calculated as the product of (i) the term frequency score for such phrase times (ii) the inverse document frequency score for such phrase.

The term frequency score for a search phrase quantifies the number of times such search phrase occurs in a given document, taking into account the length of such document relative to the average length of all documents in the search corpus and reflecting parameters set to control the effect that (i) the number of times the search phrase is used in the document and (ii) the length of the document can have on the term frequency score. The term frequency score for each search phrase is calculated as the quotient of (ii) the product of (a) the sum of (1) a constant "k" plus (2) 1 times (b) the number of times the search phrase appears in such document divided by (ii) the sum of (a) the product of (1) "k" times (2) the result of (x) 1 minus (y) a constant "b" plus (z) the product of "b" times the ratio of the total token count in such document divided by the average token count across all documents in the search corpus plus (b) the number of times the search phrase appears in such document.

The token count ratio is taken after the tokenization process but prior to the removal of the “stop words” referenced above. The constant “k” is equal to 1.2 and is a saturation point that controls how much of an effect each search phrase hit within the document has on the term frequency score. The constant “b” is equal to 0.75 and limits the effect of document length on the term frequency score by penalizing documents longer in length. If “b” were set to zero, such potential effect would be removed and, assuming identical search phrase hits, a longer document and a shorter document would receive the same score; by setting “b” to be greater than zero, a longer document gets assigned a lower score than a shorter document (assuming the documents have identical search phrase hits).

The inverse document frequency score measures the number of documents within the search corpus that contain the search phrase as compared to the total number of documents in the search corpus. The inverse document frequency score for a particular search phrase is equal to the natural logarithm of the sum of (i) 1 plus (ii) the quotient of (a) the result of (1) the total number of documents in the search corpus minus (2) the number of documents in the search corpus in which the search phrase appears at least once plus (3) a constant of 0.5 divided by (b) the sum of (1) the number of documents in which the search phrase appears at least once plus (2) 0.5.

The inverse document frequency score takes into account the rareness of a search phrase based on its frequency across all documents in the search corpus (a rarer search phrase will lead to a higher inverse document frequency score for a search phrase).

BM25 Score Calculation Examples

The below examples assume a search corpus containing 8,000 documents, with an average length of 20,000 words. The hypothetical results in the following calculations have been rounded to the nearest hundredth for ease of analysis.

Example 1: A company's annual report on Form 10-K is 10,000 words long. The tokenized, filtered and stemmed version of such company's Form 10-K mentions 'artifici intellig' 3 times and contains no other search phrases. Within the Search Corpus, 100 tokenized, filtered and stemmed documents contain at least one instance of 'artifici intellig'. The total BM25 score for the Form 10-K is calculated as follows:

BM25 Score = Annual Filing Socre$_{\text{artificial intellig}}$ = Term Frequency · Inverse Document Frequency
= 1.76 × 4.38 = 7.70

Example 2: A company's annual report on Form 10-K is 20,000 words long. The tokenized, filtered and stemmed version of such company's Form 10-K mentions 'artifici intellig' 3 times and contains no other search phrases. Within the Search Corpus, 100 tokenized, filtered and stemmed documents contain at least one instance of 'artifici intellig'. The total BM25 score for the Form 10-K is calculated as follows:

BM25 Score = Annual Filing Socre$_{\text{artificial intellig}}$ = Term Frequency · Inverse Document Frequency
= 1.57 × 4.38 = 6.88

In Example 2, the Form 10-K's length increases from 10,000 words in Example 1 to 20,000 words total. Although all other variables remain the same, the total BM25 score decreases as a result of the document length increasing relative to Example 1.

Example 3: A company's annual report on Form 10-K is 10,000 words long. The tokenized, filtered and stemmed version of such company's Form 10-K mentions 'artifici intellig' 2 times and 'machin translat' 1 time. Within the Search Corpus, 100 tokenized, filtered and stemmed documents contain at least one instance of 'artifici intellig' and 10 documents contain at least one instance of 'machin translat'. The total BM25 score for the Form 10-K is calculated as follows:

BM25 Score = Annual Filing Socre$_{\text{artificial intellig}}$ = Term Frequency · Inverse Document Frequency
= [Term Frequency  Inverse Document Frequency] + [Term Frequency  Inverse Document Frequency]
= [1.60 × 4.38] + [1.26 × 6.64]
= 7.01 + 8.37

= 15.38

In Example 3, the total number of search phrase hits occurring in the Form 10-K remains the same relative to Examples 1 and 2, but the number of different search phrases appearing in the document increase relative to Examples 1 and 2 (i.e., two different search phrases appear in the document, as compared to one search phrase in Examples 1 and 2). Although all other variables remain the same, the total BM25 score increases as a result of the number of different search phrases increasing. Moreover, the BM25 score with respect to the ‘machin translat’ search phrase is higher than the BM25 score with respect to the ‘artifici intellig’ search phrase, even though ‘artifici intellig’ appears 2 times in the document and ‘machin translat’ appears only once. The BM25 calculation gives more weight to “rarer” phrases as the assumption is that the occurrence of such phrases is indicative of higher relevance. Because ‘machin translat’ is contained in only 10 of the documents in the Search Corpus, the single occurrence in the relevant document leads to a higher BM25 score.

In general, the more words in common with the search phrases an annual regulatory filing has, the higher such document's BM25 score will be. As illustrated above, however, each component of the BM25 score calculation can have a different impact on the overall score assigned to an annual regulatory filing. Shorter documents contain fewer total tokens, which means that a larger number of search phrase matches in a shorter document increases the probability that such matches are relevant (which leads to a higher BM25 score). In addition, the repetition of a single search phrase is less important than matches of several different search phrases, but more important if the document is relatively long (with respect to the average document length of the search corpus). While the repetition of a search phrase in a document (i.e., a higher number of hits) will generally lead to a higher term frequency score as illustrated in the calculation of term frequency above, the calculation of the inverse document frequency gives less weight to words that are common within the search corpus as a whole (i.e., common words are less important to the calculation of "relevance"). The varying inputs and parameters included in the BM25 score calculation prevent a high number of search hits alone necessarily leading to a high BM25 score.

Map each annual regulatory filing and BM25 score to a single stock

If there is more than one annual regulatory filing for a company included in the search corpus, the index sponsor removes each except that which is most recent to the applicable base index observation day. If the most recent annual regulatory filing for such company in the search corpus has a BM25 score of zero, the company is removed from the universe of relevant companies for the artificial intelligence theme (the "underlying stock universe").

Further, if the company does not have any U.S. exchange-listed equity securities as of the base index observation day, the company is removed from the underlying stock universe. If the company has only one U.S. exchange-traded equity security, it is selected for inclusion in the index. If the company has more than one share class of a U.S. exchange-traded equity security, the security with the highest average daily dollar volume ("ADDV") over the 30-day period preceding the base index observation day is selected. The ADDV for a stock on a given day is equal to the 30-day average of such stock's daily dollar value from but excluding such day to and including the day which is the 30th calendar day prior thereto. For each trading day during the 30-calendar day period, the daily dollar value is equal to such stock's trading volume for such day multiplied by such stock's last available price as of the close of trading for such day. A stock's trading volume may be equal to zero on a trading day. While the ADDV period consists of 30 calendar days, only trading days within such period are used for purposes of the ADDV calculation and the actual number of trading days varies from period to period.

Apply Thomson Reuters Business Classification screen

The primary Thomson Reuters Business Classification (the "TRBC") for each company included in the underlying stock universe is obtained. Any company that has an Economic Sector classification of "Technology" is retained in the underlying stock universe. All other stocks are removed from the underlying stock universe.

Apply underlying stock screens

Any stock that fails any of the following screens is removed from the underlying stock universe:

Average daily dollar volume: stocks having an ADDV of less than $1,000,000 over the most recent 30-day period are removed from the underlying stock universe.

Market capitalization: stocks of companies whose market capitalization is less than $500 million are removed from the underlying stock universe. Market capitalization for a company on a given day is calculated by multiplying the total number of outstanding shares on such day by the closing price of a share of such stock on such day, summed over all share classes of common shares. In the event that an index market disruption event (determined with respect to a stock subject to this market capitalization screen as specified in the "Index Market Disruptions" section below) occurs or is continuing on such day with respect to such stock, the market capitalization will be equal to the market capitalization on the immediately prior index business day on which no index market disruption event occurs or is continuing with respect to such stock. (For purposes of determining whether an index market disruption event occurs or is continuing with respect to a stock in the context of this market capitalization screen, any references in the "Index Market Disruptions" section to "underlying stock" shall mean any stock subject to this market capitalization stock screen.)

Closing price: stocks having a closing price of less than $1 on any day over the most recent 30-day period are removed from the underlying stock universe.

Return data: stocks having less than 60 days of price information (measured by the availability of historical return data over the most recent 90-day period) are removed from the underlying stock universe.

Apply low theme exposure screen and company relevance screen

Calculate exposure to the artificial intelligence theme

For each company that continues to be included in the underlying stock universe, such company's exposure to the artificial intelligence theme is determined by calculating a "thematic exposure score". A company's thematic exposure score is equal to the quotient of (i) the BM25 score for such company's annual regulatory filing (calculated as described above) divided by (ii) a constant normalization score equal to 50. As described above, if there is more than one applicable annual regulatory filing for a company, all but the most recent are removed from the underlying stock universe prior to calculating a company's thematic exposure score.

Stocks of companies with a thematic exposure score of less than 0.1 are removed from the underlying stock universe.

In addition, the index sponsor will remove any company from the base index universe if the index sponsor reasonably believes that all of the search phrase matches included in such company's annual regulatory filing are patently unrelated to either (i) developing artificial intelligence technology solutions and selling those solutions as products or services or (ii) deploying artificial intelligence to solve business problems.

If the size of the remaining underlying stock universe is greater than 100 stocks, only the top 100 stocks are kept in the index in order of decreasing thematic exposure score. In case of a tie in thematic exposure score, the stocks are ordered by decreasing company market capitalization.

All remaining stocks are included in the base index and become the underlying stocks.

A summary flow chart of the total theme exposure determination, entitled "Summary Flow Chart II: Total Theme Exposure" can be found at the end of this discussion of the index.

Determining the weight of each underlying stock in the base index

Initial weights

For each underlying stock, the index calculation agent determines the company's market capitalization derived from its exposure to the artificial intelligence theme. The "adjusted market capitalization" is equal to a company's thematic exposure score multiplied by the cube root of such company's total market capitalization. The cube root of the company's market capitalization is used to minimize the disparities in the market capitalization of companies in the technology sector.

A company's "total market capitalization" is equal to the total outstanding applicable shares of such company on the base index observation day multiplied by the closing price of such shares on the base index observation day. In the event that an index market disruption event occurs or is continuing on a base index observation day with respect to an underlying stock that was included in the base index on the index business day prior to such base index observation day, the market capitalization of such underlying stock on the immediately prior index business day on which no index market disruption event occurs or is continuing with respect to such underlying stock will be the market capitalization used to calculate such underlying stock's adjusted market capitalization. In the event that an index market disruption event occurs or is continuing on a base index observation day with respect to a stock that was not included in the base index on the index business day prior to such base index observation day, the theme adjusted market capitalization for such stock will be set to zero, and such stock will not be included in the base index.

The adjusted market capitalization of an underlying stock is then divided by the aggregate of the adjusted market capitalization for all underlying stocks. The result is the initial weight for such underlying stock and a thematically weighted portfolio.

Target weights

The initial weight for each stock will then be adjusted by the index calculation agent, as necessary, to comply with the weight constraints. The resulting adjusted weight is the target weight for the underlying stock.

The weight constraints apply to each underlying stock so that each underlying stock must have a minimum weight of not less than 0.1% and a maximum weight of not more than the lesser of (i) 5% and (ii) ADDV (as defined under "Base Index Components" above, and expressed as a numerical value) x $10^{9}$, expressed as a percentage. Negative weights are not permitted.

For any underlying stock with an initial weight of less than 0.1%, the target weight for such underlying stock will be adjusted to 0.1% prior to any additional adjustment to such underlying stock's target weight that is made to comply with the underlying stock maximum weight constraint of any other underlying stock.

For any underlying stock with an initial weight greater than the maximum weight for such underlying stock, the target weight for such underlying stock will be set to such underlying stock's maximum weight. The difference in the weight between the underlying stock's initial weight and the underlying stock's target weight will be proportionally redistributed to the rest of the underlying stock target weights, subject to the maximum weight constraint for each underlying stock. This is an iterative process and is performed repeatedly, until no underlying stock violates its maximum weight constraint.

The sum of the weights of the underlying equities is always equal to 1.0.

If the sum of the target weights for the underlying stocks is less than 1.0, the base index will also include exposure to the underlying ETF, such that the sum of the target weights for the underlying stocks and the weight of the underlying ETF will equal 1.0, as described under "Short-term treasury bond ETF position" below.

Short-term treasury bond ETF position

If on any base index observation day, the sum of the target weights for the underlying stocks is less than 1.0, the base index will also include exposure to the underlying ETF. The underlying ETF will have a weight in the base index equal to the difference between 1.0 and the sum of the target weights for all underlying stocks (the "underlying ETF target weight").

The short-term treasury bond ETF position is intended to express the notional returns accruing to a hypothetical investor from an investment in the underlying ETF, which is comprised of publicly-issued U.S. Treasury securities that have a remaining maturity of greater than one month and less than or equal to one year. The underlying ETF 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 one month and less than or equal to one year, as measured by the ICE U.S. Treasury Short Bond Index. The underlying ETF's shares trade on the NASDAQ under the ticker symbol "SHV". We obtained the following fee information from the iShares® website without independent verification. The underlying ETF investment advisor, BlackRock Fund Advisors ("BFA") is entitled to receive a management fee from the underlying ETF based on a percentage of the ETF's average daily net assets, at an annual rate of 0.15%. BFA is responsible for substantially all expenses of the ETF, except interest expenses, taxes, brokerage expenses, future distribution fees or expenses and extraordinary expenses.

If for any reason the underlying ETF ceases to exist, is delisted, terminated, wound up, liquidated or files for bankruptcy, is combined with another exchange traded fund that has a different investment objective, or changes its currency of denomination, then the index committee, in its sole discretion, can choose to replace the underlying ETF with a successor exchange traded fund that in the determination of the index committee most closely replicates the underlying ETF. Any such changes or actions taken with respect to the underlying ETF by the index committee are publicly announced as promptly as is reasonably practicable and normally at least five index business days prior to the effective date of the change or actions.

Base index rebalancing period

The target weight of each underlying equity for each annual rebalancing will be determined on the applicable base index observation day regardless of whether an index market disruption event, as described below under "Index Market Disruptions", occurs.

The annual rebalancing of the underlying stocks based on their target weights will be implemented over the base index rebalancing period. The base index rebalancing period is comprised of five index rebalancing days, beginning on the day that is three index business days after the applicable base index observation day and including the four following index business days, subject to adjustment as described below under "Index Market Disruptions". Following each base index observation day, any change in the number of shares of an underlying stock in the base index from the prior base index observation day based on such underlying stock's target weight will be implemented incrementally on each day during the applicable base index rebalancing period. While the number of shares of each underlying stock will be rebalanced incrementally based on its target weight over the base index rebalancing period, because of price movements of the underlying stocks, the weights of the underlying stocks at the end of the base index rebalancing period and thereafter will be greater than or less than (but not equal to) the applicable underlying stock target weights set on the corresponding base index observation date.

If, on a base index observation day, the base index includes exposure to the underlying ETF, the number of shares of the underlying ETF will be rebalanced, as necessary, based on the underlying ETF target weight along with the number of shares of the underlying stocks incrementally on each day in such base index rebalancing period.

A summary flow chart of the annual base index rebalancing process, entitled "Summary Flow Chart I: Annual and Daily Rebalancing" can be found at the end of this discussion of the index.

Total Return Index Rebalancing

In order to control volatility, on each total return index rebalancing day, which is each index business day, the exposure of the index to the base index may be partially rebalanced into the money market position if the realized volatility of the base index exceeds 8% (the "volatility cap"). This rebalancing is done by ratably reallocating all or a portion of the index's exposure to the underlying equities into the money market position in an amount sufficient to reduce the realized volatility of the base index to 8% (if the realized volatility of the base index is less than 8%, the full index exposure would be to the underlying equities). This calculation is performed on each total return index rebalancing day in order to determine what percentage of the index's exposure should be to the money market position, if any, for that particular total return index rebalancing day. The number of shares of the underlying equities as determined on the most recent base index rebalancing day is not impacted by this rebalancing. Instead, the volatility control process only determines the amount of exposure the index has to the underlying equities on a given day. The base index as controlled for volatility is the "total return index".

An "index business day" is a day on which the New York Stock Exchange is open for its regularly trading session.

To operate the volatility control, the annualized historical realized volatility of the base index (the "annualized base index realized volatility") is calculated over the relevant volatility cap period with respect to each total return index rebalancing day. Annualized base index realized volatility is the degree of variation in the daily closing prices of the underlying equities over the relevant volatility cap period. The "volatility cap period" is the period from (and including) the day which is 21 index business days before the given total return index rebalancing day to (but excluding) the day that is 1 index business day prior to the given total return index rebalancing day. As long as with respect to any given total return index rebalancing day such calculated volatility is equal to or less than the volatility cap, the weight of the base index in the total return index will be set to 100%, meaning that none of the base index weight will be rebalanced into the money market position. However, if with respect to any given total return index rebalancing day such calculated volatility exceeds the volatility cap, the exposure of the total return index to the base index will be partially rebalanced into the money market position for that total return index rebalancing day, done 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, the total return index's exposure to the respective underlying equities within the index will be ratably reduced.

The money market position

The money market position is intended to express the notional returns accruing to a hypothetical investor from an investment in a notional money market account denominated in U.S. dollars that accrues interest at a rate determined by reference to the notional interest rate, which equals 3-month USD LIBOR, as described below. The money market position will have a positive notional return if the notional interest rate is positive.

On any calendar day, the value of the money market position (the "money market position value") will equal the product of the money market position value on the notional interest rate reset date immediately preceding the given calendar day multiplied by 1 plus the product of (i) the notional interest rate on the notional interest rate reset date immediately preceding the given calendar day multiplied by (ii) the day count fraction for the period from (but excluding) the notional interest rate reset date immediately preceding the given calendar day to (and including) the given calendar day, determined by using the day count fraction of actual/360.

The notional interest rate will be reset quarterly, on each January 2, April 2, July 2, and October 2 or, if one of those dates is not an index business day, on the index business day immediately following such date. Each such date is referred to herein as a "notional interest rate reset date".

The “notional interest rate” on any notional interest rate reset date will equal 3-month USD LIBOR, which is the offered rate for three-month deposits in U.S. dollars, as that rate appears on 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. Each such date is referred to herein as a “USD LIBOR interest determination date”. “Reuters screen” means the display on the Reuters service, or any successor or replacement service, on the page specified above, or any successor or replacement page on that service. 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 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 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 “day count convention” is equal to (actual/360).

A summary flow chart of the daily total index rebalancing process, entitled “Summary Flow Chart I: Annual and Daily Rebalancing” can be found at the end of this discussion of the index.

Calculating the Index Value

Index value calculation

The index is calculated on an excess return basis, meaning that the value of the index is equal to the excess return of the total return index over the sum of (i) 0.75% per annum (accruing daily) plus (ii) the return that could be earned on a notional cash deposit at the notional interest rate, compounded daily.

On any given index business day, the “index value” is equal to (i) the product of (a) the index value as of the notional interest rate reset date immediately preceding the given index business day multiplied by (b) the difference of (1) the quotient of (A) the total return index value as of the given index business day divided by (B) the total return index value as of the notional interest rate reset date immediately preceding the given index business day minus (2) the product of (A) the notional interest rate as of the notional interest rate reset date immediately preceding the given index business day multiplied by (B) the day count fraction for the period from (but excluding) the notional interest rate reset date immediately preceding (but not including) the given index business day to (and including) the given index business day, determined using the day count convention reduced by (ii) the product of (a) 0.75% per annum multiplied by (b) the day count fraction for the period from (but excluding) the notional interest rate reset date immediately preceding (but not including) the given index business day to (and including) the given index business day, determined using the day count convention.

Total return index value calculation

On any given index business day, the "total return index value" is equal to the product of (i) the total return index value as of the total return index rebalancing day immediately preceding the given index business day multiplied by (ii) the sum of (a) the product of (1) the quotient of the base index value as of the given index business day divided by the base index value as of the total return index rebalancing day immediately preceding the given index business day multiplied by (2) the base index weight as of the total return index rebalancing day immediately preceding the given index business day plus (b) the product of (1) the quotient of the money market position value as of the given index business day divided by the money market position value as of the total return index rebalancing day immediately preceding the given index business day multiplied by (2) 1 minus the base index weight as of the total return index rebalancing day immediately preceding the given index business day.

The "base index weight" is equal to the lesser of (i) 100% and (ii) the quotient of (a) the volatility cap divided by (b) the annualized base index realized volatility as of the total return index rebalancing day immediately preceding (but not including) the given index business day.

Base index value calculation

On any given index business day, the "base index value" is equal to the sum of, over all underlying equities, the products of, for each underlying equity, (a) the number of such underlying equity shares as of the given index business day multiplied by (b) the closing price of such underlying equity as of the given index business day.

On any given index business day that is a base index rebalancing day, for each underlying equity, the number of "underlying equity shares" for such underlying equity is equal to the product of (i) the weight for such underlying equity calculated as though no index market disruption event occurred or was continuing on the given base index rebalancing day multiplied by (ii) the quotient of (a) the sum of, over all underlying equities, the products of, for each underlying equity, (I) the number of underlying equity shares as of the index business day immediately preceding the given base index rebalancing day multiplied by (II) the closing price of such underlying equity as of the index business day immediately preceding the given base index rebalancing day divided by (b) the closing price of such underlying equity on the index business day immediately preceding the given base index rebalancing day.

On any given index business day that is a base index rebalancing day, for each underlying equity, the "weight for such underlying equity calculated as though no index market disruption event occurred or was continuing on the given base index rebalancing day" is calculated as the sum of (i) the underlying equity weight on the index business day immediately preceding the first base index rebalancing day of the relevant base index rebalancing period plus (ii) the product of (a) the remainder of (I) the underlying equity target weight that was determined on the base index observation day immediately preceding the given base index rebalancing day minus (II) the underlying equity weight on the index business day immediately preceding the first base index rebalancing day of the relevant base index rebalancing period multiplied by (b) the remainder of (I) the number of base index rebalancing days elapsed as of (and including) the given base index rebalancing day in the relevant base index rebalancing period divided by (II) the total number of base index rebalancing days in the relevant base index rebalancing period.

The "underlying equity weight" for each underlying equity on any given index business day is calculated as the quotient of (i) the product of (a) the number of underlying equity shares of such underlying equity on the given index business day multiplied by (b) the closing price of the underlying equity on the given index business day divided by (ii) the sum of, over all underlying equities, the products of, for each underlying equity, (a) the number of underlying equity shares on the given index business day multiplied by (b) the closing price of such underlying equity on the given index business day.

On any given index business day that is a base index rebalancing day, in the event that there is a potential adjustment event affecting the underlying equity, adjustments to the number of underlying equity shares, computed as described above, will be made as described under "Potential Adjustment Events" below.

On any given index business day that is not a base index rebalancing day, the number of underlying equity shares will remain unchanged from the last base index rebalancing day, subject to any potential adjustment events affecting the underlying equity. In the case of a potential adjustment event affecting an underlying equity, adjustments to the number of underlying equity shares will be made as described under "Potential Adjustment Events" below.

Index Market Disruptions

Index value calculation

If on any index business day, an index market disruption event occurs or is continuing with respect to any non-zero weighted underlying equity included in the index, the index calculation agent shall postpone calculation of the index value to the next index business day on which no index market disruption event occurs or is continuing with respect to any non-zero weighted underlying equity included in the index and an indicative level for the index will be published. Such level will be identified as a “disrupted indicative level”. The index calculation agent shall resume calculating the index value on the first index business day on which no index market disruption event is occurring or continuing with respect to any underlying equity by using (i) for the number of underlying equity shares that had not been affected by such index market disruption event, the number of underlying equity shares that would have been used as if the base index rebalancing day(s), if applicable, occurred on each index business day on which such index market disruption event occurred or was continuing and the total return index rebalancing day and subsequent total return index rebalancing day(s) (as applicable) occurred on each index business day on which such index market disruption event occurred or was continuing and (ii) for the number of underlying equity shares that had been affected by such index market disruption event, the number of underlying equity shares on the index business day immediately preceding the first day of such index market disruption event.

On the sixth index business day following the occurrence of an index market disruption event with respect to any underlying equity included in the index, if such index market disruption event is continuing and such underlying equities have not been removed from the index, the index committee may determine in its sole discretion to instruct the index calculation agent to calculate the index, using a price for such underlying equity as determined by the index committee in its sole discretion. In the event the index committee determines on such sixth 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 in which all underlying equities are affected, the calculation and publication of the index will be postponed until, in the determination of the index calculation agent, such force majeure event has been resolved.

Base index rebalancing day or total return index rebalancing day

Base index rebalancing day

As discussed above, the target weight attributed to each underlying equity will be determined on each base index observation day regardless of whether an index market disruption event (as defined below) occurs.

If an index market disruption event affects an underlying equity on a base index rebalancing day, the index calculation agent shall then rebalance the base index for that base index rebalancing day and for every subsequent base index rebalancing day within the applicable base index rebalancing period as if (i) for each underlying equity that had not been affected by such index market disruption event, the base index rebalancing day occurred on such day and (ii) for each underlying equity that had been affected by such index market disruption event, the base index rebalancing day did not occur on such day (i.e., each underlying equity that was affected by such index market disruption event is not further rebalanced during such base index rebalancing period).

Therefore, if an underlying equity is affected by an index market disruption event on a base index rebalancing day, the number of shares of such underlying equity will not be further rebalanced over the remaining base index rebalancing days in the applicable base index rebalancing period. Instead, the number of such underlying equity shares will be held constant over the remaining days in the applicable base index rebalancing period, such that the number of underlying equity shares will remain equal to the number of underlying equity shares after the close on the index business day immediately preceding the base index rebalancing day on which it was first affected by such index market disruption event.

For each underlying equity affected by an index market disruption event on a base index rebalancing day, the underlying equity weight for each subsequent base index rebalancing day during the applicable base index rebalancing period will be calculated as the quotient of (i) the product of (a) the number of such underlying equity shares after the close on the index business day immediately preceding the given base index rebalancing day multiplied by (b) the last available traded price of such underlying equity on the index business day immediately preceding the given base index rebalancing day divided by (ii) the sum of, over all underlying equities, the products of, for each underlying equity, (a) the number of underlying equity shares on the index business day immediately preceding the given base index rebalancing day multiplied by (b) as applicable, the closing price or the last available traded price of such underlying equity as of the index business day immediately preceding the given base index rebalancing day.

If not all underlying equities are affected by an index market disruption event, then the shares of such underlying equities not affected by an index market disruption event will not be rebalanced over the base index rebalancing period based on the underlying equity target weight, if applicable. Instead, on each subsequent base index rebalancing day, the number of shares of the underlying equity will be adjusted such that each underlying equity will retain a weight within the remaining weight of the base index not allocated to the underlying equity or equities affected by an index market disruption event that is proportional to its underlying equity target weight relative to the underlying equity target weights of all other underlying equities not affected by an index market disruption event.

Thus, on each base index rebalancing day, the underlying equity weight for each underlying equity not affected by an index market disruption event is calculated as: the product of (i) the quotient of (a) the underlying equity weight calculated as though no index market disruption event occurred or was continuing on any base index rebalancing day in the applicable base index rebalancing period divided by (b) 1 minus the sum of, for each underlying equity affected by an index market disruption event, such underlying equity weight calculated as though no index market disruption event occurred or was continuing on any base index rebalancing day in the applicable base index rebalancing period multiplied by (ii) 1 minus the sum of the underlying equity weight(s) for each underlying equity affected by an index market disruption event during the applicable base index rebalancing period.

The number of underlying equity shares for each underlying equity not affected by an index market disruption event will then, on each subsequent base index rebalancing day in the applicable base index rebalancing period, be calculated as the product of (i) the weight of the underlying equity for the given base index rebalancing day multiplied by (ii) the quotient of (a) the sum of, for each underlying equity, (I) the number of underlying equity shares, if applicable, after the close on the index business day immediately preceding the given base index rebalancing day multiplied by (II) as applicable, the closing price or the last available traded price if the closing price is not available of such underlying equity on the index business day immediately preceding the given base index rebalancing day divided by (b) the closing price of such underlying equity on the index business day immediately preceding the given base index rebalancing day.

For example, on a base index observation day, a hypothetical base index with no minimum or maximum weight constraints and no underlying ETF requirement consists of only four underlying stocks (stock A, stock B, stock C and stock D), all four of which were included in the base index on the index business day prior to the base index observation day, at weights of 40%, 20%, 30% and 10%, respectively. For illustrative purposes, the closing price for each underlying stock is assumed to be the same at $10 per share at the end of each day. With the assumption of a constant closing price of $10, the number of underlying stock shares on the index business day prior to the base index observation day can be assumed to be 4, 2, 3 and 1 for Stock A, Stock B, Stock C and Stock D, respectively. On the base index observation day, the underlying stock target weight of each underlying stock is determined to be equal to 20%, 50%, 10% and 20%, respectively.

If an index market disruption event affects stock A on the second base index rebalancing day in the applicable base index rebalancing period, the second base index rebalancing day and all subsequent base index rebalancing days in the base index rebalancing period will be deemed to have not occurred with respect to stock A. The number of underlying stock shares for stock A will be held constant at 3.6, which is equal to the number of underlying stock shares for stock A at the end of the first base index rebalancing day (the last index business day without an index market disruption event), as stock A was rebalanced by 1/5 of the decrease on the first base index rebalancing day in the base index rebalancing period. Similarly, the number of underlying stock shares for stock B, stock C and stock D will be 2.6, 2.6 and 1.2, respectively, at the end of the first base index rebalancing day.

The weight for Stock A, given the index market disruption event, will now be 36% for the second base index rebalancing day (compared to a weight of 32% which would have been expected for stock A for such day in the absence of the index market disruption event). The weights for stock B, stock C and stock D will be calculated such that each retains a weight within the remaining weight of the base index not allocated to stock A’s weight that is proportional to its underlying stock target weight relative to the other underlying stock target weights. The weight in the base index not allocated to stock A’s weight is equal to 64%. The weight in the base index that was to be allocated to stock A on the second base index rebalancing day in the absence of the index market disruption event was 68% for such day. Therefore, the weight for stock B on the second base index rebalancing day will be equal to 30.12% (the product of 32%/68% multiplied by 64%), versus the weight of 32% in the absence of the index market disruption event for stock B on the second base index rebalancing day) and the weight for stock C and stock D will be equal to 20.71% and 13.18%, respectively (versus the weights of 22% and 14%, respectively, on the second base index rebalancing day in the absence of an index market disruption event). Therefore, the underlying stock shares for stock A, stock B, stock C and stock D will be 3.6, 3.012, 2.071 and 1.318, respectively for the second base index rebalancing day.

In contrast, if an index market disruption event does not affect stock A during the base index rebalancing period but an index market disruption event affects stock B on the third base index rebalancing day in the applicable base index rebalancing period, the third base index rebalancing day and all subsequent base index rebalancing days in the base index rebalancing period will be deemed to have not occurred with respect to stock B. The underlying stock shares for stock B will be held at 3.2 shares for the remaining base index rebalancing days (as stock B was rebalanced by a total of 2/5 of the increase over the first and second base index rebalancing days in the base index rebalancing period to a weight of 32%). Therefore, on the fifth and final day of the base index rebalancing period, the weights for stock A, stock C and stock D will be calculated such that each retains a weight within the remaining weight of the base index not allocated to stock B's weight that is proportional to its underlying stock target weight relative to the others underlying stock target weights. The weight in the base index not allocated to stock B's weight is equal to 68%. Therefore, the weight for stock A on the final rebalancing day in the base index rebalancing period will be equal to 27.2% (versus the underlying stock target weight of 20%). Correspondingly, the underlying stock shares for stock A, stock B, stock C and stock D will be 2.72, 3.2, 1.36 and 2.72, respectively, at the end of the base index rebalancing period (in the absence of the index market disruption event affecting stock B, the underlying stock shares for stock A, stock B, stock C and stock D would have been 2, 5, 1 and 2, respectively).

Total return index rebalancing day

If a total return index rebalancing day must be effected on an index business day on which an index market disruption event affects an underlying equity, the index calculation agent shall then rebalance the index as if (i) for each underlying equity that had not been affected by an index market disruption event, the total return index rebalancing day occurred on such day and (ii) for each underlying equity that had been affected by such index market disruption event, the total return index rebalancing day did not occur on such day, provided that for purposes of calculating the annualized base index realized volatility the alternative calculations set forth in the next paragraph apply (i.e., other than for purposes of calculating the annualized base index realized volatility in the manner set forth in the next paragraph, each underlying equity that was affected by such index market disruption event is disregarded for purposes of total return index rebalancing).

Solely for purposes of calculating the annualized base index realized volatility which includes an index business day on which an index market disruption event has occurred or is continuing with respect to any underlying equity (except if such index market disruption event affects all the underlying equities), the base index value will include any underlying equity 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 closing price of the underlying equity 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 last traded price of the underlying equity on the immediately preceding relevant index business day by the percentage change (whether positive or negative) of the underlying equity having the largest absolute total return (expressed in percentage; as adjusted for dividends, splits and spin-offs) from the immediately preceding relevant index business day to the relevant index business day; provided, that if an index market disruption event has occurred and is continuing with respect to more than one underlying stock 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 underlying stock for purposes of calculating the annualized base index realized volatility, 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.

An "index market disruption event" with respect to an underlying equity will have occurred in any of the following situations (as determined by the index calculation agent in its sole discretion): (i) the official closing price, level or other measure of any underlying equity is unavailable on any relevant day on which such measure is scheduled to be published; (ii) a relevant exchange 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 an exchange disruption; (iii) upon the occurrence or existence of a trading disruption 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 relevant exchange, and which the index calculation agent determines is material; (iv) with respect to the underlying ETF, the net asset value per share is not calculated or is not announced by the underlying ETF or the sponsor of the underlying ETF, and such event has a material impact on the index; (v) with respect to the underlying ETF, the underlying ETF or the sponsor of the underlying ETF suspends creations or redemptions of shares, and such event has a material impact on the index; (vi) upon the occurrence or existence of an index dislocation; or (vii) upon the occurrence or existence of a force majeure event.

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

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

An “exchange” means the primary exchange on which shares of an underlying equity are listed.

A “related exchange” means, in respect of an underlying equity or the index underlying the underlying ETF, 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 underlying equity or the index underlying the underlying ETF, as the case may be, are traded, if any.

An “index dislocation” means the index calculation agent determines that a market participant, as a result of a market-wide condition relating to the index or any underlying equity, 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 underlying equity, 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” means 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 index calculation agent determines is likely to have a material effect on a component necessary for the calculation of the index, or on its ability to perform its role in respect of the index.

Potential Adjustment Events

In the event that an underlying equity is affected by a “potential adjustment event”, the index calculation agent may make adjustments to the number of shares of such underlying equity reflected in the index and/or the weighting of the underlying equity, if it determines that the event could have a diluting or concentrative effect on the theoretical value of the underlying equity shares and would not otherwise be accounted for in the index. The table below describes the potential adjustment events for which the index calculation agent may make adjustments. The effective date of any adjustment made will be as of the ex-date for the potential adjustment event with the exception of ad-hoc situations as described below.

Ad-hoc situations are defined as circumstances when either the index calculation agent receives information about the effectiveness of a transaction after the last trading day of an underlying equity, or the underlying equity has been suspended from trading with immediate effect and will not resume trading until its delisting and/or has been delisted from the relevant exchange with immediate effect. In case of ad-hoc situations, the adjustment will be applied with a notice period of two index business days, i.e., the effective date for the adjustment will be the third index business day following the announcement.

If a potential adjustment event is announced prior to an underlying stock being removed from the index, but the ex-date occurs after the underlying stock is removed from the index, the underlying stock will never be adjusted for such adjustment event.

| Potential Adjustment Event | Adjustment | Adjustment Description |
|---|---|---|
| Cash Dividends | Yes | The dividend is reinvested in the underlying equity |
| Special/Extraordinary Dividends | Yes | The dividend is reinvested in the underlying equity |
| 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. |
| Stock Cash Acquisition | Yes | Where company X is acquired, proceeds equal to the original number of shares of company X multiplied by the latest available price determined by the calculation agent are reinvested proportionally across the index.<br><br>If an ad-hoc situation applies, then a notional position in company X, where the valuation of the notional position is exactly equal to the proceeds, will be maintained in the base index during the two index business day notice period prior to the effective date. |
| Stock Merger | Yes | If company Y, the acquirer, is currently in the index, and irrespective of whether or not an ad-hoc situation applies to the adjustment event, then where shareholders receive “B” new shares of company Y for every “A” share of company X held, the shares of company X are replaced by shares of company Y where the number of shares of company Y is obtained by multiplying the original number of shares of company X by the quotient of B divided by A.<br><br>If the acquirer is not a current index constituent, then the shares of the acquired company will be removed from the index and the proceeds will be reinvested proportionally across the index. If an ad-hoc situation applies and the acquirer company Z is not a current index constituent, and where shareholders receive “C” shares of company Z for every “A” share of company X held, then for the two index business day notice period, the shares of company X will be replaced by shares of company Z obtained by multiplying the original number of shares of company X by the quotient of C divided by A. The shares of company Z will be removed from the index on the effective date and proceeds will be reinvested proportionally across the index. |
| Stock Spinoff | Yes | Where shareholders receive “B” new shares of spun-off company Y for every “A” share of parent company X held, a position in company Y is initiated where the number of shares of company Y is obtained by multiplying the original number of shares of company X by the quotient of B divided by A.<br><br>If the effective date of the spinoff is a base index rebalancing day, the effective proceeds of the spinoff obtained by multiplying the original number of shares of company X by the quotient of B divided by A and that further multiplied by the latest available price of company Y determined by the index calculation agent are reinvested in company X. |
| Stock Delisting | Yes | The proceeds received from the sale of the delisted securities are reinvested proportionally across the index. If an ad-hoc situation applies, then a notional cash position equal to the proceeds will be maintained in the base index during the two |

index business day notice period prior to the effective date.

For potential adjustment events not listed in the table above, the index calculation agent may make adjustments if it determines that the event could have a diluting or concentrative effect on the theoretical value of the underlying equity shares and would not otherwise be accounted for in the index. Any such adjustments are publicly announced in advance wherever practicable.

The Index Committee and Index Calculation Agent

An index committee is responsible for overseeing the index, the methodology and the implementation thereof, while the index calculation agent is responsible for the calculation of the index, including responding to index market disruption events (as defined under "Index Market Disruption Events" above) and potential adjustment events. The index committee will initially be comprised of three full-time employees of Motif Capital Management, Inc. or one or more of its affiliates.

The index committee may exercise limited discretion with respect to the index, as contemplated by the methodology, including in determining the underlying stocks included in the base index, BM25 scores and thematic exposure scores. 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 calculation agent may from time to time consult the index committee on matters of interpretation with respect to the methodology.

Data Error

If the index calculation agent determines that the price made available by the relevant exchange reflects a manifest error for an underlying equity with a non-zero weighting in the index (or the published level of the notional interest rate) reflects a manifest error, the calculation of the index 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 underlying equity (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 price of the underlying equity as of any index business day to take into account such adjustment or correction.

On any index business day during which the price of for an underlying equity reflects such an error (and such error has not been corrected), the underlying equity target weights and the base index weight will be calculated using the price made available by the relevant exchange (notwithstanding any manifest error).  If the 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 equities implied by the underlying equity target weight and the base index weight (each prior to the error being corrected) will not be adjusted.

Non-Data Error

If there is a missed potential adjustment event (as described under "Potential Adjustment Events" above) (a "missed potential adjustment event") or a deviation from the index methodology as described in this document (a "missed index methodology event"), and a correction can be made within 2 days or fewer after such missed potential adjustment event or missed index methodology event, the index calculation agent will recalculate the index value for the index business day on which such event occurred and each following index business day on which the index value was affected by such missed potential adjustment event or missed index methodology event, using the corrected potential adjustment event adjustment or index methodology.  If such a correction occurs more than 2 days after such missed corporate event or missed index methodology event, the index will not be recalculated.

LIST OF SEARCH PHRASES FROM ACM COMPUTING CLASSIFICATION 2012 TAXONOMY

Phrases mentioned more than once are only entered once in the list of relevant phrases; when there is overlap between phrases, but they are not identical, both phrases are included. The below list of search phrases reflects the removal of duplicative phrases but does not comprise the final phrase list because it does not reflect the removal of phrases that occur in more than 4% of all annual regulatory filings filed with the SEC within 15 months before the relevant base index observation day.

- Artificial intelligence
- Natural language processing
- Information extraction
- Machine translation
- Discourse, dialogue and pragmatics
- Natural language generation
- Speech recognition
- Lexical semantics
- Phonology / morphology
- Language resources
- Knowledge representation and reasoning
- Description logics
- Semantic networks
- Nonmonotonic, default reasoning and belief revision
- Probabilistic reasoning
  - Vagueness and fuzzy logic
- Causal reasoning and diagnostics
- Temporal reasoning
- Cognitive robotics
- Ontology engineering
- Logic programming and answer set programming
- Spatial and physical reasoning
- Reasoning about belief and knowledge
- Planning and scheduling
- Planning for deterministic actions
- Planning under uncertainty
- Multi-agent planning
- Planning with abstraction and generalization
- Robotic planning
- Evolutionary robotics
- Search methodologies
- Heuristic function construction
- Discrete space search
- Continuous space search
- Randomized search
- Game tree search
- Abstraction and micro-operators
- Search with partial observations
- Control methods
- Computational control theory

- Motion path planning
- Philosophical/theoretical foundations of artificial intelligence
- Cognitive science
- Theory of mind
- Distributed artificial intelligence
- Multi-agent systems
- Intelligent agents
- Mobile agents
- Cooperation and coordination
- Computer vision
- Computer vision tasks
- Biometrics
- Scene understanding
- Activity recognition and understanding
- Video summarization
- Visual content-based indexing and retrieval
- Visual inspection
- Vision for robotics
- Scene anomaly detection
- Image and video acquisition
- Camera calibration
- Epipolar geometry
- Computational photography
- Hyperspectral imaging
- Motion capture
- 3D imaging
- Active vision
- Computer vision representations
- Image representations
- Shape representations
- Appearance and texture representations
- Hierarchical representations
- Computer vision problems
- Interest point and salient region detections
- Image segmentation
- Video segmentation
- Shape inference
- Object detection
- Object recognition
- Object identification
- Tracking
- Reconstruction
- Matching
- Machine learning
- Learning paradigms
- Supervised learning
- Ranking
- Learning to rank
- Supervised learning by classification
- Supervised learning by regression
- Structured outputs

- Cost-sensitive learning
- Unsupervised learning
- Cluster analysis
- Anomaly detection
- Mixture modeling
- Topic modeling
- Source separation
- Motif discovery
- Dimensionality reduction and manifold learning

LIST OF SEARCH PHRASES FROM ACM COMPUTING CLASSIFICATION 2012 TAXONOMY (CONTINUED)

- Reinforcement learning
- Sequential decision making
- Inverse reinforcement learning
- Apprenticeship learning
- Multi-agent reinforcement learning
- Adversarial learning
- Multi-task learning
- Transfer learning
- Lifelong machine learning
- Learning under covariate shift
- Learning settings
- Batch learning
- Online learning settings
- Learning from demonstrations
- Learning from critiques
- Learning from implicit feedback
- Active learning settings
- Semi-supervised learning settings
- Machine learning approaches
- Classification and regression trees
- Kernel methods
- Support vector machines
- Gaussian processes
- Neural networks
- Logical and relational learning
- Inductive logic learning
- Statistical relational learning
- Learning in probabilistic graphical models
- Maximum likelihood modeling
- Maximum entropy modeling
- Maximum a posteriori modeling
- Mixture models
- Latent variable models
- Bayesian network models
- Learning linear models
- Perceptron algorithm
- Factorization methods
- Non-negative matrix factorization
- Factor analysis
- Principal component analysis
- Canonical correlation analysis
- Latent Dirichlet allocation
- Rule learning
- Instance-based learning
- Markov decision processes
- Partially-observable Markov decision processes
- Stochastic games
- Learning latent representations

- Deep belief networks
- Bio-inspired approaches
- Artificial life
- Evolvable hardware
- Genetic algorithms
- Genetic programming
- Generative and developmental approaches
- Machine learning algorithms
- Dynamic programming for Markov decision processes
- Value iteration
- Q-learning
- Policy iteration
- Temporal difference learning
- Approximate dynamic programming methods
- Ensemble methods
- Boosting
- Bagging
- Spectral methods
- Feature selection
- Regularization
- Cross-validation

LIST OF INDEX CONSTITUENTS AS OF MARCH 31, 2019

Below is a full list of constituents in the Motif Capital Artificial Intelligence 8 ER Index as of March 31, 2019. A full list of index constituents as of the last calendar day of each month is also available on the index sponsor's website, which will be updated intramonth in the event that there is a change in the index constituents (such as may result from a corporate event). We are not incorporating by reference the website or any materials it includes in this document.

- 2U INC
- 58.COM INC
- ACCENTURE PLC-CL A
- ADOBE INC
- ADVANCED MICRO DEVICES
- ALARM.COM HOLDINGS INC
- ALIBABA GROUP HOLDING-SP ADR
- ALPHABET INC A-SHARES
- AMBARELLA INC
- AMDOCS LTD
- ARLO TECHNOLOGIES INC
- ASML HOLDING NV-NY REG SHS
- ASPEN TECHNOLOGY INC
- BAIDU INC – SPON ADR
- BLACKBAUD INC
- BOOZ ALLEN HAMILTON HOLDING CORP
- CABOT MICROELECTRONICS CORP
- CARS.COM INC
- CEVA INC
- CGI INC – CLASS A
- CHEETAH MOBILE INC – ADR
- CISCO SYSTEMS INC
- COMMVAULT SYSTEMS INC
- CORNERSTONE ONDEMAND INC
- ENTEGRIS INC
- ENVESTNET INC
- EXTREME NETWORKS INC
- FAIR ISAAC CORP
- FIREEYE
- FIVE9 INC
- GLOBANT SA
- GOPRO INC
- GUIDEWIRE SOFTWARE INC
- HIMAX TECHNOLOGIES INC
- HUBSPOT INC
- INFOSYS LTD
- INOVALON HOLDINGS INC
- INTEL CORP
- INTL BUSINESS MACHINES CORP
- INTUIT COM
- IROBOT CORP

- JD.COM INC
- LIBERTY TRIPADVISOR HDG INC
- LINE CORP-SPONSORED ADR
- LIVEPERSON INC
- LOGMEIN INC
- LUXOFT HOLDING INC
- MASTERCARD INC-CLASS A
- MATERIALISE NV
- MEDIDATA SOLUTIONS INC

- MELLANOX TECHNOLOGIES LTD
- MICRON TECHNOLOGY INC
- MICROSOFT CORP
- MICROSTRATEGY INC-CL A
- NETGEAR INC
- NEW RELIC INC
- NICE LTD
- NOKIA CORP-SPON ADR
- NOVA MEASURING INSTRUMENTS
- NUANCE COMMUNICATIONS INC
- NVIDIA CORP
- ON SEMICONDUCTOR CORPORATION
- ONESPAN INC
- OVERSTOCK.COM INC
- PALO ALTO NETWORKS INC
- PARAMETRIC TECHNOLOGY CORP
- PEGASYSTEMS INC
- PPDAI GROUP INC
- PROGRESS SOFTWARE CORP
- PROOFPOINT INC
- PURE STORAGE INC – CLASS A
- Q2 HOLDINGS INC
- QAD INC-A
- QUALCOMM INC
- QUDIAN INC SPONSORED ADR CLASS A
- RADWARE LTD
- SAILPOINT TECHNOLOGIES HOLDING
- SALESFORCE.COM INC
- SAP AG-SPONSORED ADR
- SECUREWORKS CORP – A
- SHUTTERSTOCK INC
- SONY CORP-SPONSORED ADR
- SPLUNK INC
- SWITCH INC
- SYKES ENTERPRISES INC
- TALEND SA
- TELEDYNE TECHNOLOGIES INC
- TRADE DESK INC/THE –CLASS A

- VERINT SYSTEMS INC
- VERISK ANALYTICS INC
- VIRTUSA CORP
- VISA INC-CLASS A SHARES
- VOCERA COMMUNICATIONS INC
- WIPRO LTD-ADR
- XEROX CORP
- XPERI CORP
- YEXT INC
- ZENDESK INC
- ZYNGA INC

Closing Levels 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 the 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.

We cannot give you any assurance that the future performance of the index or the underlying stocks will result in your receiving an amount greater than the outstanding face amount of your notes on the stated maturity date.

Neither we nor any of our affiliates make any representation to you as to the performance of the index. Before investing in the offered notes, you should consult publicly available information to determine the index levels between the date of this prospectus 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 on a call payment date or at maturity, may bear little relation to the historical index performance information or hypothetical performance data shown below.

The graph below shows the daily closing levels of the index from April 26, 2014 through April 26, 2019 (using hypothetical performance data and historical closing levels). As a result, the following graph does not reflect the global financial crisis which began in 2008, which had a materially negative impact on the price of most equity securities and, as a result, the level of most equity indices. Since the index was launched on October 30, 2018 and has a limited operating history, the graph includes hypothetical performance data for the index prior to its launch on October 30, 2018. The hypothetical performance data prior to October 30, 2018 was obtained from the index sponsor's website, without independent verification. The index sponsor advises that such hypothetical performance data was derived using the index rules as of October 30, 2018, but applied retroactively using historical underlying stock and notional interest rate levels. In addition, the hypothetical performance data reflects a significant increase in the number of index constituents over time and the composition of the current index is materially different from that of the index as simulated for prior years. As a result, such hypothetical performance data should not be relied upon when making your investment decision.

The historical closing levels from October 30, 2018 to April 26, 2019 were obtained from Bloomberg Financial Services, 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 hypothetical performance data or historical closing levels of the index as an indication of the future performance of the index.

Average Allocation Between the Base Index and the Money Market Position for Each Month

Historically, a very significant portion (up to approximately 78.6%) of the index consistently has been allocated to the money market position. The graph below shows the average allocation between the base index (consisting of the underlying stocks) and the money market position for each month from March 2014 through March 2019. This graph uses hypothetical performance data for the index prior to its launch on October 30, 2018 using the index rules as of October 30, 2018, but applied retroactively using historical underlying stock and notional interest rate levels. (In the graph below, this hypothetical information can be found to the left of the vertical solid line marker.) You should not take the historical information or hypothetical data as an indication of the future performance of the index.

Performance of the Notional Interest Rate (3-Month USD LIBOR) Reflected in the Money Market Position

The money market position reflects the returns accruing on a hypothetical cash investment in a notional money market account denominated in U.S. dollars that accrues interest at the notional interest rate, which is equal to 3-month USD LIBOR.

The graph below illustrates the historical levels of the 3-month USD LIBOR rate from April 26, 2014 through April 26, 2019. The level of the 3-month USD LIBOR rate has fluctuated in the past and may, in the future, experience significant fluctuations. Any historical upward or downward trend in the level of the 3-month USD LIBOR rate during the period shown below is not an indication that the level of the 3-month USD LIBOR rate is more or less likely to increase or decrease at any time during the life of the notes. See "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" and "Additional Risk Factors Specific to 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" for more information about 3-month USD LIBOR.

You should not take the historical level of the 3-month USD LIBOR rate as an indication of future levels of the 3-month USD LIBOR rate.

Neither we nor any of our affiliates make any representation to you as to the performance of the 3-month USD LIBOR rate. The actual levels of the 3-month USD LIBOR rate during the term of the notes may bear little relation to the historical levels of the 3-month USD LIBOR rate shown below.

We obtained the 3-month USD LIBOR rates shown in the graph below from Reuters, without independent verification.

Comparative Performance of the Index and Two Broad-Based Stock Indices

For comparative purposes, the graph below shows the performance, from April 26, 2014 through April 26, 2019, of the index (in blue, and using historical information and hypothetical performance data, as explained below) and two broad-based equity indices, the Russell 3000® Index (in red) and the S&P 500® Index (in green). The Russell 3000® Index seeks to measure the largest 3,000 companies by total market capitalization in the U.S. equity market. The S&P 500® Index seeks to track a representative sample of 500 companies in leading industries of the U.S. economy.  Unlike the index, neither the Russell 3000® Index nor the S&P 500® Index attempts to track the performance of companies that either develop or use artificial intelligence technology.

For comparative purposes, each of the index, the Russell 3000® Index and the S&P 500® Index have been adjusted to have a closing level of 100 on April 26, 2014 by dividing the applicable closing level on each day by that index's closing level on April 26, 2014 and multiplying the quotient by 100.00. The historical closing levels of the index from October 30, 2018 to April 26, 2019 used to create this graph reflect the actual performance of the index and were obtained from Bloomberg Financial Services, without independent verification. (In this graph, the historical closing levels of the index can be found to the right of the vertical solid line marker.) The index sponsor of the index advises that the hypothetical performance data from April 26, 2014 through October 29, 2018 used to create this graph was derived using the index rules as of October 30, 2018, but applied retroactively using historical underlying stock and notional interest rate levels. The daily historical closing levels of the Russell 3000® Index from April 26, 2014 through April 26, 2019 used to create this graph were obtained from Bloomberg Financial Services, without independent verification. Although the official closing levels of the Russell 3000® Index are published to six decimal places by FTSE Russell, the sponsor of the Russell 3000® Index, Bloomberg Financial Services reports the levels of the Russell 3000® Index to fewer decimal places. The daily historical closing levels of the S&P 500® Index from April 26, 2014 through April 26, 2019 used to create this graph were obtained from Bloomberg Financial Services, without independent verification. You should not take this graph, or the hypothetical performance data or historical closing levels of the index, or the historical closing levels of the Russell 3000® Index or the S&P 500® Index, used to create this graph, as an indication of the future performance of the index or the correlation (if any) between the level of the index and the level of the Russell 3000® Index or the level of the S&P 500® Index.

Additional Selected Performance Information for the Index

The following table provides additional selected hypothetical data and historical performance information for the index as of April 26, 2019. The data prior to October 30, 2018 reflected in this table is hypothetical and was derived using the index rules as of October 30, 2018, but applied retroactively using historical underlying stock and notional interest rate levels. We obtained all of the hypothetical data and historical performance information in this table from the index sponsor, without independent verification. You should not take the historical information or hypothetical data as an indication of the future performance of the index.

| | |
|---|---|
| Effective Performance (1M) | 2.2% |
| Effective Performance (6M) | 7.3% |
| Effective Performance (1Y) | 2.6% |
| Effective Performance (3Y) | 30.0% |
| Effective Performance (5Y) | 32.0% |
| Annualized Performance (since July 2013)* | 6.5% |
| Annualized Volatility (since July 2013)* | 8.9% |
| Return over risk (since July 2013)** | 0.72 |
| Maximum Peak-to-Trough Drawdown (since July 2013)*** | 13.8% |

* Calculated on an annualized basis since July 24, 2013.
** Calculated by dividing the annualized performance by the annualized volatility since July 24, 2013.
*** The largest percentage decline in the index level from any previously occurring level since July 24, 2013.

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License Agreement

Motif is a registered trademark of Motif Investing, Inc. (“Motif Investing”) and has been licensed for use by Motif Capital Management, Inc. (“Motif Capital”) and sublicensed for certain purposes by GS Finance Corp. (“Goldman”). The “Motif Capital Artificial Intelligence 8 ER Index” is a product of Motif Capital and has been licensed for use by Goldman. Goldman’s notes are not sponsored, endorsed, sold or promoted by Motif Investing, Motif Capital, or their respective affiliates. Neither Motif Capital nor Motif Investing make any representation or warranty, express or implied, to the owners of the notes or any member of the public regarding the advisability of investing in securities generally or in the notes particularly or the ability of the Motif Capital Artificial Intelligence 8 ER Index to track general market performance.

Motif Capital’s only relationship to Goldman with respect to the Motif Capital Artificial Intelligence 8 ER Index is the licensing of the Index and certain trademarks, service marks and/or trade names of Motif Capital, other than a non-controlling interest held by The Goldman Sachs Group Inc., Goldman’s parent company, in Motif Investing Inc., the index sponsor’s ultimate parent company. The Motif Capital Artificial Intelligence 8 ER Index is determined, composed and calculated by Motif Capital without regard to Goldman or the notes. Motif Capital has no obligation to take the needs of Goldman or the owners of the notes into consideration in determining, composing or calculating the Motif Capital Artificial Intelligence 8 ER Index. Motif Capital is not responsible for and has not participated in the determination of the prices, and amount of the notes or the timing of the issuance or sale of the notes or in the determination or calculation of the equation by which the notes are to be converted into cash. Motif Capital has no obligation or liability in connection with the administration, marketing or trading of the notes. There is no assurance that investment products based on the Motif Capital Artificial Intelligence 8 ER Index will accurately track index performance or provide positive investment returns.  Inclusion of a security within an index is not a recommendation by Motif Capital to buy, sell, or hold such security, nor is it considered to be investment advice.

MOTIF CAPITAL DOES NOT GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS AND/OR THE COMPLETENESS OF THE Motif Capital Artificial Intelligence 8 ER Index OR ANY DATA RELATED THERETO OR ANY COMMUNICATION, INCLUDING BUT NOT LIMITED TO, ORAL OR WRITTEN COMMUNICATION (INCLUDING ELECTRONIC COMMUNICATIONS) WITH RESPECT THERETO. MOTIF CAPITAL SHALL NOT BE SUBJECT TO ANY DAMAGES OR LIABILITY FOR ANY ERRORS, OMISSIONS, OR DELAYS THEREIN. MOTIF CAPITAL MAKES NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIMS ALL WARRANTIES, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE OR AS TO RESULTS TO BE OBTAINED BY GOLDMAN, OWNERS OF THE NOTES, OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE Motif Capital Artificial Intelligence 8 ER Index OR WITH RESPECT TO ANY DATA RELATED THERETO. WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT WHATSOEVER SHALL MOTIF CAPITAL BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, TRADING LOSSES, LOST TIME OR GOODWILL, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE.

THERE ARE NO THIRD PARTY BENEFICIARIES OF ANY AGREEMENTS OR ARRANGEMENTS BETWEEN MOTIF CAPITAL AND Goldman.

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 generally will not receive any payments from us until maturity.

It is not entirely clear how, under the rules governing contingent payment debt instruments, the maturity date for debt instruments (such as your notes) that provide for the possibility of early redemption should be determined for purposes of computing the comparable yield and projected payment schedule. It would be reasonable, however, to compute the comparable yield and projected payment schedule for your notes (and we intend to make the computation in such a manner) based on the assumption that your notes will remain outstanding until the stated maturity date.

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

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

| Accrual Period | Interest Deemed to Accrue During Accrual Period (per $1,000 note) | Total Interest Deemed to Have Accrued from Original Issue Date (per $1,000 note) as of End of Accrual Period |
|---|---|---|
| through December 31, 2019 | | |
| January 1, 2020 through December 31, 2020 | | |
| January 1, 2021 through December 31, 2021 | | |
| January 1, 2022 through December 31, 2022 | | |
| January 1, 2023 through December 31, 2023 | | |
| January 1, 2024 through December 31, 2024 | | |
| January 1, 2025 through December 31, 2025 | | |
| January 1, 2026 through | | |

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, redemption 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, redemption 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 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.

We will not attempt to ascertain whether any underlying stock issuer would be treated as a "United States real property holding corporation" ("USRPHC"), within the meaning of Section 897 of the Internal Revenue Code. If any underlying stock issuer was so treated, certain adverse U.S. federal income tax consequences could possibly apply to a United States alien holder. You should refer to information filed with the SEC with respect to each underlying stock issuer and consult your tax advisor regarding the possible consequences to you, if any, if the issuer of a particular underlying stock is or becomes a USRPHC.

In addition, 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, redemption 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 underlying stocks or on the underlying ETF 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.

## EMPLOYEE RETIREMENT INCOME SECURITY ACT

This section is only relevant to you if you are an insurance company or the fiduciary of a pension plan or an employee benefit plan (including a governmental plan, an IRA or a Keogh Plan) proposing to invest in the notes.

The U.S. Employee Retirement Income Security Act of 1974, as amended ("ERISA") and the U.S. Internal Revenue Code of 1986, as amended (the "Code"), prohibit certain transactions ("prohibited transactions") involving the assets of an employee benefit plan that is subject to the fiduciary responsibility provisions of ERISA or Section 4975 of the Code (including individual retirement accounts, Keogh plans and other plans described in Section 4975(e)(1) of the Code) (a "Plan") and certain persons who are "parties in interest" (within the meaning of ERISA) or "disqualified persons" (within the meaning of the Code) with respect to the Plan; governmental plans may be subject to similar prohibitions unless an exemption applies to the transaction. The assets of a Plan may include assets held in the general account of an insurance company that are deemed "plan assets" under ERISA or assets of certain investment vehicles in which the Plan invests. Each of The Goldman Sachs Group, Inc. and certain of its affiliates may be considered a "party in interest" or a "disqualified person" with respect to many Plans, and, accordingly, prohibited transactions may arise if the notes are acquired by or on behalf of a Plan unless those notes are acquired and held pursuant to an available exemption. In general, available exemptions are: transactions effected on behalf of that Plan by a "qualified professional asset manager" (prohibited transaction exemption 84-14) or an "in-house asset manager" (prohibited transaction exemption 96-23), transactions involving insurance company general accounts (prohibited transaction exemption 95-60), transactions involving insurance company pooled separate accounts (prohibited transaction exemption 90 1), transactions involving bank collective investment funds (prohibited transaction exemption 91-38) and transactions with service providers under Section 408(b)(17) of ERISA and Section 4975(d)(20) of the Code where the Plan receives no less and pays no more than "adequate consideration" (within the meaning of Section 408(b)(17) of ERISA and Section 4975(f)(10) of the Code). The person making the decision on behalf of a Plan or a governmental plan shall be deemed, on behalf of itself and the plan, by purchasing and holding the notes, or exercising any rights related thereto, to represent that (a) the plan will receive no less and pay no more than "adequate consideration" (within the meaning of Section 408(b)(17) of ERISA and Section 4975(f)(10) of the Code) in connection with the purchase and holding of the notes, (b) none of the purchase, holding or disposition of the notes or the exercise of any rights related to the notes will result in a nonexempt prohibited transaction under ERISA or the Code (or, with respect to a governmental plan, under any similar applicable law or regulation), and (c) neither The Goldman Sachs Group, Inc. nor any of its affiliates is a "fiduciary" (within the meaning of Section 3(21) of ERISA) or, with respect to a governmental plan, under any similar applicable law or regulation) with respect to the purchaser or holder in connection with such person's acquisition, disposition or holding of the notes, or as a result of any exercise by The Goldman Sachs Group, Inc. or any of its affiliates of any rights in connection with the notes, and neither The Goldman Sachs Group, Inc. nor any of its affiliates has provided investment advice in connection with such person's acquisition, disposition or holding of the notes.

If you are an insurance company or the fiduciary of a pension plan or an employee benefit plan (including a government plan, an IRA or a Keogh plan) and propose to invest in the notes, you should consult your legal counsel.

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 "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".

SUPPLEMENTAL PLAN OF DISTRIBUTION

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 prospectus 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 prospectus supplement, and to certain securities dealers at such price less a concession not in excess of % of the face amount. The original issue price for notes purchased by certain retirement accounts and certain fee-based advisory accounts will be % of the face amount of the notes, which will reduce the underwriting discount specified on the cover of this prospectus supplement with respect to such notes to %.

In the future, GS&Co. or other affiliates of GS Finance Corp. may repurchase and resell the offered notes in market-making transactions, with resales being made at prices related to prevailing market prices at the time of resale or at negotiated prices. GS Finance Corp. estimates that its share of the total offering expenses, excluding underwriting discounts and commissions, will be approximately $ . For more information about the plan of distribution and possible market-making activities, see “Plan of Distribution” in the accompanying prospectus.

We have been advised that GS&Co. will also pay a fee in connection with the distribution of the notes to SIMON Markets LLC, a broker-dealer affiliated with GS Finance Corp.

We expect to deliver the notes against payment therefor in New York, New York on May 31, 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.

Any notes which are the subject of the offering contemplated by this prospectus supplement, the accompanying prospectus and the accompanying prospectus supplement may not be offered, sold or otherwise made available to any retail investor in the European Economic Area. Consequently no key information document required by Regulation (EU) No 1286/2014 (the “PRIIPs Regulation”) for offering or selling the notes or otherwise making them available to retail investors in the EEA has been prepared and therefore offering or selling the notes or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation. For the purposes of this provision:

(a) the expression “retail investor” means a person who is one (or more) of the following:
(i) a retail client as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, “MiFID II”); or
(ii) a customer within the meaning of Directive 2002/92/EC (as amended, the “Insurance Mediation Directive”), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or
(iii) not a qualified investor as defined in Directive 2003/71/EC (as amended, the “Prospectus Directive”); and
(b) the expression an “offer” includes the communication in any form and by any means of sufficient information on the terms of the offer and the notes to be offered so as to enable an investor to decide to purchase or subscribe for the notes.

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a “Relevant Member State”), GS&Co. has represented and agreed that with effect from and including the date on which the Prospectus Directive is implemented in that Relevant Member State (the “Relevant Implementation Date”) it has not made and will not make an offer of notes which are the subject of the offering contemplated by this prospectus supplement, the accompanying prospectus and the accompanying prospectus supplement to the public in that Relevant Member State except that, with effect from and including the Relevant Implementation Date, an offer of such notes may be made to the public in that Relevant Member State:

(a) at any time to any legal entity which is a qualified investor as defined in the Prospectus Directive;
(b) at any time to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), subject to obtaining the prior consent of the relevant dealer or dealers nominated by the issuer for any such offer; or

(c) at any time in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of notes referred to above shall require us or any dealer to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an “offer of notes to the public” in relation to any notes in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the notes to be offered so as to enable an investor to decide to purchase or subscribe for the notes, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State and the expression “Prospectus Directive” means Directive 2003/71/EC (as amended, including by Directive 2010/73/EU), and includes any relevant implementing measure in the Relevant Member State.

Any invitation or inducement to engage in investment activity (within the meaning of Section 21 of the FSMA) in connection with the issue or sale of the notes may only be communicated or caused to be communicated in circumstances in which Section 21(1) of the FSMA does not apply to GS Finance Corp. or The Goldman Sachs Group, Inc.

All applicable provisions of the FSMA must be complied with in respect to anything done by any person in relation to the notes in, from or otherwise involving the United Kingdom.

The notes may not be offered or sold in Hong Kong by means of any document other than (i) to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) and any rules made thereunder, or (ii) in other circumstances which do not result in the document being a “prospectus” as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong) or which do not constitute an offer to the public within the meaning of that Ordinance; and no advertisement, invitation or document relating to the notes may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere) which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the notes which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” as defined in the Securities and Futures Ordinance and any rules made thereunder.

This prospectus supplement, along with the accompanying prospectus supplement and the accompanying prospectus have not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement, along with the accompanying prospectus supplement and the accompanying prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the notes may not be circulated or distributed, nor may the notes be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act, Chapter 289 of Singapore (the “SFA”)) under Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to conditions set forth in the SFA.

Where the notes are subscribed or purchased under Section 275 of the SFA by a relevant person which is a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor, the securities (as defined in Section 239(1) of the SFA) of that corporation shall not be transferable for six months after that corporation has acquired the notes under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer in that corporation’s securities pursuant to Section 275(1A) of the SFA, (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore ("Regulation 32").

Where the notes are subscribed or purchased under Section 275 of the SFA by a relevant person which is a trust (where the trustee is not an accredited investor (as defined in Section 4A of the SFA)) whose sole purpose is to hold investments and each beneficiary of the trust is an accredited investor, the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferable for six months after that trust has acquired the notes under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer that is made on terms that such rights or interest are acquired at a consideration of not less than S$200,000 (or its equivalent in a foreign currency) for each transaction (whether such amount is to be paid for in cash or by exchange of securities or other assets), (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32.

The notes have not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended), or the FIEA. The notes may not be offered or sold, directly or indirectly, in Japan or to or for the benefit of any resident of Japan (including any person resident in Japan or any corporation or other entity organized under the laws of Japan) or to others for reoffering or resale, directly or indirectly, in Japan or to or for the benefit of any resident of Japan, except pursuant to an exemption from the registration requirements of the FIEA and otherwise in compliance with any relevant laws and regulations of Japan.

The notes are not offered, sold or advertised, directly or indirectly, in, into or from Switzerland on the basis of a public offering and will not be listed on the SIX Swiss Exchange or any other offering or regulated trading facility in Switzerland. Accordingly, neither this prospectus supplement nor any accompanying prospectus supplement, prospectus or other marketing material constitute a prospectus as defined in article 652a or article 1156 of the Swiss Code of Obligations or a listing prospectus as defined in article 32 of the Listing Rules of the SIX Swiss Exchange or any other regulated trading facility in Switzerland. Any resales of the notes by the underwriters thereof may only be undertaken on a private basis to selected individual investors in compliance with Swiss law. This prospectus supplement and accompanying prospectus and prospectus supplement may not be copied, reproduced, distributed or passed on to others or otherwise made available in Switzerland without our prior written consent. By accepting this prospectus supplement and accompanying prospectus and prospectus supplement or by subscribing to the notes, investors are deemed to have acknowledged and agreed to abide by these restrictions. Investors are advised to consult with their financial, legal or tax advisers before investing in the notes.

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

Conflicts of Interest

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

We have not authorized anyone to provide any information or to make any representations other than those contained or incorporated by reference in this prospectus 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 prospectus 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 prospectus supplement, the accompanying prospectus supplement and the accompanying prospectus is current only as of the respective dates of such documents.

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GS Finance Corp.

Autocallable Motif Capital Artificial Intelligence 8 ER Index-Linked Notes due

guaranteed by

The Goldman Sachs Group, Inc.

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Prospectus Supplement



Prospectus Supplement dated July 10, 2017

Prospectus dated July 10, 2017



Goldman Sachs & Co. LLC