GOLDMAN SACHS NEW HORIZONS INDEX

METHODOLOGY

MARCH 25, 2022

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*The following summary and overview of the Goldman Sachs New Horizons Index are only summaries and, as such, are necessarily incomplete. The summary and overview should be read in conjunction with, and are qualified in their entirety by, the more detailed description of the Goldman Sachs New Horizons Index and its operation that follows in this document (the "**Methodology**").*

The "Certain Risk Factors and Additional Information about the Index" section at the end of the Methodology is intended to summarize certain risks associated with the Goldman Sachs New Horizons Index, but does not purport to be exhaustive, nor should it be regarded as offering advice on the advisability of investing in products that may be linked to the Goldman Sachs New Horizons Index or its underlying investment strategy. You should also read any relevant materials which may highlight further risks particular to such products, or arising from the relationship between the terms of such products and the features of the Goldman Sachs New Horizons Index. In particular, you should read the relevant materials relating to the Underlying Assets and any discussion of risks contained therein. Neither Goldman Sachs International nor any of its affiliates guarantees the quality, accuracy and/or the completeness of the Goldman Sachs New Horizons Index or any data included therein or on which the Goldman Sachs New Horizons Index or any Underlying Asset (as defined below) is based, and neither Goldman Sachs International nor any of its affiliates shall be liable to any third party for any loss or damage, direct, indirect or consequential, arising from (i) any inaccuracy or incompleteness in, or delays, interruptions, errors or omissions in the Goldman Sachs New Horizons Index or any data included therein or on which the Goldman Sachs New Horizons Index is based or (ii) any decision made or action taken by any third party in reliance upon the Goldman Sachs New Horizons Index or any data included therein or on which the Goldman Sachs New Horizons Index is based.

Index Summary

The following is only a summary and, as such, is necessarily incomplete. The summary should be read in conjunction with, and is qualified in its entirety by, the more detailed description of the Goldman Sachs New Horizons Index, its operation and its risks that follows in this document.

The Goldman Sachs New Horizons Index (the "**Index**") is designed to combine a traditional asset allocation strategy with an alternative investment strategy through exposure to two portfolios: (i) a long-only "**Core Portfolio**" and (ii) a long-short "**Satellite Portfolio**" with the goal of diversifying Index returns. The Core Portfolio provides exposure to assets - equities, rates, credits, commodities and real estate – whose performance is more traditionally correlated with market performance. The Satellite Portfolio uses market-neutral strategies, whose performance is less correlated to the Core Portfolio performance. By combining the portfolios, the Index provides exposure to market performance while also providing exposure to market-

neutral strategies to potentially provide diversifying returns. The Index is subject to costs and deductions as further described under "— *Costs and Deductions*" below.

The Index provides 100% exposure to each of the Core Portfolio and Satellite Portfolio. As a result, the returns (including negative returns) of the Core Portfolio and Satellite Portfolio will have a cumulative impact on Index returns. The cumulative impact means, for example, if the Core Portfolio has a return of 5% and the Satellite Portfolio has a return of -1%, the Index will have a return (without giving effect to costs, deductions, and volatility controls, as discussed further below) of 4% ((5% Core Portfolio return × 100% exposure to the Core Portfolio) + (-1% Satellite Portfolio return × 100% exposure to the Satellite Portfolio)). Each portfolio is described in more detail below:

- The **Core Portfolio** provides exposure to a multi-asset strategy that provides long-only exposure to up to 22 assets (the "**Underlying Core Assets**") grouped within the following "**Core Asset Classes**":

    - "*Equities*" through five indices comprised of futures contracts on equities markets with themes respectively based on market-capitalization (U.S. large-cap), sector (U.S. technology) and region (European, Japanese and Australian equities) (each such Underlying Core Asset, an "**Underlying Core Equity Asset**");

    - "*Rates*" through eight indices comprised of futures contracts on fixed income securities with themes respectively based on U.S. Treasuries of varying maturities (3 indices), German government bonds of varying maturities (3 indices), Japanese government bonds (1 index) and Australian government bonds (1 index) (each such Underlying Core Asset, an "**Underlying Core Rates Asset**");

    - "*Credits*" through four indices comprised of an index tracking investment grade corporate bonds in the U.S., an index tracking investment grade corporate bonds in Europe, an index tracking high-yield corporate bonds in Europe and an index tracking high-yield corporate bonds in the U.S. (each such Underlying Core Asset, an "**Underlying Core Credit Asset**");

    - "*Commodities*" through four indices comprised of commodity futures contracts in crude oil, gold, copper and soybeans (each such Underlying Core Asset, an "**Underlying Core Commodity Asset**"); and

    - *"Real Estate"* through one exchange-traded fund (ETF) comprised of stocks in the U.S. real estate industry sector (the "**Underlying Core Real Estate Asset**").

    More information about the Underlying Core Assets is available in Annex A.

    The Core Portfolio is rebalanced daily using a Core Portfolio Optimization Algorithm (as defined in "*Methodology Overview*" below) that seeks to identify the weights for the Underlying Core Assets that will maximize the asset-weighted "**Combined Score**" for the resulting portfolio, with the goal of allocating exposure to assets that not only have

a strong recent performance (the "**Effective Momentum Score**") but that also have a strong future expected return (the "**Effective Forward Score**"). The Combined Score for each Underlying Core Asset is a weighted combination of:

- the Effective Momentum Score (weighted 20%), which generally reflects the strength of recent price movements during the relevant look-back period; and

- the Effective Forward Score (weighted 100%), which takes a more market-neutral perspective and generally reflects returns (or "yields") that are expected to accrue if underlying prices remain unchanged, provided that the Effective Forward Score for an Underlying Core Rates Asset will be reduced in circumstances where the corresponding historical realized inflation rate is higher than the corresponding short term rate; the Effective Forward Score for an Underlying Core Equity Asset or Underlying Core Real Estate Asset is assumed to be zero.

Since the Combined Score for each Underlying Core Asset is weighted, it means that the Effective Momentum Score for an Underlying Core Asset will be multiplied by 20% and the Effective Forward Score will be multiplied by 100%. The resulting numbers will then be added together and become the Combined Score for the Underlying Core Asset. The lower weighting of the Effective Momentum Score, which is generally more volatile than the Effective Forward Score, and greater weighting of the Effective Forward Score means that the impact of recent price movements in an Underlying Core Asset will generally have a lesser effect on the Combined Score.

A Combined Score for each Underlying Core Asset is determined for 3, 6 and 9 month look-back periods. The Core Portfolio Optimization Algorithm is run, and seeks to find the weights for the Underlying Core Assets that will provide the highest portfolio Combined Score (which is the sum of the Combined Scores for each of the Underlying Core Assets as weighted by the algorithm, and is not the sum of the Underlying Core Asset-weighted returns) for each of the 3, 6 and 9 month look-back periods, subject to various constraints, including asset and asset class weight caps, a 5% volatility target during the relevant look-back period and a leverage cap (i.e., total exposure to all Underlying Core Assets) of 300%.

With respect to each Underlying Core Asset on each Index Trading Day, the weight assigned to such Underlying Core Asset for each of the 3, 6 and 9 month look-back periods are averaged to determine its **Averaged Underlying Asset Target Weight**. For each Underlying Core Asset, the Averaged Underlying Asset Target Weights over the preceding 21 Index Trading Days are averaged in order to determine the **Smoothed Optimized Weight** of each Underlying Core Asset for any given Index Trading Day. The Smoothed Optimized Weights are then multiplied by a target exposure level that applies to each of the Underlying Core Assets that results from the application of the volatility control feature described in the first bullet under "—Volatility Controls." The resulting amounts constitute the weight of each Underlying Core Asset in the Core

Portfolio before the deduction of costs and deductions (described below) (the Core Portfolio together with the Satellite Portfolio, the "**Base Index**").

See "*Methodology Overview—Core Portfolio Combined Score—Effective Momentum Score and Effective Forward Score*" below for additional details and definitions.

- The **Satellite Portfolio** provides exposure to each of the following two components (the "**Satellite Components**" or "**Underlying Alternative Assets**" and, together with Underlying Core Assets, the "**Underlying Assets**" or " **Index Components**"):

    - The **Satellite Intraday Equity Component,** which is weighted as 20% of the Satellite Portfolio. This component attempts to benefit from positive or negative intraday momentum in two substrategies that track equities futures on the S&P 500® Index (weighted 70%) and Nasdaq 100® Index (weighted 30%). On a given day, if, over the course of any 30-minute trading window, the relevant futures market has risen beyond a certain threshold since the previous close, the component will take "long" positions in the futures contracts underlying the relevant substrategy (under the assumption that a long position will benefit if the market continues to rise through the day). Conversely, if on a given day, over the course of any 30-minute trading window, the relevant futures market has fallen beyond a certain threshold since the previous close, the component will take "short" positions in the futures contracts underlying the relevant substrategy (under the assumption that a short position will benefit if the market continues to fall through the day).

    - The **Satellite Commodity Component,** which is weighted as 20% of the Satellite Portfolio. This component seeks to exploit inefficiencies in commodity markets through exposure to three different substrategies, which target inefficiencies that are believed to be attributable to commercial players (the *Commodity Curve Constituent*), speculators (the *Commodity Commitment of Traders Constituent*) and investors (the *Commodity Congestion Constituent*).

        - the *Commodity Curve Constituent* tracks the investment results of long-short positions based on commodity futures contracts of different maturities, taking "long" positions in longer-dated contracts and "short" positions in shorter-dated contracts. The Commodity Curve Constituent performance is based, not on the performance of commodities themselves, but on how longer-dated contracts perform relative to the shorter-dated contracts, with the hope that longer-dated contracts have better performance than shorter dated contracts from the imbalance of commercial players;

        - the *Commodity Commitment of Traders Constituent* tracks 26 underlying single-commodity indices that use Commodity Futures Trading Commission (CFTC)-reported data to determine the "net speculative positions" that commodity speculators took over the prior 12-month period.

The net speculative positions are calculated by subtracting the current "short" positions of commodity speculators from the current "long" positions of commodity speculators (such "net speculative positions" of commodity speculators are derived indirectly by taking the opposite side of CFTC-reported positions of commercial players, on the assumption that "long" positions by commercial players imply "short" positions by speculators, and vice versa). In general terms, the strategy's investment thesis assumes that deviations in the net positions of speculators will revert to historical levels:

- if current net speculative positions in the market are *lower* than the median level over the prior 12-month period (i.e., commodity speculators are currently taking less-than-usual net long positions or more-than-usual net short positions in options and futures with respect to a commodity market), the strategy takes "long" positions in shorter-dated contracts and "short" positions in longer-dated contracts; or

- if current net speculative positions in the market are *higher* than the median level over the prior 12-month period (i.e., commodity speculators are currently taking higher-than-usual net long positions or less-than-usual net short positions in options and futures with respect to a commodity market), the strategy takes "short" positions in shorter-dated contracts and "long" positions in longer-dated contracts,

in each case, in anticipation of a reversion to the historical average level; and

- the *Commodity Congestion Constituent* uses CFTC-reported data to compare current net speculative positions against median net speculative positions over the prior 12-month period and times the "roll" (i.e., the process of selling a shorter-term contract and buying a longer-term contract as the expiration of the shorter-term contract approaches) of its underlying positions accordingly:

  - if current net speculative positions in the market are *higher* than the median level over the prior 12-month period, the Commodity Congestion Constituent will effectively build up a net "long" position in the longer-term contract (the "**Roll Contract**") (combined with a net "short" position in the shorter-term contract (the "**Current Contract**")) significantly *before* the standard roll period for the underlying commodities benchmark (i.e. the "vanilla roll", which varies by commodity, but is typically between or around the 5th and 9th business days of a calendar month) (such practice is called a "pre-pre roll"), hold the positions until the start of the vanilla roll period and exit such net long position in the Roll Contract by selling the Roll Contract (and buying the offsetting short position in the Current Contract) in the

vanilla roll period in the hopes of earning more on the sale of the Roll Contract relative to the price to buy the Current Contract by getting ahead of buying pressures affecting the Roll Contract, and selling pressures affecting the Current Contract, during the "vanilla roll" period (assuming that the other market participants who invest in the commodity benchmark will roll their positions during the "vanilla roll" period); or

- if current net speculative positions in the market are *lower* than the median level over the prior 12-month period, the Commodity Congestion Constituent will effectively take a net "short" position in the Roll Contract (combined with a net "long" position in the Current Contract) during the "vanilla roll" period and cover such net short position in the Roll Contract by buying the Roll Contract (and selling the offsetting long position in the Current Contract) in the period *after* the standard "vanilla roll" period in the hopes of paying cheaper prices to buy the Roll Contract relative to the sale of the Current Contract by exploiting the selling pressures affecting the Roll Contract, and buying pressures affecting the Current Contract, during the "vanilla roll" period (such practice is called a "post roll").

The Satellite Commodity Component provides 100% exposure to each of the three substrategies. As a result, the returns (including negative returns) of the three substrategies will have a cumulative impact on the Satellite Commodity Component returns. For example, if the Commodity Curve Constituent had a return of 5%, the Commodity Commitment of Traders Constituent had a return of 3% and the Commodity Congestion Constituent had a return of -1% (each, as described in greater detail below), the Satellite Commodity Component would have a return of 7% ((5% Commodity Curve Constituent × 100% exposure to the Commodity Curve Constituent) + (3% Commodity Commitment of Traders Constituent return × 100% exposure to the Commodity Commitment of Traders Constituent) + (-1% Commodity Congestion Constituent return × 100% exposure to the Commodity Congestion Constituent)).

- A hypothetical cash allocation earning a zero net return on an excess return basis is weighted as 60% of the Satellite Portfolio. The hypothetical cash allocation only exists to reduce the impact of the performance of the Satellite Components relative to the performance of the Core Portfolio.

Volatility Controls

The Index effectively provides volatility controls at three levels:

- A 5% volatility target is applied daily at the Underlying Core Asset level. If an Underlying Core Asset has a realized volatility of greater than 5%, the exposure to the

Underlying Core Asset will be deleveraged into a hypothetical cash position that earns zero return in order to decrease the volatility to 5% and, if the Underlying Core Asset has a realized volatility of less than 5%, the exposure to the Underlying Core Asset will be leveraged in order to increase the volatility to 5%, in each case subject to a maximum leverage of 200% (at the Underlying Core Asset level) and the fact that exposure to an Underlying Core Asset can only change day-over-day by 20%.

- A 5% volatility constraint is built into the rules-based Core Portfolio Optimization Algorithm, which effectively caps the historical volatility of the Core Portfolio over each of the 3, 6 and 9 month look-back periods used to determine the Averaged Underlying Asset Target Weights. The 5% volatility constraint measures the volatility of the Core Portfolio as a whole (as opposed to the 5% target on Underlying Core Asset-level volatility described in the prior bullet). In the absence of this constraint, the Core Portfolio volatility could be higher than 5% even though the Underlying Core Assets are subject to a 5% volatility target due to the application of leverage at the Core Portfolio level and other factors (such as measurement periods, constraints on day-over-day changes, etc.).

- A 5% volatility control is applied to the Base Index. This feature aims to provide volatility-controlled exposure by ratably decreasing exposure to the weights of Underlying Assets in the Base Index to the extent that the historical realized volatility of the Base Index exceeds a volatility control level of 5%. The exposures dictated by the Volatility Control Exposure are rebalanced on a daily basis, subject to a maximum exposure of 100%. In the absence of the constraint, Base Index volatility could be higher than 5% due to the fact that only the Core Portfolio and Underlying Core Assets, and not the Satellite Portfolio or its assets, are subject to the volatility controls described above and other factors.

As a general matter, when application of the volatility controls and targets results in leveraged exposure to the Underlying Assets, cash borrowing costs will not be incurred. Further, generally when application of the volatility controls and targets results in deleveraged exposure to the Underlying Assets, such deleveraged exposure will be moved into hypothetical cash positions that will earn zero return.

Costs and Deductions

The Index is calculated on an excess return basis, so each of the Underlying Assets is either reported on an excess return basis already or will be converted to excess return over the relevant cash rate. The "U.S. Large Cap Equity", "European Equity", "Japanese Equity", "Japanese Government Bonds" and "U.S. Real Estate" Underlying Core Assets are reported on a total return basis and therefore, a deduction at the cash rate of the relevant currency is applied to the reported levels of those assets.

The Index is subject to Servicing Costs and Asset Transaction Costs that vary from asset to asset. The Servicing Costs are:

- with respect to Underlying Assets (if applicable) that are not Underlying Core Credit Assets, daily accruals at fixed "**Asset Servicing Cost Rates**" that vary from 0.02% to 0.60% depending on the Underlying Asset, in each case as specified in Annex A; and

- with respect to each Underlying Core Credit Asset, a **Credit Roll Cost** accruing over the five credit asset rolling days of each semi-annual credit roll period (Credit Roll Costs do not accrue outside of the credit roll period) accruing at a rate based on a percentage of the relevant credit spread index (i.e., an index that tracks credit risk) tracking the relevant Underlying Core Credit Asset. See "1.7. *Calculation of the Credit Roll Costs"* for further details; see Annex A for the identification of the relevant credit spread index for each Underlying Core Credit Asset.

The Asset Transaction Cost Rate is:

- with respect to Underlying Assets (if applicable) that are not Underlying Core Credit Assets, a fixed rate that varies for different Underlying Assets and ranges from 0.005% to 0.08%, as specified in Annex A; and

- with respect to each Underlying Core Credit Asset, a percentage of the relevant credit spread index (i.e., an index that tracks credit risk) tracking the relevant Underlying Core Credit Asset, subject to a certain floor. See "1.8. *Calculation of the Credit Transaction Cost Rate*" for further details; see Annex A for the identification of the relevant credit spread index for each Underlying Core Credit Asset.

In addition, within the Goldman Sachs International-sponsored Satellite Components and constituents of Satellite Components, there are servicing and rebalancing costs subtracted in the construction of such constituents.

Further, a deduction rate of 0.50% per annum (accruing daily) is applied to the Index.

Based on hypothetical historical data from March 27, 2007 (the date when historical levels of all Underlying Assets became available) to the Launch Date, the rolling 1-year sum of the aggregate costs and 0.50% per annum deduction rate of the Index has been as high as approximately 1.87% per annum at times, and has been approximately 1.52% per annum on average.

Further information about the costs and deductions is included under "*Methodology Overview—Index Return Deductions*" below.

Selected Key Risks

The "Selected Key Risks" is intended to summarize certain risks associated with the Index, but is not exhaustive, and should be read in conjunction with the "Certain Risk Factors and Additional Information about the Index" section at the end of the Methodology. The "Selected Key Risks" should not be regarded as offering advice on the advisability of investing in products that may be linked to the Index or the investment strategy underlying the Index. You should also

read any relevant documentation which may highlight further risks particular to any product linked to the Index, or arising from the relationship between the terms of such product and the features of the Index.

- The Index relies on strategies that are based on widely available financial and academic research, and any historical premiums associated with such strategies may not continue into the future as the benefits of such strategies become more widely recognized and implemented by market participants.

- The index may reflect significant leveraged exposure of up to 300% in the target weights of the Core Portfolio.

- The Core Portfolio (due to the weighting influence of forward scores) and Satellite Portfolio (due to its generally "market neutral" components) may underperform in rising market environments, which may have a material adverse impact on Index performance.

- The Core Portfolio Optimization Algorithm may provide a very different set of optimized weights compared to a portfolio that looks at only one of the Effective Momentum Score or the Effective Forward Score or a different weighted combination of the two scores, and may underperform a similar strategy that looks at only one set of scores or a different weighted combination of the two scores.

- The Effective Forward Scores for the Underlying Core Rates Assets will be reduced in circumstances where the applicable historical realized inflation corresponding to an Underlying Core Rates Asset is higher than the applicable short term rate. Such Effective Forward Score reduction may cause exposure to be moved out of an Underlying Core Rates Asset, and, in circumstances where such Underlying Core Rates Asset subsequently rises, it may have a material adverse impact on Index performance. For example, in a market condition where inflation is decreasing and the fixed income market is rising, if the applicable historical realized inflation corresponding to an Underlying Core Rates Asset is still higher than its applicable short term rate, the Effective Forward Score for such Underlying Core Rates Asset will still be reduced, even though the performance of such Underlying Core Rates Asset may increase, which could have a material adverse impact on Index performance.

- The components of the Satellite Portfolio may not be as uncorrelated to other components as they have been historically, which may have a material adverse impact on Index performance.

- Because the volatility target and volatility control mechanisms look at historical volatility, they may not decrease exposure to the relevant measure right before a significant and quick downturn in the market, and may not increase exposure to other measures quickly enough during a market recovery, both of which could have a material adverse impact on the performance of the Index.

- The Index deductions, including the asset servicing costs, asset transactions costs, index deduction rate and asset-level excess return deductions, will have a negative impact on Index performance.

- The Satellite Intraday Equity Component will not benefit from overnight movements in the relevant equity markets (between the market close of one day and the market open of the next day), which could have a material adverse impact on the performance of the portion of the Index exposed to the Satellite Intraday Equity Component.

- The Satellite Intraday Equity Component will have a negative performance if there is a sharp equity sell-off followed by a recovery in the same day, sharp equity appreciation followed by a decline in the same day or no clear intraday performance trend, which could have a material adverse impact on the performance of the portion of the Index exposed to the Satellite Intraday Equity Component.

- The Commodity Curve Constituent may have negative performance if shorter dated futures positions perform better than longer dated futures positions, which could have a material adverse impact on the performance of the Index.

- The Commodity Commitment of Traders Constituent will have negative performance if deviations in net positions of speculators are sustained and do not revert to historical levels, which could have a material adverse impact on the performance of the Index.

- The Commodity Congestion Constituent will have negative performance if other market participants recognize and seek to extract roll premiums by changing the timing of their rolling periods, which could have a material adverse impact on the performance of the Index.

- The Index has a very limited performance history. The Index will only be calculated live from the Launch Date and the hypothetical index data prior to that date was calculated using historical and hypothetical data. **You should not take any historical or hypothetical index performance information as an indication of the future performance of the Index.**

Hypothetical and Historical Performance

The Index's hypothetical and historical performance information is available at goldmansachsindices.com/products/GSNHRZON.

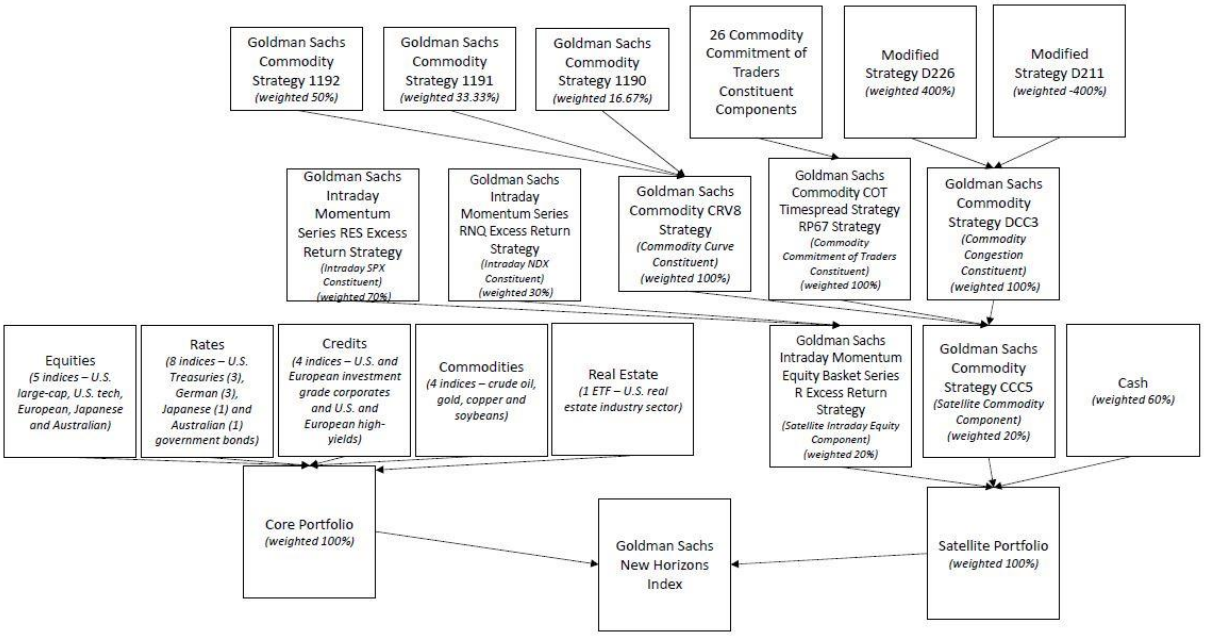
Where You Can Find More Information

The methodology for the Index is included under "*The Methodology*" below.

With respect to the Satellite Intraday Equity Component and its constituents, the rules are available upon request from whom you purchase any products linked to the Index.

With respect to the Underlying Core Assets, the rules are available as referenced in "*Overview of the Underlying Core Assets*" below.

With respect to the Satellite Commodity Component, the rules are available as referenced in "*Overview of the Underlying Alternative Assets*" below.



Methodology Overview

The Index is designed to provide 100% notional (i.e., reflecting a synthetic position rather than an actual investment) exposure to each of two portfolios (any term that is bolded but not defined in the following bullets is defined in "*Index Summary*" above or subsequent sections of this Methodology Overview):

- a **Core Portfolio** weighted among 22 Underlying Core Assets using a rules-based **Core Portfolio Optimization Algorithm** that seeks to identify, with respect to an applicable **Core Portfolio Optimization Look-Back Period** of 3, 6 or 9 months preceding the relevant Index Trading Day, the combination of Underlying Core Asset weights that would maximize the weighted sum of **Combined Scores** with respect to such Core Portfolio Optimization Look-Back Period across all Underlying Core Assets, subject to:

    - a Core Portfolio-level volatility cap of 5% (applied *after* taking the Underlying-Core Asset-level volatility target of 5% into account) (calculated as described under "2.9. *Calculation of the Annualized Underlying Asset Covariance*");

    - a cap on total leverage (i.e., the sum of "effective" weights *after* taking the Underlying Core Asset-level volatility target exposure, described in the third following paragraph below, into account) of 300%;

    - a combined Core Asset Class-specific weight cap specified in Annex A (the Core Asset Classes are described below) (applied to the sum of "effective" weights in the asset class *after* taking the Underlying Core Asset-level volatility target exposure into account); and

    - an Underlying Core Asset-specific weight cap on each of the volatility targeted Underlying Core Assets (for the avoidance of doubt, the weight cap is applied to the target optimized weight *without* taking the Underlying Core Asset-level volatility target exposure into account), as specified in Annex A,

    all as further described below in "2.7. *Calculation of the Target Optimized Weight*".

    The **Combined Score** of an Underlying Core Asset is itself a weighted combination of such Underlying Core Asset's **Effective Momentum Score** (weighted 20%) and **Effective Forward Score** (weighted 100%) over the relevant look-back period, in each case *after* applying the 5% Underlying Core Asset-level volatility target described in the second following paragraph below). See "*—Core Portfolio Combined Score—Effective Momentum Score and Effective Forward Score*".

    Following the Core Portfolio Optimization Algorithm's determination of optimal weights with respect to the 3, 6 and 9 month Core Portfolio Optimization Look-Back Periods across all Underlying Core Assets, the weights of the 3, 6 and 9 month with respect to each individual Underlying Core Asset are averaged to determine its **Averaged Underlying Asset Target Weight**. The Averaged Underlying Asset Target Weights is then further

averaged over the preceding 21 Index Trading Days to determine the **Smoothed Optimized Weight** with respect to an Underlying Core Asset on any given Index Trading Day.

Each Underlying Core Asset is subject to a volatility adjustment feature before the Core Portfolio Optimization Algorithm which aims to produce an **Individual Asset Volatility Target Exposure** that provides volatility-controlled exposure. This is achieved by periodically increasing (or decreasing) the exposure to the Underlying Core Asset based on its historical realized volatility (calculated as described under "4.3. *Calculation of the Exponentially Weighted Realized Volatility of Underlying Asset*") relative to a target level of 5%. An increase in the realized volatility of the relevant Underlying Core Asset may decrease the Individual Asset Volatility Target Exposure and vice versa. The exposures dictated by each Individual Asset Volatility Target Exposure are rebalanced on a daily basis, subject to (1) a maximum exposure to the Individual Asset Volatility Target Exposure of any Underlying Core Asset of 200% and (2) a limit on day-over-day change in exposure to the Individual Asset Volatility Target Exposure of 20% (as described under "4.2. *Calculation of the Individual Asset Volatility Target Exposure*"). The volatility measure of the Underlying Core Asset used to calculate its Individual Asset Volatility Target Exposure is based on the higher of two "exponentially weighted" realized volatilities of such Underlying Core Asset returns using (i) a short-term "decay factor" of 0.94 giving relatively greater weight to more recent volatilities and (ii) a long-term "decay factor" of 0.97 giving relatively greater weight to older volatilities. In order to calculate the "exponentially weighted" realized variance (which is the square of "exponentially weighted" realized volatility), in addition to other mathematical operations, 1 minus the "decay factor" is a relative weight given to the most recent daily observation of variance, while the "decay factor" is a relative weight given to a term representing the prior calculated "exponentially weighted" realized variance measure (which itself is calculated using the same decay factor for its prior volatility measure, and so on), as described under "4.3. *Calculation of the Exponentially Weighted Realized Volatility of Underlying Asset*". As a result, a higher "decay factor" gives relatively greater weight to older data, reflecting a longer-term perspective.

Through the Underlying Core Assets, the Core Portfolio provides long-only exposure to the following five major Core Asset Classes:

- "*Equities*" through five indices comprised of futures contracts on equities markets with themes respectively based on market-capitalization (U.S. large-cap), sector (U.S. technology equity) and region (European, Japanese and Australian equities) (each, an "**Underlying Core Equity Asset**");

- "*Rates*" through eight indices comprised of futures contracts on fixed income securities with themes respectively based on U.S. Treasuries (3 indices) of varying maturities, German government bonds (3 indices) of varying maturities, Japanese government bonds and Australian government bonds (each, an "**Underlying Core Rates Asset**");

- "*Credits*" through four indices: an index tracking investment grade corporate bonds in the U.S., an index tracking investment grade corporate bonds in Europe, an index tracking high-yield corporate bonds in Europe and an index tracking high-yield corporate bonds in the U.S. (each, an "**Underlying Core Credit Asset**");

- "*Commodities*" through four indices respectively based on commodity futures contracts in crude oil, gold, copper and soybeans (each, an "**Underlying Core Commodity Asset**"); and

- *"Real Estate"* through one exchange-traded fund (ETF) comprised of stocks in the U.S. real estate industry sector (the "**Underlying Core Real Estate Asset**").

- a **Satellite Portfolio** with fixed weights assigned to the following strategies (with weights indicated in parentheses below):

    - The Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy (20%) – GSISMEBR (the "**Satellite Intraday Equity Component**" and, together with the Satellite Commodity Component (defined below), the "**Satellite Components**" or "**Underlying Alternative Assets**") is a fixed basket allocated 70% to the Goldman Sachs Intraday Momentum Series RES Excess Return Strategy (GSISMRES) (the "Intraday SPX Constituent") and 30% allocated to Goldman Sachs Intraday Momentum Series RNQ Excess Return Strategy (GSISMRNQ) (the "Intraday NDX Constituent"). The Intraday SPX Constituent attempts to benefit from positive or negative intraday momentum in S&P 500 E-mini Futures without taking overnight exposures, and the Intraday NDX Constituent attempts to benefit from positive or negative intraday momentum in Nasdaq 100 E-mini Futures without taking overnight exposures. The Satellite Intraday Equity Component aims to be long futures contracts if the relevant market has risen beyond a certain threshold since the previous close, or short futures contracts if the relevant market has fallen beyond a certain threshold since the previous close. Notional long positions will generally be expected to benefit if the market continues to rise after it has risen from the previous close, and notional short positions will generally be expected to benefit if the market continues to fall after it has fallen from the previous close. All positions of the Satellite Intraday Equity Component are exited at the close to avoid any overnight market risk in the strategy;

    - The Goldman Sachs Commodity Strategy CCC5 (20%) – ABGSCCC5 (the "**Satellite Commodity Component**") is a fixed basket allocated 100% to each of three underlying strategies (300% total exposure, or 60% total exposure on a "look-through" basis without considering the leverage inside the strategies). The Satellite Commodity Component seeks to exploit the behavior of commercial players, speculators and investors in the commodities markets.

- (100%) The Goldman Sachs Commodity CRV8 Strategy (the "Commodity Curve Constituent") (ABGSCRV8) represents a fixed notional exposure to a basket of three underlying strategies (each, a "Commodity Curve Constituent Component" and together, the "Commodity Curve Constituent Components"). The Commodity Curve Constituent seeks to track the investment results of long-short positions based on commodity futures contracts of different maturities, taking "long" positions in longer-dated contracts and "short" positions in shorter-dated contracts. Commodity Curve Constituent performance is based, not on the performance of commodities themselves, but on how longer-dated contracts perform relative to the shorter-dated contracts, with the hope that longer-dated contracts have better performance than shorter-dated contracts. The fixed-weight exposures of the Commodity Curve Constituent to the three Commodity Curve Constituent Components (with weights indicated in parentheses below following their Bloomberg symbols) is as described below:

    - The Goldman Sachs Commodity Strategy 1192 (ABGS1192) (50%) takes a 100% notional long position on the Bloomberg Commodity Index 2 Month Forward (BCOMF2) and a -100% notional position (100% notional short position) on the Bloomberg Commodity Index (BCOM).

    - The Goldman Sachs Commodity Strategy 1191 (ABGS1191) (33.33%) takes a 100% notional long position on the Bloomberg Commodity Index 4 Month Forward (BCOMF4) and a -100% notional position (100% notional short position) on the Bloomberg Commodity Index (BCOM).

    - The Goldman Sachs Commodity Strategy 1190 (ABGS1190) (16.67%) takes a 100% notional long position on the Bloomberg Commodity Index 6 Month Forward (BCOMF6) and a -100% notional position (100% notional short position) on the Bloomberg Commodity Index (BCOM);

- (100%) The Goldman Sachs Commodity COT Timespread Strategy RP67 Strategy (the "Commodity Commitment of Traders Constituent") (ABGSRP67) represents a notional exposure with fixed-target weights allocated among 26 underlying indices (each, a "Commodity Commitment of Traders Constituent Component", and together, the "Commodity Commitment of Traders Constituent Components"). The Commodity Commitment of Traders Constituent seeks to track the investment results of long or short timespread positions based on commodity futures contracts of different maturities, taking "long" positions in longer-dated contracts and "short" positions on shorter-dated contracts (for a short timespread), or

"short" positions in longer-dated contracts and "long" positions on shorter-dated contracts (for a long timespread), based on information relating to current versus historical levels of net speculative position embedded within the CFTC Commitments of Traders report. In general terms, the strategy's investment thesis assumes that deviations in net positions of speculators will revert to historical levels, and seeks to take positions in anticipation of such reversion. The position in each commodity is taken by long or short timespread between front month contracts and 3 month or 6 month forward contracts. The Commodity Commitment of Traders Constituent applies a Commodity Commitment of Traders Constituent Component-level volatility cap of 5% and a Commodity Commitment of Traders Constituent Component-level weight cap of 200%.

- (100%) The Goldman Sachs Commodity Strategy DCC3 (the "Commodity Congestion Constituent", and together with the Commodity Curve Constituent and Commodity Commitment of Traders Constituent, the "Commodity Constituents" and each, a "Commodity Constituent") (ABGSDCC3) represents a fixed notional exposure to a long-short basket of two underlying strategies (each, a "Commodity Congestion Constituent Component", together, the "Commodity Congestion Constituent Components"):

    - (400%) Modified Strategy D226 on the Bloomberg Commodity Index (ENHG226P) (400% notional long position); and

    - (-400%) Modified Strategy D211 on the Bloomberg Commodity Index (ENHGD211) (400% notional short position).

  In general terms, the Commodity Congestion Constituent seeks to time the roll of its underlying positions based on the current net options and futures positions of commodity investors compared to historical median over the prior year based on the CFTC Commitments of Traders Report.

    - If current speculative positions in the market are higher than the median level over the prior year (i.e., commodity investors are currently taking more-than-usual net long positions or less-than-usual net short positions in options and futures with respect to a commodity market) based on the CFTC Commitments of Traders Report, the Commodity Congestion Constituent will assume a position as if it were rolling commodity futures positions in a 5 business day period that begins on the 5th to last business day in the month preceding the month in which the roll would take place for the relevant commodity in a commodities benchmark and ends on the last business day of such month, and which is *before* the standard roll schedule for a commodities benchmark (i.e. the "vanilla roll")

(such practice is called a "pre-pre roll"). Mechanically, this is achieved by taking a "short" position in the contract that a participant would hold prior to rolling (the "Current Contract"), and taking a "long" position in the contract a participant hold after rolling (the "Roll Contract"), in the five business day pre-pre roll period. The strategy maintains those positions until the beginning of the standard roll period, during which the net position is unwound. At the end of the standard roll period, the strategy will have no position in either the Current Contract or the Roll Contract, but hopefully will have extracted a premium by getting ahead of selling pressure affecting the Current Contract and buying pressure affecting the Roll Contract during the standard roll period.

- If current speculative positions in the market are lower than the median level over the prior year (i.e., commodity investors are currently taking less-than-usual net long positions or more-than-usual net short positions in options and futures with respect to a commodity market) based on the CFTC Commitments of Traders Report, the Commodity Congestion Constituent will assume a position as if it were rolling commodity futures positions in a 2-5 business day period (depending on the specific commodity) that begins on the 9th business day of the month in which the roll would take place for the relevant commodity in a commodities benchmark and ends on the 10th, 11th or 13th business day of such month, and which is after the standard roll schedule for a commodities benchmark (i.e. the "vanilla roll") (such practice is called a "post roll"). Mechanically, this is achieved by taking a "long" position in the contract that a participant would hold prior to rolling (the "Current Contract"), and taking a "short" position in the contract a participant hold after rolling (the "Roll Contract") in the standard roll period and then unwinding such positions in the two to five business day post roll period. At the end of the post roll period, the strategy will have no position in either the Current Contract or the Roll Contract, but hopefully will have extracted a premium by exiting its net long position in the Current Contract at higher prices and covering its net short position in the Roll Contract at lower prices during the post roll period.

  - A hypothetical cash allocation (60%) earning a zero net return on an excess return basis.

in each case, subject to certain deductions described below.

CFTC Commitment of Traders (COT) Report

The Commodity Futures Trading Commission (CFTC) publishes the Commitments of Traders (COT) reports (COT reports) to help the public understand market dynamics. Specifically, the COT reports provide a breakdown of each Tuesday's open interest for futures and options on commodity markets in which 20 or more traders hold positions equal to or above the reporting levels established by the CFTC.

The COT reports are based on position data supplied by reporting firms (futures commission merchants (FCMs), clearing members, foreign brokers and exchanges). While the position data is supplied by reporting firms, the actual trader category or classification is based on the predominant business purpose self-reported by traders on the CFTC Form 401 and is subject to review by CFTC staff for reasonableness. CFTC staff does not know specific reasons for traders' positions and hence this information does not factor in determining trader classifications. In practice this means, for example, that the position data for a trader classified in the "producer/merchant/processor/user" category for a particular commodity will include all of its positions in that commodity, regardless of whether the position is for hedging or speculation. Note that traders are able to report business purpose by commodity and, therefore, can have different classifications in the COT reports for different commodities. For one of the reports, Traders in Financial Futures, traders are classified in the same category for all commodities.

Generally, the data in the COT reports is from Tuesday and released Friday. The CFTC receives the data from the reporting firms on Wednesday morning and then corrects and verifies the data for release by Friday afternoon.

Internal Simulated Currency Hedge (as further described in Section 5.)

With respect to Underlying Assets denominated in a currency other than U.S. dollars, the Index reflects an internal simulated currency hedge, which, through a series of hypothetical currency hedging transactions, seeks to partially mitigate non-U.S. dollar-denominated Underlying Assets' exposure to exchange rate fluctuations in the relevant currency.

Core Portfolio Combined Score—Effective Momentum Score and Effective Forward Score (as further described in Section 2.8.)

On each Index Trading Day, for each Underlying Core Asset, a "**Combined Score**" is calculated with respect to each Core Portfolio Optimization Look-Back Period (3, 6 or 9 months) equal to the *sum of* 20% of its Effective Momentum Score (as defined below) for such look-back period *plus* (ii) 100% of its Effective Forward Score (as defined below), as further described in "2.8.1. *Calculation of the Combined Scores*" below.

- The "**Effective Momentum Score**" is generally intended to capture the strength of recent price movements. The Effective Momentum Score for an Underlying Core Asset with respect to a Core Portfolio Optimization Look-Back Period (3, 6 or 9 months) is the annualized daily return in the Volatility Targeted Underlying Asset Value during such period, which can be negative, positive or zero, subject to a minimum value of -0.5 and a

maximum value of 0.5. See "2.8.2. *Calculation of the Effective Momentum Scores*" for further details.

- The "**Effective Forward Score**" is generally intended to capture the return an investment would generate in the absence of underlying price movements.

    - The Effective Forward Score for an Underlying Core Equity Asset and the Underlying Core Real Estate Asset is assumed to be zero.

    - The Effective Forward Score for an Underlying Core Rates Asset, Underlying Core Credit Asset or Underlying Core Commodity Asset on any Index Trading Day is the average weighted **Forward Score** for such Underlying Core Asset over the preceding 21 day averaging period, with weights determined by such Underlying Core Asset's Individual Asset Volatility Target Exposure, subject to a minimum value of -0.15 and a maximum value of 0.15. See "2.8.3. *Calculation of the Effective Forward Scores"* for further details.

Forward Scores (as further described in Section 3.)

The Forward Scores are determined using a different methodology for Underlying Core Rates Asset, Underlying Core Credit Asset or Underlying Core Commodity Asset, as described below.

Rates Forward (as further described in Section 3.1.)

The Forward Score for an Underlying Core Rates Asset is generally based on the *sum of* two components: (1) the yield to maturity of the target tenor underlying the Underlying Core Rates Asset in excess of the short-term interest rate (sometimes referred to as the "term premium", reflecting the slope of the yield curve (i.e., how much yields increase as maturities increase)) *plus* (2) the Underlying Core Rates Asset "roll-down", which reflects a potential yield change in fixed-income instruments as it moves closer to maturity (assuming the overall yield curve does not change). The Forward Score for an Underlying Core Rates Asset will be reduced in circumstances where the corresponding historical realized inflation rate is higher than the corresponding short-term interest rate. See "3.1. *Calculation of Forward Scores of Underlying Core Rates Assets ("Rates Forward")"* for further details.

Credit Forward (as further described in Section 3.2.)

The Forward Score for an Underlying Core Credit Asset is generally based on the *sum of* two components: (1) the "spread" of a credit default swap on the Underlying Core Credit Asset (i.e., the total amount a protection buyer pays a protection seller, as a percentage of the total notional amount, in a swap requiring payment from the protection seller to the protection buyer in the case of certain credit events such as bankruptcies) *plus* (2) the Underlying Core Credit Asset "roll-down", which reflects a potential "spread" change in credit assets as they move closer to maturity (but in the case of Underlying Core Credit Assets, using differences in credit default swap spreads,

rather than yields to maturity, of long term versus short term assets). See "3.2. *Calculation of Forward Scores of Underlying Core Credit Assets ("Credit Forward")"* for further details.

Commodities Forward (as further described in Section 3.3.)

The Forward Score for an Underlying Core Commodity Asset is generally based on its dollar-weighted "backwardation value" measuring the degree to which the prices of shorter dated commodity contracts exceed the prices of longer dated commodity contracts. Backwardation can occur as a result of a higher demand for an asset currently than the contracts maturing in the future through the futures market. The primary cause of backwardation in the commodities' futures market is a shortage of the commodity in the spot market. In addition, the Forward Score for soybeans is subject to a seasonal adjustment to generally eliminate seasonal patterns. See "3.3. *Calculation of Forward Scores of Underlying Core Commodity Assets ("Commodities Forward")"* for further details.

Index Return Deductions and Base Index Volatility Controls

- *Base Index—Core Portfolio and Satellite Portfolio Returns*: The return of the Base Index is calculated based on the sum of returns of the Core Portfolio and the Satellite Portfolio *before* the deduction of any Servicing Costs (including Credit Roll Costs), Rebalancing Costs (including Credit Transaction Costs) or the Deduction Rate (each as described below), and *before* giving effect to the Base Index-level volatility cap of 5% (but *after* giving effect to the Underlying Core Asset-level volatility target of 5% and the application of the Core Portfolio Optimization Algorithm, which includes a 5% volatility constraint). See "2.1. *Calculation of the Base Index Value"* for further details.

- *Base Index to Underlying Asset Look-Through Weights—Base Index Volatility Control Exposure*: The Base Index is subject to a volatility control feature which aims to produce a **Volatility Control Exposure** that provides volatility-controlled exposure to Base Index Underlying Asset Weights. This is achieved by ratably decreasing exposure to the Base Index Underlying Asset Weights to the extent that the historical realized volatility of the Base Index (calculated as described under "1.4. *Calculation of the Base Index Exponentially Weighted Realized Volatility*") exceeds a volatility control level of 5%. The exposures dictated by the Volatility Control Exposure are rebalanced on a daily basis, subject to a maximum exposure of 100%. The volatility measure of the Base Index used to calculate the Volatility Control Exposure is based on the higher of two "exponentially weighted" realized volatilities of Base Index returns using (i) a short-term "decay factor" of 0.94 giving relatively greater weight to more recent volatilities and (ii) a long-term "decay factor" of 0.97 giving relatively greater weight to older volatilities. See "1.3. *Calculation of the Underlying Asset Look-Through Weights"* for further details.

- *Underlying Asset Look-Through Weights to Preliminary Net Index—Servicing Costs*: On each Index Business Day, the Volatility Control Exposure-adjusted weighted returns based on the Underlying Asset Look-Through Weights (i.e., the return before the deduction of any Servicing Costs (including Credit Roll Costs), Rebalancing Costs (including Credit Transaction Costs) or the Deduction Rate, but after giving effect to the Index's various volatility control features) will be reduced by Underlying Asset-specific Servicing Costs applied to any non-zero-weighted notional positions in the Underlying Assets. The Servicing Costs are:

    - with respect to Underlying Assets (if applicable) that are not Underlying Core Credit Assets, daily accruals at fixed "**Asset Servicing Cost Rates**" that vary from 0.02% to 0.60% depending on the Underlying Asset, in each case as specified in Annex A; and

- with respect to each Underlying Core Credit Asset, a cumulative **Credit Roll Cost** accruing over the five credit asset rolling days of each semi-annual credit roll period (Credit Roll Costs do not accrue outside of the credit roll period) based on the Credit Spread Index tracking the "on-the-run" series (i.e., the most recently issued, and typically most liquid, series of a periodically issued security) of the relevant Underlying Core Credit Asset (as specified in Annex A). See "1.7. *Calculation of the Credit Roll Costs"* for further details.

See "1.2. *Calculation of the Net Index Value"* for further details.

- *Preliminary Net Index to Net Index—Rebalancing Costs*: On each Index Trading Day, following deduction of Servicing Costs, the return of the Preliminary Net Index (i.e., the return after the deduction of Servicing Costs (including Credit Roll Costs), and after giving effect to the Index's various volatility control features, but before the deduction of Rebalancing Costs (including Credit Transaction Costs)) is reduced based on the sum of notional turnover-based Rebalancing Costs across all Underlying Assets, calculated with respect to each Underlying Asset as the product of (i) the notional change required to get from (a) the "effective look-through weight" of the Underlying Asset (the actual weight of the Underlying Asset in an index) before rebalancing to (b) the "look-through weight" of the Underlying Asset after rebalancing, multiplied by (ii) an Underlying Asset-specific **Asset Transaction Cost Rate**. The Asset Transaction Cost Rate is:

    - with respect to Underlying Assets (if applicable) that are not Underlying Core Credit Assets, a fixed rate that varies for different Underlying Assets and ranges from 0.005% to 0.08%, as specified in Annex A.
    - with respect to each Underlying Core Credit Asset, a fixed percentage of the Credit Spread Index tracking the "on-the-run" series of the relevant Underlying Core Credit Asset (as specified in Annex A) subject to a certain floor. See "1.8. *Calculation of the Credit Transaction Costs*" for further details.

See "1.2. *Calculation of the Net Index Value*" for further details.

- *Net Index to Index—Deduction Rate*—On each Index Business Day, the return of the Net Index (i.e., the return of the Index after the deduction of Servicing Costs (including Credit Roll Costs) and Rebalancing Costs (including Credit Transaction Costs), and after giving effect to the Index's various volatility control features) is further reduced by a Deduction Rate of 0.50% per annum (accruing daily).

If the value of the Index should fall to or below zero in respect of an Index Business Day, then the Index Value in respect of such Index Business Day and all following Index Business Days shall be zero.

In addition, the Satellite Components sponsored by the Index Sponsor or its affiliates are subject to the following deductions:

- *Satellite Intraday Equity Component*
    - The Intraday SPX Constituent is reduced based on the volume of turnover at a fixed "component transaction cost rate" that is lower for transactions notionally unwound near market close (0.01%), or otherwise higher (0.02%), based on liquidity considerations; and
    - The Intraday NDX Constituent is reduced based on the volume of turnover at a fixed "component transaction cost rate" that is lower for transactions notionally unwound near market close (0.01%), or otherwise higher (0.02%), based on liquidity considerations.
- *Satellite Commodity Component*
    - *Commodity Curve Constituent – subject to 0.02% transaction cost rate inside the Satellite Commodity Component*
        - Goldman Sachs Commodity Strategy 1192 (ABGS1192) is reduced based on its allocation inside the Commodity Curve Constituent at a "servicing cost rate" of 0.2% per annum (accruing daily) and is further reduced based on the volume of turnover at an "asset transaction cost rate" of 0.015%;
        - Goldman Sachs Commodity Strategy 1191 (ABGS1191) is reduced based on its allocation inside the Commodity Curve Constituent at a "servicing cost rate" of 0.25% per annum (accruing daily) and is further reduced based on the volume of turnover at an "asset transaction cost rate" of 0.02%; and

        - Goldman Sachs Commodity Strategy 1190 (ABGS1190) is reduced based on its allocation inside the Commodity Curve Constituent at a "servicing cost rate" of 0.35% per annum (accruing daily) and is further reduced based on the volume of turnover at an "asset transaction cost rate" of 0.025%.

    - *Commodity Commitment of Traders Constituent*
        - Each of the 26 Commodity Commitment of Traders Constituent Component is reduced based on its asset allocation at a Commodity Commitment of Traders Constituent Component-specific "servicing cost rate" varying from 0.08% to 0.28% per annum (accruing daily) and is further reduced based on the volume of turnover at a Commodity Commitment of Traders Constituent Component-specific "asset transaction cost rate" varying from 0.01% to 0.04%;
    - *Commodity Congestion Constituent—— subject to 0.08% transaction cost rate inside the Satellite Commodity Component*
      The Goldman Sachs Commodity Strategy DCC3 (ABGSDCC3) is reduced at a "servicing cost rate" of 0.6% per annum (accruing daily).

Index Value

The Index Value will be published on each Index Business Day.

Goldman Sachs International is the "**Index Sponsor**" and "**Calculation Agent**" for the Index. In the event that the Index Sponsor appoints a replacement Calculation Agent, a public announcement will be made via press release.

Unless otherwise indicated, any public announcement contemplated by this Methodology shall be made on the website of the Index Sponsor.

Certain Risk Factors and Additional Information about the Index

Anyone considering an investment in products referencing the Index should read the appendix to the Methodology entitled "*Certain Risk Factors and Additional Information about the Index*." Neither the Index Sponsor nor any of its affiliates makes any representation or warranty, express or implied, or accepts any liability or responsibility to the owner of any products referencing the Index or any member of the public regarding (i) the advisability of investing in products generally, in the Index, the Base Index, or the Underlying Assets or (ii) the ability of the Index to generate positive results. If you consider acquiring any product referencing the Index you should consult your own accounting, tax, investment and legal advisors before doing so.

The Methodology

Publication of the Index

Goldman Sachs International (the "**Calculation Agent**") calculates and publishes the value of the Index on each Index Business Day and publishes it on both Bloomberg and Reuters. The relevant tickers are specified in Annex A. The Index Sponsor does not have any obligation to ensure that the relevant Calculation Agent continues to publish, and the Index Sponsor may discontinue publication of, the value of the Index at any time at the sole discretion of the Index Committee. The Index Sponsor may at any time appoint one or more replacement Calculation Agents including itself or an affiliate.

Publication of Changes to the Index and to the Methodology

Changes to the components of the Index made by the Index Committee will be publicly announced as promptly as is reasonably practicable and normally at least five Index Business Days prior to the effective date of the changes. Changes to the Methodology made by the Index Committee will be publicly announced at least 60 New York business days prior to their effective date. Adjustments made by the Calculation Agent in response to market adjustment events and potential adjustment events will be publicly announced as promptly as is reasonably practicable.

Index Committee

An Index Committee is responsible for overseeing the Index and the Methodology, while the Calculation Agent is responsible for the day-to-day implementation of the Methodology, for the calculation of the Index, including responding to Market Disruption Events (as defined under "*Market Disruption Events*" below) and potential adjustment events, and for publication of the Index Values and the Methodology. The Index Committee is comprised (as of the date hereof) of employees of The Goldman Sachs Group, Inc. or one or more of its affiliates. At least 40 percent of the committee is comprised of employees of non-revenue generating functions (such employees being "control-side" employees). Other members consist of employees of The Goldman Sachs Group, Inc.'s global markets division, which includes employees who regularly trade the Underlying Assets. If the Index Committee exercises any discretion related to the Index, as described in this Methodology, it must be approved by 100% of the control side employees present at the relevant Index Committee meeting.

The Index Committee may exercise limited discretion in respect of the Index, as contemplated by the Methodology, including in the situations described under "*Changes to the Index Constituents*" *"Changes to the Inflation Data",* and "*Publication of Changes to the Index and to the Methodology*". In addition, the Index Committee intends to review the Methodology at least once a year, and may make changes to the Methodology from time to time (including after any such annual review) if it determines, in its sole discretion, that such changes are necessary or desirable in light of the goals of the Index. Subject to the exceptions described under "*Publication of Changes to the Index and to the Methodology*", any such changes or actions are publicly announced as promptly as is reasonably practicable and normally at least 60 New York business days prior to their effective date. The Calculation Agent may from time to time consult the Index Committee

on matters of interpretation in respect of the Methodology. None of the Index Sponsor, Index Committee, Calculation Agent or any agent of the foregoing is under any obligation to consults investors in any products linked to the Index in connection with its decisions. Notwithstanding anything in this Methodology to the contrary, the Index Committee may discontinue publication of the Index at any time in its sole discretion.

Because the Index Committee considers information about changes to the Index and related matters that may be potentially market moving and material, all Index Committee discussions, including those with the Calculation Agent, are confidential. The Index Committee will determine the successor of any of its members.

1. Index Values

1.1. Calculation of the Index Value

The Index Level on the Index Base Date (as defined in Annex A) is equal to 100. On any following Index Business Day$_{(t)}$, the Index Level is calculated according to the following formula:

If such Index Business Day$_{(t)}$ is an Index Trading Day:

$$IL_t = IL_{ITDt-1} \times \frac{NIL_t}{NIL_{ITDt-1}} \times \exp\left(-Deduction\_Rate \times DCF_{ITDt-1,t}\right)$$

Otherwise:

$$IL_t = IL_{ITDt-1}$$

Where:

Subscript $_{(t)}$ refers to the given Index Business Day$_{(t)}$;
Subscript $_{(ITDt-1)}$ refers to the Index Trading Day immediately preceding (but excluding) Index Business Day$_{(t)}$;
IL_{date} refers to the Index Level as of date$_{(date)}$;
NIL_{date} refers to the Net Index Level as of date$_{(date)}$;
exp means the exponential function;
$Deduction\_Rate$ refers to the Deduction Rate (as specified in Annex A); and
$DCF_{ITDt-1,t}$ is the day count fraction for the period from (but excluding) date$_{(ITDt-1)}$ to (and including) the given date$_{(t)}$, determined by using the USD Rate Day Count Convention (as specified in Annex A).
Note: If on any day the level is equal to or less than zero, the level shall be deemed to be zero on such day and for all future days.

1.2. Calculation of the Net Index Value

The Net Index Level on the Index Base Date (as defined in Annex A) is equal to 100. On any following Index Business Day$_{(t)}$, the Net Index Level is calculated according to the following formulas:

$$NIL_t = NIL_t^{Pre} - RC_t$$

$$NIL_t^{Pre} = NIL_{ITDt-1} \times \left[1 + \sum_{i=1}^{n} w_{i,ITDt-1}^{Look-through} \times \left(\frac{A_{i,t}}{A_{i,ITDt-1}} - 1\right)\right] - SC_t$$

Where:

Subscript (t) refers to the given Index Business Day(t);
Subscript (ITDt-1) refers to the Index Trading Day immediately preceding (but excluding) Index Business Day(t);
NIL_{date} refers to the Net Index Level as of date(date);
NIL_{date}^{Pre} refers to the Net Index Level on calendar date(date) immediately before subtracting the Rebalancing Cost associated with calendar date(date);
RC_{date} means the Rebalancing Cost as of date(date);
n is the number of Underlying Assets (24);
$w_{i,date}^{Look-through}$ is the Underlying Asset Look-through Weight(i) of Underlying Asset(i) as of date(date) (which may be zero);
$A_{i,date}$ means the Underlying Asset Value(i) of Underlying Asset(i) as of date(date) (if such date is not an Asset Business Day for Underlying Asset(i), it shall be the Underlying Asset Value(i) of Underlying Asset(i) as of the immediately preceding Asset Business Day); and
SC_{date} means the Servicing Cost as of date(date).

1.3. Calculation of the Underlying Asset Look-through Weights

On each Index Trading Day(t) starting from the third Index Trading Day following the Base Index Base Date (as defined in Annex A), the Underlying Asset Look-through Weight(i) of an Underlying Asset(i) is calculated as follows:

If a Market Disruption Event (as defined under "*Market Disruption Events*" below) occurs or is continuing with respect to such Underlying Asset(i), and such Index Trading Day(t) is after (but not including) the Launch Date (as defined in Annex A) (for the avoidance of doubt, it is not applicable to Underlying Asset(i) if a Market Disruption Event occurs or is continuing with respect to other Underlying Assets but not Underlying Asset(i) on such day):

$$w_{i,t}^{Look-through} = \overline{w}_{i,t}^{Look-through}$$

Otherwise:

$$w_{i,t}^{Look-through} = w_{i,ITDt-2}^{BI} \times VCE_{ITDt-2}$$

Where:

Subscript (t) refers to the relevant Index Trading Day;
Subscript (ITDt-x) refers to the x-th Index Trading Day immediately preceding (but not including) the calendar date(t);
$w_{i,t}^{Look-through}$ is the Underlying Asset Look-through Weight(i) of Underlying Asset(i) as of date(t);
$\overline{w}_{i,t}^{Look-through}$ is the Actual Underlying Asset Look-through Weight(i) of Underlying Asset(i) as of date(t) (calculated as described under *"1.5. Calculation of the Rebalancing Costs"*);
$w_{i,date}^{BI}$ is the Base Index Underlying Asset Weight(i) of Underlying Asset(i) as of date(date);
VCE_{date} refers to the Volatility Control Exposure with respect to date(date), and is calculated

according to the following formula:

$$VCE_{date} = \min\left[100\%, \frac{VCL}{\max(BIRV_{date}^{0.97}, BIRV_{date}^{0.94})}\right]$$

Where:

Subscript (date) refers to the given day(date);
VCE_{date} refers to the Volatility Control Exposure with respect to date(date);
VCL refers to the Volatility Control Level (as specified in Annex A); and
$BIRV_{date}^{\lambda}$ refers to the Base Index Exponentially Weighted Realized Volatility with respect to a decay factor λ as of date(date).

1.4. Calculation of the Base Index Exponentially Weighted Realized Volatility

The Base Index Exponentially Weighted Realized Volatility on the Base Index Base Date (as defined in Annex A) and the first four Index Trading Days following the Base Index Base Date is equal to the Volatility Control Level (as specified in Annex A). On each following Index Trading Day(t), the Base Index Exponentially Weighted Realized Volatility is calculated as follows:

$$BIRV_t^{\lambda} = \sqrt{\lambda \times \left(BIRV_{ITDt-1}^{\lambda}\right)^2 + (1-\lambda) \times \frac{250}{5} \times \left[\ln\left(\frac{BI_t}{BI_{ITDt-5}}\right)\right]^2}$$

Where:

Subscript (t) refers to the relevant Index Trading Day;
Subscript (ITDt-x) refers to the x-th Index Trading Day immediately preceding (but excluding) Index Trading Day(t);
$BIRV_{date}^{\lambda}$ refers to the Base Index Exponentially Weighted Realized Volatility with respect to a decay factor λ as of date(date);
BI_{date} means the Base Index Value as of date(date); and
λ is the corresponding decay factor.

1.5. Calculation of the Rebalancing Costs

The Rebalancing Cost on the Index Base Date (as defined in Annex A) and any Index Business Day that is not an Index Trading Day is 0.

On any other Index Trading Day(t) following the Index Base Date, the Rebalancing Cost is calculated as follows:

$$RC_t = \sum_{i=1}^{n} ATC_{i,t} \times |w_{i,t}^{Look-through} - \overline{w}_{i,t}^{Look-through}| \times NIL_t^{Pre}$$

$$\overline{w}_{i,t}^{Look-through} = w_{i,ITDt-1}^{Look-through} \times \frac{A_{i,t}}{A_{i,ITDt-1}} \times \frac{NIL_{ITDt-1}}{NIL_t^{Pre}}$$

Where:

Subscript (t) refers to the relevant Index Trading Day;
Subscript (ITDt-1) refers to the Index Trading Day immediately preceding (but not including) Index Trading Day*(t)*;
Subscript (i) refers to the relevant Underlying Asset;
RC_{date} means the Rebalancing Cost as of date(date);
n is the number of Underlying Assets (24);
$ATC_{i,t}$ means the Asset Transaction Cost Rate of Underlying Asset(i) on date(t) (as specified in Annex A);
$w_{i,date}^{Look-through}$ is the Underlying Asset Look-through Weight(i) of Underlying Asset(i) as of date(date);
$\overline{w}_{i,date}^{Look-through}$ is the Actual Underlying Asset Look-through Weight(i) of Underlying Asset(i) as of date(date);
$A_{i,date}$ means the Underlying Asset Value(i) of Underlying Asset(i) as of date(date);
NIL_{date} refers to the Net Index Level as of date(date); and
NIL_{date}^{Pre} refers to the Net Index Level on calendar date(date) immediately before subtracting the Rebalancing Cost associated with calendar date(date).

1.6. Calculation of the Servicing Costs

The Servicing Cost on the Index Base Date (as defined in Annex A) is 0. On each following Index Business Day(t), the Servicing Cost is calculated as follows:

$$SC_t = NIL_{ITDt-1} \times \sum_{i=1}^{n} \left[\left| w_{i,ITDt-1}^{Look-through} \right| \times \sum_{s=ITDt-1}^{t-1} \left(DCF_{s,s+1} \times ASC_{i,s} \right) \right]$$

Where:

Subscript (t) refers to the relevant Index Business Day;
Subscript (ITDt-1) refers to the Index Trading Day immediately preceding (but not including) Index Business Day *(t)*;
Subscript (s) refers to the Index Business Day in the period from (and including) the Index Trading Day immediately preceding (but not including) Index Business Day*(t)* to (and including) the Index Business Day immediately preceding (but not including) Index Business Day*(t)*;
Subscript (s+1) refers to the Index Business Day immediately following (but not including) Index Business Day *(s)*;
Subscript (i) refers to the relevant Underlying Asset;

SC_{date} means the Servicing Cost as of date(date);
NIL_{date} refers to the Net Index Level as of date(date);
$DCF_{s,s+1}$ is the day count fraction for the period from (but excluding) date(s) to (and including) the given date(s+1), determined by using the USD Rate Day Count Convention (as specified in Annex A);
n is the number of eligible Underlying Assets (24);
$ASC_{i,date}$ means the Asset Servicing Cost Rate of Underlying Asset(i) as of date(date) (as specified in Annex A); and
$w_{i,date}^{Look-through}$ is the Underlying Asset Look-through Weight(i) of Underlying Asset(i) as of date(date).

1.7. Calculation of the Credit Roll Costs

The Credit Roll Cost of Underlying Core Credit Asset(i) on the Index Base Date (as defined in Annex A) is 0. On each following Index Business Day(t), the Credit Roll Cost of Underlying Core Credit Asset(i) is calculated as follows:

$$CRC_{i,t} = \frac{\sum_s CARC_{i,s}}{DCF_{t,t+1}}$$

$$CARC_{i,s} = \begin{cases} \frac{10 \times 0.35\% \times CSIL_{i,t}}{NCRD \times 10{,}000} & if\ such\ day(s)\ is\ a\ Credit\ Asset\ Rolling\ Day\ for\ such\ Underlying\ Asset \\ 0 & otherwise \end{cases}$$

Where:

Subscript (t) refers to the relevant Index Business Day;
Subscript (t+1) refers to the Index Business Day immediately following (but not including) Index Business Day *(t)*;
Subscript (s) refers to the relevant each Asset Business Day from (and excluding) Index Business Day *(t)* to (and including) Index Business Day*(t+1)*;
Subscript (i) refers to the relevant Underlying Core Credit Asset in the *Credits Asset Class* (as specified in Annex A);
$CRC_{i,date}$ means the Credit Roll Cost of Underlying Core Credit Asset(i) as of date(date);
$CARC_{i,\ date}$ means the Credit Asset Roll Cost of Underlying Core Credit Asset(i) as of date(date);
$DCF_{t,t+1}$ is the day count fraction for the period from (but excluding) date(t) to (and including) the given date(t+1), determined by using the USD Rate Day Count Convention (as specified in Annex A);
$CSIL_{i,date}$ is the Credit Spread Index Level of Underlying Core Credit Asset(i) on calendar date(date) (if such day is not an Asset Business Day of Underlying Core Credit Asset(i), it shall be the Credit Spread Index Level of Underlying Core Credit Asset(i) on the immediately preceding Asset Business Day); and

$NCRD$ refers to the Number of Credit Roll Days (as specified in Annex A).

1.8. Calculation of the Credit Transaction Costs

On each Index Business Day$_{(t)}$, the Credit Transaction Cost of Underlying Core Credit Asset$_{(i)}$ is calculated as follows:

$$CTC_{i,t} = \frac{5 \times max\left(0.50\% \times CSIL_{i,ABDt-1}, CTCFloor_i\right)}{10{,}000}$$

Where:

Subscript (t) refers to the relevant Index Business Day;
Subscript (i) refers to the relevant Underlying Core Credit Asset in the Credits Asset Class (as specified in Annex A);
Subscript (ABDt-1) refers to the Asset Business Day immediately preceding (but not including) Index Business Day *(t)*;
$CTC_{i,date}$ means the Credit Transaction Cost of Underlying Core Credit Asset$_{(i)}$ as of date$_{(date)}$;
$CSIL_{i,date}$ is the Credit Spread Index Level of Underlying Core Credit Asset$_{(i)}$ on calendar date$_{(date)}$ (if such day is not an Asset Business Day of Underlying Core Credit Asset$_{(i)}$, it shall be the Credit Spread Index Level of Underlying Core Credit Asset$_{(i)}$ on the immediately preceding Asset Business Day); and
$CTCFloor_i$ means the Credit Transaction Cost Rate Floor of Underlying Core Credit Asset$_{(i)}$ (as specified in Annex A).

2. Calculation of Base Index Value

2.1. Calculation of the Base Index Value

The Base Index Value on each Index Trading Day from the Base Index Base Date (as defined in Annex A) to (and not including) the third Index Trading Day following the Base Index Base Date is equal to 100. On any given following Index Trading Day$_{(t)}$ from (and including) the third Index Trading Day following the Base Index Base Date, the Base Index Value is calculated according to the following formula:

$$BI_t = BI_{ITDt-1} \times \left[1 + \left(\frac{CPIV_t}{CPIV_{ITDt-1}} - 1\right) + \left(\frac{SPIV_t}{SPIV_{ITDt-1}} - 1\right)\right]$$

Where:

Subscript $_{(t)}$ refers to the given Index Trading Day$_{(t)}$;
Subscript $_{(ITDt-x)}$ refers to the x-th Index Trading Day immediately preceding (but not including) the Index Trading Day $_{(t)}$;
BI_{date} means the Base Index Value as of date $_{(date)}$;
$CPIV_{date}$ means the Core Portfolio Index Value as of date $_{(date)}$; and
$SPIV_{date}$ means the Satellite Portfolio Index Value as of date $_{(date)}$.

2.2. Calculation of the Core Portfolio Index Value

The Core Portfolio Index Value on each Index Trading Day from the Base Index Base Date (as defined in Annex A) to (and not including) the third Index Trading Day following the Base Index Base Date is equal to 100. On any given following Index Trading Day$_{(t)}$ from (and including) the third Index Trading Day following the Base Index Base Date, the Core Portfolio Index Value is calculated according to the following formula:

$$CPIV_t = CPIV_{ITDt-1} \times \left[1 + \sum_{i=1}^{n} w_{i,ITDt-3}^{BI} \times \left(\frac{A_{i,t}}{A_{i,ITDt-1}} - 1\right)\right]$$

Where:

Subscript $_{(t)}$ refers to the given Index Trading Day$_{(t)}$;
Subscript $_{(ITDt-x)}$ refers to the x-th Index Trading Day immediately preceding (but not including) the Index Trading Day$_{(t)}$;
Subscript $_{(i)}$ refers to the relevant Underlying Core Asset;
$CPIV_{date}$ means the Core Portfolio Index Value as of date $_{(date)}$;
n is the number of eligible Underlying Core Assets (22) (For avoidance of doubt, it does not include the 2 Underlying Alternative Assets);

$w_{i,date}^{BI}$ is the Base Index Underlying Asset Weight$_{(i)}$ of Underlying Core Asset$_{(i)}$ as of date$_{(date)}$ (which may be zero); and
$A_{i,date}$ means the Underlying Asset Value$_{(i)}$ of Underlying Core Asset$_{(i)}$ as of date$_{(date)}$.

2.3. Calculation of the Satellite Portfolio Index Value

The Satellite Portfolio Index Value on each Index Trading Day from the Base Index Base Date (as defined in Annex A) to (and not including) the third Index Trading Day following the Base Index Base Date is equal to 100. On any given following Index Trading Day$_{(t)}$ from (and including) the third Index Trading Day following the Base Index Base Date, the Satellite Portfolio Index Value is calculated according to the following formula:

$$SPIV_t = SPIV_{ITDt-1} \times \left[1 + \sum_{i=1}^{n} w_{i,ITDt-3}^{BI} \times \left(\frac{A_{i,t}}{A_{i,ITDt-1}} - 1\right)\right]$$

Where:

Subscript $_{(t)}$ refers to the given Index Trading Day$_{(t)}$;
Subscript $_{(ITDt-x)}$ refers to the x-th Index Trading Day immediately preceding (but not including) the Index Trading Day$_{(t)}$;
Subscript $_{(i)}$ refers to the relevant Underlying Alternative Asset;
$SPIV_{date}$ means the Satellite Portfolio Index Value as of date $_{(date)}$;
n is the number of eligible Underlying Alternative Assets (2) (For avoidance of doubt, it only covers the 2 Underlying Assets in the Alternative Asset class);
$w_{i,date}^{BI}$ is the Base Index Underlying Asset Weight$_{(i)}$ of Underlying Alternative Asset$_{(i)}$ as of date$_{(date)}$; and
$A_{i,date}$ means the Underlying Asset Value$_{(i)}$ of Underlying Alternative Asset$_{(i)}$ as of date$_{(date)}$.

2.4. Calculation of the Base Index Underlying Asset Weight

On each Index Trading Day$_{(t)}$ from (and including) the Base Index Base Date (as defined in Annex A), the Base Index Underlying Asset Weight$_{(i)}$ of an Underlying Asset $_{(i)}$ is calculated according to the following:

If such Underlying Asset is an Underlying Core Asset:

$$w_{i,t}^{BI} = w_{i,t}^{OPT\_smoothed} \times w_{i,t}^{Individual\_Asset\_VTE}$$

If such Underlying Asset is an Underlying Alternative Asset:

$$w_{i,t}^{BI} = w_i^{AltTarget}$$

Where:

Subscript (i) refers to the relevant Underlying Asset;
Subscript (t) refers to the relevant Index Trading Day;
$w_{i,t}^{BI}$ is the the Base Index Underlying Asset Weight$_{(i)}$ of Underlying Asset$_{(i)}$ on calendar date$_{(t)}$;
$w_{i,t}^{OPT\_smoothed}$ is the Smoothed Optimized Weight to Volatility Targeted Underlying Core Asset$_{(i)}$ on calendar date$_{(t)}$;
$w_{i,t}^{Individual\_Asset\_VTE}$ is the Individual Asset Volatility Target Exposure to Underlying Core Asset$_{(i)}$ on calendar date$_{(t)}$; and
$w_{i}^{AltTarget}$ is the Alternative Asset Target Weight of Underlying Alternative Asset$_{(i)}$ (as specified in Annex A underlying "Overview the Underlying Alternative Assets").

2.5. Calculation of the Smoothed Optimized Weight

On each Index Trading Day$_{(t)}$ from (and including) the Base Index Base Date (as defined in Annex A), the Smoothed Optimized Weight to Volatility Targeted Underlying Core Asset$_{(i)}$ is calculated according to the following:

$$w_{i,t}^{OPT\_smoothed} = \frac{1}{21} \times \sum_{s} w_{i,s}^{Averaged\ Target}$$

Where:

Subscript (i) refers to the relevant Underlying Core Asset;
Subscript (t) refers to the relevant Index Trading Day;
Subscript (s) refers to the relevant Index Trading Day and each Index Trading Day prior to such Index Trading Day within the relevant Weight Averaging Period;
$w_{i,t}^{OPT\_smoothed}$ is the Smoothed Optimized Weight to Volatility Targeted Underlying Core Asset$_{(i)}$ on calendar date$_{(t)}$; and
$w_{i,s}^{Averaged\ Target}$ is the Averaged Underlying Asset Target Weight of Underlying Core Asset$_{(i)}$ on calendar date$_{(s)}$.
The "**Weight Averaging Period**" on any given Index Trading Day is the period from (but excluding) the day which is 21 Index Trading Days prior to the given Index Trading Day to (and including) the given Index Trading Day.

2.6. Calculation of the Averaged Underlying Asset Target Weight

On each Index Trading Day$_{(t)}$, the Averaged Underlying Asset Target Weight$_{(i)}$ of an Underlying Core Asset $_{(i)}$ is calculated according to the following formula:

$$w_{i,t}^{Averaged\ Target} = \frac{1}{3} \times \sum_{lb} w_{i,t}^{OPTTarget,lb}$$

where:

Subscript (i) refers to the relevant Underlying Core Asset;
Subscript (t) refers to the relevant Index Trading Day;
Subscript (lb) refers to the relevant Core Portfolio Optimization Look-Back Period;
$w_{i,t}^{Averaged\ Target}$ is the Averaged Underlying Asset Target Weight(i) of Underlying Core Asset (i) on calendar day(t) (with rounding effects treated as described below under "Rounding Convention"); and
$w_{i,t}^{OPTTarget,lb}$ is the Target Optimized Weight(i) of Underlying Core Asset (i) for the Core Portfolio Optimization Look-Back Period(lb) on calendar day(t) as determined by the Methodology algorithm.

Rounding Convention: The Averaged Underlying Asset Target Weights computed at each Index Trading Day is rounded to the nearest three decimal places with 0.05% (0.0005) being rounded upward. For example, if the optimal Averaged Underlying Asset Target Weights is 12.36% (0.1236), it would be rounded up to 12.4% (0.124).

2.7. Calculation of the Target Optimized Weight

The respective target optimized weights of the 22 Underlying Core Assets in the Core Portfolio (each a "Target Optimized Weight" and together the "Target Optimized Weights"), which can be as low as zero, are determined for each of the Core Portfolio Optimization Look-Back Periods on each Index Trading Day starting from (and including) the Core Portfolio Optimization Base Date (as defined in Annex A), within the investment and volatility constraints described in Annex A and below, by applying the Portfolio Optimization Methodology algorithm.

$$w_{1,t}^{OPTTarget,lb}, w_{2,t}^{OPTTarget,lb}, w_{3,t}^{OPTTarget,lb} \ldots. = \Omega_t^{OPTTarget,lb}$$

$$\Omega_t^{OPTTarget,lb} = \underset{\vec{w}}{\operatorname{argmin}} \sum_i - w_{i,t}^{lb} \times CombineScore_{i,t}^{lb}$$

Subject to the constraints:

$$\sum_{i,j} w_{i,t}^{lb} \times w_{j,t}^{lb} \times AssetCov_{i,j,t}^{lb} \leq Vol\_Target^2$$

$$\sum_i w_{i,t}^{lb} \times w_{i,ITDt-1}^{Individual\_Asset\_VTE} \leq L_{max}$$

$$\sum_{i \epsilon AC} w_{i,t}^{lb} \times w_{i,ITDt-1}^{Individual\_Asset\_VTE} \leq AssetClassCap_{AC} \text{ for each Core Asset Class}$$

$$0 \leq w_{i,t}^{lb} \leq WeightCap_i \text{ for each Underlying Core Asset}$$

Where:

Subscript (t) refers to the relevant Index Trading Day (as specified in Annex A);
Subscript (ITDt-x) refers to the x-th Index Trading Day immediately preceding (but not including) the Index Trading Day*(t)*;
Subscript (i) and *(j)* refer to the relevant Underlying Core Asset;
$w_{i,t}^{OPTTarget,lb}$ means the Target Optimized Weight of Underlying Core Asset(i) as of date(t) corresponding to the Core Portfolio Optimization Look-Back Period(lb);
$\Omega_t^{OPTTarget,lb}$ means the set of Target Optimized Weights of Underlying Core Assets as of date(t) corresponding to the Core Portfolio Optimization Look-Back Period(lb);
$CombineScore_{i,t}^{lb}$ means the Combined Score of Underlying Core Asset(i) as of date*(t)* corresponding to the Core Portfolio Optimization Look-Back Period(lb);
$AssetCov_{i,j,t}^{lb}$ means the Annualized Underlying Asset Covariance between Underlying Core Asset(i) and Underlying Core Asset(j) during the relevant Core Portfolio Optimization Look-Back Period(lb) on date(t);
Vol_Target refers to the Volatility Target (as specified in Annex A);
$w_{i,date}^{Individual\_Asset\_VTE}$ refers to the Individual Asset Volatility Target Exposure to Underlying Core Asset(i) on calendar date(date);
L_{max} refers to the Core Portfolio Leverage Cap (as specified in Annex A);
$AssetClassCap_{AC}$ refers to the Asset Class Weight Cap for Core Asset Class(AC) (as specified in Annex A); and
$WeightCap_i$ refers to the Weight Cap for Underlying Core Asset(i) (as specified in Annex A).
The "**Core Portfolio Optimization Look-Back Period**" on any given Index Trading Day is the period from (and excluding) the day which falls respectively nine (9), six (6) or three (3) calendar months before the Index Trading Day prior to the given Index Trading Day (or, if any such date is not an Index Trading Day, the Index Trading Day immediately preceding such day) to (and including) the Index Trading Day prior to the given Index Trading Day.

2.8. Calculation of the Combined Scores

2.8.1. Calculation of the Combined Scores

For any Index Trading Day$_{(t)}$ and relevant look-back period$_{(lb)}$ in respect of Underlying Core Asset$_{(i)}$:

$$CombineScore_{i,t}^{lb} = 0.2 \times MOM_{i,t}^{lb} + 1 \times Effective\_Fwd_{i,t}$$

Where:

Subscript (t) refers to the given Index Trading Day;
Subscript (i) refers to the given Underlying Core Asset$_{(i)}$;
$CombineScore_{i,t}^{lb}$ is the Combined Score of Underlying Core Asset$_{(i)}$ as of date$_{(t)}$ corresponding to the look-back period$_{(lb)}$;
$MOM_{i,t}^{lb}$ is the Effective Momentum Score of Underlying Core Asset$_{(i)}$ as of date$_{(t)}$ corresponding to the look-back period$_{(lb)}$; and
$Effective\_Fwd_{i,t}$ is the Effective Forward Score of Underlying Core Asset$_{(i)}$ as of date$_{(t)}$.

2.8.2. Calculation of the Effective Momentum Scores

For any Index Trading Day$_{(t)}$ and relevant look-back period$_{(lb)}$ in respect of Underlying Core Asset$_{(i)}$:

$$MOM_{i,t}^{lb} = max\left[-0.5, min\left[0.5, \frac{230}{N_{t,lb}} \times \sum_{s} \ln\left(\frac{VTA_{i,s}}{VTA_{i,s-1}}\right)\right]\right]$$

Where:

Subscript (t) refers to the given Index Trading Day;
Subscript (i) refers to the given Underlying Core Asset$_{(i)}$;
Subscript (s) refers to each Index Trading Day within the relevant look-back period$_{(lb)}$;
*Subscript (*lb*)* refers to the relevant look-back period;
$MOM_{i,t}^{lb}$ is the Effective Momentum Score of Underlying Core Asset$_{(i)}$ on date$_{(t)}$ corresponding to look-back period$_{(lb)}$;
$N_{t,lb}$ is the actual number of Index Trading Days within the relevant look-back period$_{(lb)}$; and
$VTA_{i,s}$ is the Volatility Targeted Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ on Index Trading Day$_{(s)}$; and
$VTA_{i,s-1}$ is the Volatility Targeted Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ on the Index Trading Day immediately preceding Index Trading Day$_{(s)}$.

2.8.3. Calculation of the Effective Forward Scores

For any Index Trading Day$_{(t)}$ and for Underlying Core Asset$_{(i)}$ which is classified under Equities Asset Class or Real Estate Asset Class:

$$Effective\_Fwd_{i,t} = 0$$

For Underlying Core Asset$_{(i)}$ which is classified under Rates Asset Class:

$$Effective\_Fwd_{i,t} = max\left[-0.15, min\left[0.15, w_{i,ITDt-1}^{Individual\_Asset\_VTE} \times \frac{1}{21} \times \sum_{s} AdjFwd_{i,s}\right]\right]$$

For Underlying Core Asset$_{(i)}$ which is classified under Credits and Commodities Asset Classes:

$$Effective\_Fwd_{i,t} = max\left[-0.15, min\left[0.15, w_{i,ITDt-1}^{Individual\_Asset\_VTE} \times \frac{1}{21} \times \sum_{s} Fwd_{i,s}\right]\right]$$

Subscript (t) refers to the given Index Trading Day;
Subscript (ITDt-x) refers to the x-th Index Trading Day immediately preceding (but not including) the Index Trading Day$_{(t)}$;
Subscript (i) refers to the given Underlying Core Asset;
Subscript (s) refers to the relevant Index Trading Day and each Index Trading Day prior to such Index Trading Day within the relevant Forward Score Averaging Period;
$Effective\_Fwd_{i,t}$ is the Effective Forward Score of Underlying Core Asset$_{(i)}$ on date$_{(t)}$;
$AdjFwd_{i,t}$ is the Adjusted Forward Score of Underlying Core Rates Asset$_{(i)}$ on date$_{(t)}$ (calculated as described under "*3.1. Calculation of Forward Scores of Underlying Core Rates Assets ("Rates Forward")"*);
$Fwd_{i,date}$ is the Forward Score of Underlying Core Asset$_{(i)}$ on Date$_{(date)}$ (calculated as described under "*3. Calculation of Forward Scores"*); and
$w_{i,date}^{Individual\_Asset\_VTE}$ is the Individual Asset Volatility Target Exposure to Underlying Core Asset$_{(i)}$ on calendar date$_{(date)}$.
The "**Forward Score Averaging Period**" on any given Index Trading Day is the period from (but excluding) the day which is 22 Index Trading Days prior to the given Index Trading Day to (and not including) the given Index Trading Day.

2.9. Calculation of the Annualized Underlying Asset Covariance

The Annualized Underlying Asset Covariance between Underlying Asset$_{(i)}$ and Underlying Asset$_{(j)}$ during the relevant look-back period$_{(lb)}$ on calendar day$_{(t)}$, and is calculated according to the following formula:

$$AssetCov_{i,j,t}^{lb} = \frac{230}{5 \times N_{t,lb}} \times \sum_{s} \left[\ln\left(\frac{VTA_{i,s}}{VTA_{i,s-5}}\right) \times \ln\left(\frac{VTA_{j,s}}{VTA_{j,s-5}}\right) \right]$$

Where:
Subscript (i) refers to the relevant Underlying Asset$_{(i)}$;
Subscript (j) refers to the relevant Underlying Asset$_{(j)}$;
Subscript (s) refers to each Index Trading Day within the relevant look-back period$_{(lb)}$;
Subscript (t) refers to the relevant calendar day;
Subscript (lb) refers to the relevant look-back period;
$N_{t,lb}$ is the actual number of Index Trading Days within the relevant look-back period$_{(lb)}$;
$VTA_{i,s}$ is the Volatility Targeted Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ on Index Trading Day$_{(s)}$;
$VTA_{i,s-5}$ is the Volatility Targeted Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ on the fifth (5th) Index Trading Day immediately preceding Index Trading Day$_{(s)}$;
$VTA_{j,s}$ is the Volatility Targeted Underlying Asset Value$_{(j)}$ of Underlying Asset$_{(j)}$ on Index Trading Day$_{(s)}$; and
$VTA_{j,s-5}$ is the Volatility Targeted Underlying Asset Value$_{(j)}$ of Underlying Asset$_{(j)}$ on the fifth (5th) Index Trading Day immediately preceding Index Trading Day$_{(s)}$.

3. Calculation of Forward Scores

3.1. Calculation of Forward Scores of Underlying Core Rates Assets ("Rates Forward")

In respect of relevant calculation day (*t)* and Underlying Core Rates Asset (*i)* (for all the assets in Rates asset class), the Forward Score is calculated in accordance with the following formula:

$$Fwd_{i,t} = Long\ Yield_i(t) - Short\ Rate_i(_{Lookback\ Date_i(t)}) + Rolldown_i(t)$$

Where:

Duration$_i$(t) means, in respect of Underlying Core Rates Asset (*i)* and relevant calculation day (*t)*, an amount calculated in accordance with the following formula:

$$Duration_i(t) = \frac{1}{Long\ Yield_i(t)} \times \left[1 - \frac{1}{\left(1 + Long\ Yield_i(t)\right)^{Tenor\ Long_i}}\right]$$

Lookback Date$_i$(t) means, in respect of relevant calculation day (t) and Underlying Core Rates Asset (*i)*, if Short Rate Style(t) is "RFR", the second last day prior to and including relevant calculation day (t) on which the Short Rate Data Source in respect of the Underlying Core Rates Asset is scheduled to be published, otherwise if Short Rate Style(t) is "Not Specified", the relevant calculation day *(t)*;

Long Yield$_i$(t) means, in respect of relevant calculation day (*t)* and Underlying Core Rates Asset *(i)*, the percentage value published on the Long Yield Data Source in respect of such Underlying Core Rates Asset *(i)* and such relevant calculation day (*t)*, as determined by the Calculation Agent. If such relevant calculation day is not a day on which the Long Yield Data Source is scheduled to publish such value, the relevant exchange is not open or such value is otherwise unavailable for any other reason, then *Long Yield$_i$(t)* in respect of such relevant calculation day shall be deemed to be the value on the first day preceding such relevant calculation day on which the relevant Long Yield Data Source published such value;

Long Yield Data Source means, in respect of an Underlying Core Rates Asset, the data source specified in the column entitled "Long Yield Data Source" corresponding to such Underlying Core Rates Asset as specified in Annex A;

Rolldown$_i$(t) means, in respect of Underlying Core Rates Asset (*i)* and relevant calculation day (*t)*, an amount calculated in accordance with the following formula:

$$Rolldown_i(t) = Duration_i(t) \times \frac{Long\ Yield_i(t) - Short\ Yield_i(t)}{Tenor\ Long_i - Tenor\ Short_i}$$

Short Rate$_i$(t) means, in respect of relevant calculation day (*t)* and Underlying Core Rates Asset *(i)*, the percentage value published on the Short Rate Data Source in respect of such Underlying Core Rates Asset on such relevant calculation day, as determined by the Calculation Agent. If such relevant calculation day is not a day on which the Short Rate Data Source is scheduled to

publish such value, or such value is otherwise unavailable for any other reason, then Short $Rate_i(t)$ in respect of such relevant calculation day shall be deemed to be the value on the first day preceding such relevant calculation day on which the relevant Short Rate Data Source published such value;

Short Rate Data Source means, in respect of an Underlying Core Rates Asset, the data source specified in the column entitled "Short Rate Data Source" corresponding to such Underlying Core Rates Asset as specified in Annex A;

Short $Yield_i(t)$ means, in respect of relevant calculation day (*t)* and Underlying Core Rates Asset *(i)*, the percentage value published on the Short Yield Data Source in respect of such Underlying Core Rates Asset on such relevant calculation day, as determined by the Calculation Agent. If such relevant calculation day is not a day on which the Short Yield Data Source is scheduled to publish such value, the relevant exchange is not open or such value is otherwise unavailable for any other reason, then *Short* $Yield_i(t)$ in respect of such relevant calculation day shall be deemed to be the value on the first day preceding such relevant calculation day on which the relevant Short Yield Data Source published such value;

Short Yield Data Source means, in respect of an Underlying Core Rates Asset, the data source specified in the column entitled "Short Yield Data Source" corresponding to such Underlying Core Rates Asset as specified in Annex A;

Tenor $Long_i$ means, in respect of Underlying Core Rates Asset (*i)*, the number specified in the column entitled "Tenor Long" corresponding to such Underlying Core Rates Asset as specified in Annex A; and

Tenor $Short_i$ means, in respect of Underlying Core Rates Asset (*i)*, the number specified in the column entitled "Tenor Short" corresponding to such Underlying Core Rates Asset as specified in Annex A.

Calculation of Adjusted Forward Scores of Underlying Core Rates Assets

In respect of relevant calculation day *(t)* and Underlying Core Rates Asset *(i)* (for all the assets in Rates asset class), the Adjusted Forward Score is calculated in accordance with the following formula:

$$AdjFwd_{i,t} = Fwd_{i,t} - \max\left[Inflation_{i,IOBt} - Short\ Rate_i\left(Lookback\ Date_i(t)\right), 0\right]$$

Where:

$AdjFwd_{i,t}$ is the Adjusted Forward Score of Underlying Core Rates Asset(i) on date(t) ;

$Fwd_{i,t}$ is the Forward Score of Underlying Core Rates Asset(i) on date(t);

Short $Rate_i(t)$ means, in respect of relevant calculation day (*t)* and Underlying Core Rates Asset *(i)*, the percentage value published on the Short Rate Data Source in respect of such Underlying Core Rates Asset on such relevant calculation day, as determined by the Calculation Agent. If such relevant calculation day is not a day on which the Short Rate Data Source is scheduled to publish such value, or such value is otherwise unavailable for any other reason, then Short

$Rate_i(t)$ in respect of such relevant calculation day shall be deemed to be the value on the first day preceding such relevant calculation day on which the relevant Short Rate Data Source published such value;

Short Rate Data Source means, in respect of an Underlying Core Rates Asset, the data source specified in the column entitled "Short Rate Data Source" corresponding to such Underlying Core Rates Asset as specified in Annex A;

Lookback Date$_i$(t) means, in respect of relevant calculation day *(t)* and Underlying Core Rates Asset (*i)*, if Short Rate Style(t) is "RFR", the second last day prior to and including relevant calculation day *(t*) on which the Short Rate Data Source in respect of the Underlying Core Rates Asset is scheduled to be published, otherwise if Short Rate Style*(t)* is "Not Specified", the relevant calculation day *(t)*; and

$Inflation_{i,IOBt}$ means in respect of relevant calculation day (*t)* and Underlying Core Rates Asset *(i)*, the latest official percentage value published for the previous months or quarters (not including expected value for the current month or quarter) on the Inflation Data Source in respect of such Underlying Core Rates Asset as of the relevant Inflation Observation Day of such relevant calculation day, as observed and determined by the Calculation Agent (the "Inflation Data") (for the avoidance of doubt, based on the regular publication schedule, for the Inflation Data of U.S., Germany and Japan it is normally the data published for the month prior to the month of the relevant Inflation Observation Day, and for the Inflation Data of Australia the data published for the quarter prior to the month of the relevant Inflation Observation Day);

$IOBt$ means in respect of a calculation day *(t),* the Inflation Observation Day (which is the last Index Business Day of each calendar month) immediately preceding (and including) such calculation day (*t)*; and

Inflation Data Source means, in respect of an Underlying Core Rates Asset, the data source specified in the column entitled "Inflation Data Source" corresponding to such Underlying Core Rates Asset as specified in Annex A.

Note: if revised or restated values of the Inflation Data are available in respect of previous months or quarters, the Index will not revise or restate any previously calculated Adjusted Forward Scores, any resulting allocations or the calculation of any past Index Values in response to a revision or restatement of the Inflation Data.

3.2. Calculation of Forward Scores of Underlying Core Credit Assets ("Credit Forward")

In respect of relevant calculation day *(t)* and Underlying Core Credit Asset (*i)* (for all the assets in Credits asset class), the Forward Score is calculated in accordance with the following formula:

$$Fwd_{i,t} = Long\ Credit\ Spread_i(t) + Rolldown_i(t)$$

Long Credit Spread$_i$(t) means, in respect of relevant calculation day (*t)* and Underlying Core Credit Asset (*i)*, the value published on the Long Credit Spread Data Source in respect of such

Underlying Core Credit Asset and such relevant calculation day (*t*), as determined by the Calculation Agent. If such relevant calculation day is not a day on which the Long Credit Spread Data Source is scheduled to publish such value, or such value is otherwise unavailable for any other reason, then the *Long Credit Spread$_i$(t)* in respect of such relevant calculation day shall be deemed to be the value in respect of such Underlying Core Credit Asset on the first day preceding such relevant calculation day on which the relevant Long Credit Spread Data Source published such value;

Long Credit Spread Data Source means, in respect of an Underlying Core Credit Asset, the data source specified in the column entitled "Long Credit Spread Data Source" corresponding to such Underlying Core Credit Asset as specified in Annex A;

Short Credit Spread$_i$(t) means, in respect of relevant calculation day (*t*) and Underlying Core Credit Asset (*i*), the value published on the Short Credit Spread Data Source in respect of such Underlying Core Credit Asset and such relevant calculation day (*t*), as determined by the Calculation Agent. If such relevant calculation day is not a day on which the Short Credit Spread Data Source is scheduled to publish such value, or such value is otherwise unavailable for any other reason, then the *Short Credit Spread$_i$(t)* in respect of such relevant calculation day shall be deemed to be the value in respect of such Underlying Core Credit Asset on the first day preceding such relevant calculation day on which the relevant Short Credit Spread Data Source published such value;

Short Credit Spread Data Source means, in respect of an Underlying Core Credit Asset, the data source specified in the column entitled "Short Credit Spread Data Source" corresponding to such Underlying Core Credit Asset as specified in Annex A;

Long Yield$_i$(t) means, in respect of relevant calculation day (*t*) and Underlying Core Credit Asset (*i*), the percentage value published on the Long Yield Data Source in respect of such Underlying Core Credit Asset and such relevant calculation day (*t*), as determined by the Calculation Agent. If such relevant calculation day is not a day on which the Long Yield Data Source is scheduled to publish such percentage value, the relevant exchange is not open or such value is otherwise unavailable for any other reason, then *Long Yield$_i$(t)* in respect of such relevant calculation day shall be deemed to be the value on the first day preceding such relevant calculation day on which the relevant Long Yield Data Source published such value;

Long Yield Data Source means, in respect of an Underlying Core Credit Asset, the data source specified in the column entitled "Long Yield Data Source" corresponding to such Underlying Core Credit Asset as specified in Annex A;

Rolldown$_i$(t) means, in respect of Underlying Core Credit Asset (*i*) and relevant calculation day (*t*), an amount calculated in accordance with the following formula:

$$Rolldown_i(t) = Duration_i(t) \times \frac{Long\ Credit\ Spread_i(t) - Short\ Credit\ Spread_i(t)}{Tenor\ Long_i - Tenor\ Short_i}$$

Duration$_i$(t) means, in respect of Underlying Core Credit Asset (*i*) and relevant calculation day

(*t*), an amount calculated in accordance with the following formula:

$$Duration_i(t) = \frac{1}{Long\ Rate_i(t)} \times \left[1 - \frac{1}{\left(1 + Long\ Rate_i(t)\right)^{Tenor\ Long_i}}\right]$$

Long Rate$_i$(t) means, in respect of Underlying Core Credit Asset (*i)* and relevant calculation day (*t)*, an amount calculated in accordance with the following formula:

$$Long\ Rate_i(t) = \frac{Long\ Credit\ Spread_i(t)}{(1 - Recovery\ Rate_i)} + Long\ Yield_i(t)$$

Tenor Long$_i$ means, in respect of Underlying Core Credit Asset (*i)*, the number specified in the column entitled "Tenor Long" corresponding to such Underlying Core Credit Asset as specified in Annex A;
Tenor Short$_i$ means, in respect of Underlying Core Credit Asset *i*, the number specified in the column entitled "Tenor Short" corresponding to such Underlying Core Credit Asset as specified in Annex A; and
Recovery Rate$_i$ means, in respect of an Underlying Core Credit Asset, the value specified in the column entitled "Recovery Rate" corresponding to such Underlying Core Credit Asset as specified in Annex A.

3.3. Calculation of Forward Scores of Underlying Core Commodity Assets ("Commodities Forward")

In respect of relevant calculation day (*t)*, Underlying Core Commodity Asset *(i)* (for all the assets in Commodities asset class) the Forward Score is calculated in accordance with the following formula:

$$Fwd_{i,t} = IMFwd_i(t) - Seasonal\ Adjustment_i \times [Seasonal\ Average_i(t) - Annual\ Average_i(t)]$$

Where:
If relevant calculation day (*t)* is not a day the offices of the Calculation Agent in New York are open for business, then for the purpose of calculating $Fwd_{i,t}$, the relevant calculation day (*t)* shall be deemed to be the first day immediately preceding such relevant calculation day on which the offices of the Calculation Agent in New York are open for business.
Seasonal Adjustment$_i$(t) shall be set to 1 if "Seasonal Adjustment" is specified as "Applicable" in respect of the Underlying Core Commodity Asset *(i)* as specified in Annex A, or 0 if it is set to "Not Applicable" or if not so specified.

Calculation of *IMFwd*

$IMFwd_i(t)$ means, in respect of Underlying Core Commodity Asset (*i)* and relevant calculation day (*t)*, an amount calculated in accordance with the following formula:

$$IMFwd_i(t) = \sum_c Dollar\ Weight_{\ c}(t) \times Backwardation\ Value_c(t)$$

Dollar Weight$_c$(t) means the percentage weight of Contract Expiration *(c)* in Underlying Core Commodity Asset (*i)* on day (*t)*, which is calculated as the ratio of (A) the product of (i) the number of units of Contract Expiration *(c)* included in one unit of Underlying Core Commodity Asset (*i)* on day (*t)*, as determined in accordance with the relevant rules or methodology in respect of Underlying Core Commodity Asset (*i)*, multiplied by (ii) the Daily Contract Reference Price of Contract Expiration *(c)* on day (*t)*, and divided by (B) the Timely Level of Underlying Core Commodity Asset *(i)* on day (*t)*;
Backwardation Value$_c$(t) means the Backwardation Value$_{cp}$(t) in respect of the Contract Pair consisting of Contract Expiration *(c)* and its corresponding Comparison Contract Expiration on day (*t)*, calculated in accordance with the following formula:

$$Backwardation\ Value_{cp}(t) = \frac{Price_{SDC(cp)}(t) - Price_{LDC(cp)}(t)}{Price_{LDC(cp)}(t)} \times \frac{12}{Number\ of\ Months_{cp}}$$

SDC(cp) means the Short Dated Contract Expiration of Contract Pair *(cp)*, which is the Contract Expiration that has the earlier Contract Month among the two Contract Expirations included in Contract Pair *(cp)*;
LDC(cp) means the Long Dated Contract Expiration of Contract Pair *(cp)*, which is the Contract Expiration that has the later Contract Month among the two Contract Expirations included in Contract Pair *(cp)*;
Number of Months$_{cp}$ means the number of calendar months in the period commencing on, but excluding, the Contract Month of the Short Dated Contract Expiration in respect of Contract Pair *cp*, and including, the Contract Month of the Long Dated Contract Expiration in respect of Contract Pair *(cp)*;
Price$_x$(t) means the Daily Contract Reference Price of Contract Expiration *(x)* on day (*t)*;
Contract Pair means a set of two distinct Contract Expirations with respect to the same Futures Contract;
Comparison Contract Expiration means, in respect of a Contract Expiration *(c)* and a day (*t)*, the Designated Contract Expiration, with respect to the same futures contract of Contract Expiration *(c)*, which has the latest Contract Month falling prior to the Contract Month of Contract Expiration *(c)* and the Last Valid Day of such Designated Contract Expiration falling after day (*t)*. If such Designated Contract Expiration does not exist, the Comparison Contract Expiration shall be the Designated Contract Expiration with the earliest Contract Month falling after the Contract Month of Contract Expiration *(c)*;

Designated Contract Expiration means, in respect of a Futures Contract, each of the Contract Expirations corresponding to such Futures Contract set out as specified in Annex A;
Contract Month means, in respect of a Designated Contract Expiration, the calendar month specified in respect of such Designated Contract Expiration;
Last Valid Day means, in respect of a Designated Contract Expiration the Last Trading Date of such Designated Contract Expiration; and
Last Trading Date means, in respect of a Designated Contract Expiration, the last day on which such Designated Contract Expiration can be traded on the relevant Trading Facility, as determined and announced by such Trading Facility for such Designated Contract Expiration.

Calculation of Seasonal Average

Seasonal Average$_i$(t) means the seasonal average with respect to Underlying Core Commodity Asset (*i)* and day (*t)* and calculated as the arithmetic average of *IMFwd*$_i$(t) with respect to Underlying Core Commodity Asset *(i)* of each Seasonal Lookback Day*(t)*;
Seasonal Lookback Day(t) means, with respect to day (*t),* each day on which the offices of the Calculation Agent in New York are open for business falling in any Seasonal Window(t) in the Lookback Window*(t)*;
Seasonal Window(t) means, for each calendar year the period starting from, and including, the Seasonal Window Start Date with respect to day *(t)* and such calendar year, to, and including, the Seasonal Window End Date with respect to day *(t)* and such calendar year*;*
Seasonal Window Start Date shall have the meaning given to such term as specified in Annex A;
Seasonal Window End Date shall have the meaning given to such term as specified in Annex A;
Lookback Window(t) means, with respect to day *(t),* the period starting from, and including, Lookback Window Start*(t),* to, and including Lookback Window End(t);
Lookback Window Start(t) means, with respect to day *(t),* the calendar day that falls 182 days before the Equivalent Observation Date falling the Number Of Lookback Years before such day *t,* or, if such calendar day is not a day on which the offices of the Calculation Agent in New York are open for business, the day immediately following such calendar day on which the offices of the Calculation Agent in New York are open for business;
Lookback Window End(t) means, with respect to day *(t),* the calendar day that falls 182 days after the Equivalent Observation Date falling 1 year before such day *t,* or, if such calendar day is not a day on which the offices of the Calculation Agent in New York are open for business, the day immediately preceding such calendar day on which the offices of the Calculation Agent in New York are open for business;
Equivalent Observation Date means, in respect of a day and each calendar year, the day falling on the same day and month as such day in such calendar year, provided that if such Day falls on February 29 of a leap year or February 28 of a non-leap year, the Equivalent Observation Date in such calendar year shall be the last calendar day of February in such calendar year; and
Number Of Lookback Years means a number as specified in Annex A.

Calculation of Annual Average

Annual Average$_i$(t) means the yearly average with respect to Underlying Core Commodity Asset (*i)* and day (*t)*, and calculated as the arithmetic average of *IMFwd*$_i$(t) with respect to Underlying Core Commodity Asset (*i)* of each day on which the offices of the Calculation Agent in New York are open for business falling in the Lookback Window(t).

4. Volatility Targeted Underlying Asset Value

4.1. Calculation of the Volatility Targeted Underlying Asset Value

The Volatility Targeted Underlying Asset Value$_{(i)}$ of an Underlying Asset$_{(i)}$ on the Underlying Asset Base Date (as defined in Annex A) and the immediately following 2 relevant Asset Business Days is equal to 100. On each Asset Business Day$_{(t)}$ starting from the third relevant Asset Business Day following the Underlying Asset Base Date (as defined in Annex A), the Volatility Targeted Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ is calculated according to the following formula:

$$VTA_{i,t} = VTA_{i,t-1} \times \left[1 + w_{i,t-3}^{Individual\_Asset\_VTE} \times \left(\frac{A_{i,t}}{A_{i,t-1}} - 1\right)\right]$$

Where:

Subscript (t) refers to the given Asset Business Day;
Subscript (i) refers to the given Underlying Asset;
Subscript (t-x) refers to the x-th Asset Business Day immediately preceding (but not including) Asset Business Day$_{(t)}$;
$A_{i,date}$ means the Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ as of date$_{(date)}$;
$VTA_{i,date}$ means the Volatility Targeted Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ as of date$_{(date)}$; and
$w_{i,t}^{Individual\_Asset\_VTE}$ is the Individual Asset Volatility Target Exposure to Underlying Asset$_{(i)}$ on calendar date$_{(date)}$.

4.2. Calculation of the Individual Asset Volatility Target Exposure

On any Asset Business Day$_{(t)}$ for each Underlying Asset$_{(i)}$ in the Alternative Asset Class, the Individual Asset Volatility Target Exposure to Underlying Asset$_{(i)}$ on calendar date$_{(t)}$ is calculated according to the following:

$$w_{i,t}^{Individual\_Asset\_VTE} = 1.0$$

Otherwise:

On the Underlying Asset Base Date (as defined in Annex A):

$$w_{i,t}^{Individual\_Asset\_VTE} = 1.0$$

On each Asset Business Day$_{(t)}$ starting from the Asset Business Day following the Underlying Asset Base Date (as defined in Annex A), the Individual Asset Volatility Target Exposure to Underlying Asset$_{(i)}$ on calendar date$_{(t)}$ is calculated according to the following:

$$w_{i,t}^{Individual\_Asset\_VTE} = w_{i,t-1}^{Individual\_Asset\_VTE} + \max(-0.2, \min(0.2, (Prelim\_VTE_{i,t} - w_{i,t-1}^{Individual\_Asset\_VTE})))$$

Where:

Subscript (t) refers to the given Asset Business Day;
Subscript (i) refers to the given Underlying Asset;
Subscript (t-1) refers to the Asset Business Day immediately preceding (but not including) Asset Business Day(t);
$w_{i,t}^{Individual\_Asset\_VTE}$ is the Individual Asset Volatility Target Exposure to Underlying Asset(i) on calendar date(t);

$Prelim\_VTE_{i,t}$ refers to the Preliminary Volatility Control Exposure of Underlying Asset(i) with respect to date(t), and is calculated according to the following formula:

$$Prelim\_VTE_{i,t} = \min\left[200\%, \frac{Vol\_Target}{\max\left(RV_{i,t}^{0.97}, RV_{i,t}^{0.94}\right)}\right]$$

Where:

Subscript (t) refers to the given Asset Business Day (t);
$Prelim\_VTE_{i,t}$ refers to the Preliminary Volatility Target Exposure of Underlying Asset(i) with respect to date(t);
Vol_Target refers to the Volatility Target (as specified in Annex A); and
$RV_{i,t}^{\lambda}$ refers to the Exponentially Weighted Realized Volatility of Underlying Asset (i) with respect to a decay factor λ as of date(t).

4.3. Calculation of the Exponentially Weighted Realized Volatility of Underlying Asset

The Exponentially Weighted Realized Volatility of Underlying Asset(i) on the Underlying Asset Base Date (as defined in Annex A) is equal to Volatility Target (as specified in Annex A). On each following Asset Business Day (t), Exponentially Weighted Realized Volatility of Underlying Asset(i) is calculated as follows:

$$RV_{i,t}^{\lambda} = \sqrt{\lambda \times \left(RV_{i,t-1}^{\lambda}\right)^2 + (1-\lambda) \times 250 \times \left[\ln\left(\frac{A_{i,t}}{A_{i,t-1}}\right)\right]^2}$$

Where:

Subscript (t) refers to the relevant Asset Business Day;
Subscript (t-x) refers to the x-th Asset Business Day immediately preceding (but excluding) Asset Business Day(t);

$RV_{i,date}^{\lambda}$ refers to the Exponentially Weighted Realized Volatility of Underlying Asset$_{(i)}$ with respect to a decay factor λ as of date$_{(date)}$;
$A_{i,t}$ means the Underlying Asset$_{(i)}$ as of date$_{(date)}$; and
λ is the corresponding decay factor.

5. Calculation of the Underlying Asset Value

5.1. The Underlying Asset Value of Excess Return Underlying Assets

If the Return Type of an Underlying Asset$_{(i)}$ is "Excess Return" (as specified in the sections "*Overview of the Underlying Core Assets*" and "*Overview of the Underlying Alternative Assets*" in Annex A), the Underlying Asset shall be an Excess Return Underlying Asset. The Underlying Asset Value$_{(i)}$ of an Excess Return Underlying Asset$_{(i)}$ on the Underlying Asset Base Date (as defined in Annex A) is equal to 100. On any Asset Business Day$_{(t)}$ following the Underlying Asset Base Date, the Underlying Asset Value$_{(i)}$ of Excess Return Underlying Asset$_{(i)}$ is calculated according to the following formula:

(i) If the Underlying Asset Currency (as specified in the sections "*Overview of the Underlying Core Assets*" and "*Overview of the Underlying Alternative Assets*" in Annex A) of such Underlying Asset is U.S. dollars:

$$A_{i,t} = A_{i,t-1} \times \frac{RL_{i,t}}{RL_{i,t-1}}$$

(ii) Otherwise:

$$A_{i,t} = A_{i,t-1} \times \left[1 + \left(\frac{RL_{i,t}}{RL_{i,t-1}} - 1\right) \times \frac{FX_{i,t}}{FX_{i,t-1}}\right]$$

Where:

Subscript (t) refers to the given Asset Business Day;
Subscript (i) refers to the given Underlying Asset;
Subscript (t-1) refers to the Asset Business Day immediately preceding (but not including) Asset Business Day$_{(t)}$;
$A_{i,date}$ means the Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ as of date$_{(date)}$;
$RL_{i,date}$ means the Reference Level of Underlying Asset$_{(i)}$ as of date$_{(date)}$; and
$FX_{i,date}$ means the applicable Currency Exchange Rate for Underlying Asset $_{(i)}$ as of date$_{(t)}$.

5.2. The Underlying Asset Value of Total Return Underlying Assets

5.2.1. Calculation of the Underlying Asset Values of Total Return Underlying Assets

If the Return Type of an Underlying Asset$_{(i)}$ is "Total Return" (as specified in the sections "*Overview of the Underlying Core Assets*" and "*Overview of the Underlying Alternative Assets*" in Annex A), the Underlying Asset shall be a Total Return Underlying Asset. The Underlying Asset Value$_{(i)}$ of a Total Return Underlying Asset$_{(i)}$ on the Underlying Asset Base Date (as defined in Annex A) is equal to 100. On any Asset Business Day$_{(t)}$ following the Underlying Asset Base

Date, the Underlying Asset Value$_{(i)}$ of Total Return Underlying Asset$_{(i)}$ is calculated according to the following formula:

(i) If the Underlying Asset is the Underlying ETF:

$$A_{i,t} = A_{i,t-1} \times \left(1 + \frac{RL_{i,t} + D_{i,t}}{RL_{i,t-1}} - \frac{DFA_{i,t}^{USD}}{DFA_{i,t-1}^{USD}}\right)$$

(ii) If the Underlying Asset is not the Underlying ETF and the Underlying Asset Currency (as specified in the sections "*Overview of the Underlying Core Assets*" and "*Overview of the Underlying Alternative Assets*" in Annex A) of such Underlying Asset is U.S. dollars:

$$A_{i,t} = A_{i,t-1} \times \left(1 + \frac{RL_{i,t}}{RL_{i,t-1}} - \frac{DFA_{i,t}^{USD}}{DFA_{i,t-1}^{USD}}\right)$$

(iii) Otherwise:

$$A_{i,t} = A_{i,t-1} \times \left[1 + \left(\frac{RL_{i,t}}{RL_{i,t-1}} \times \frac{FX_{i,t}}{FX_{i,t-1}}\right) - \left(\frac{CFA_{i,t}^{CCY}}{CFA_{i,t-1}^{CCY}} \times \frac{FX_{i,t}}{FX_{i,t-1}}\right)\right]$$

Where:

Subscript $_{(t)}$ refers to the given Asset Business Day;
Subscript $_{(i)}$ refers to the given Underlying Asset;
Subscript $_{(t-1)}$ refers to the Asset Business Day immediately preceding (but not including) Asset Business Day$_{(t)}$;
Superscript $^{(CCY)}$ refers to the relevant currency;
$A_{i,date}$ means the Underlying Asset Value$_{(i)}$ of Underlying Asset$_{(i)}$ as of date$_{(date)}$;
$RL_{i,date}$ means the Reference Level of Underlying Asset$_{(i)}$ as of date$_{(date)}$;
$D_{i,t}$ means, for the Underlying Asset$_{(i)}$ (which is the Underlying ETF), the aggregate amount of cash dividends with an ex-dividend date during the period from but excluding Asset Business Day$_{(t-1)}$ to and including Asset Business Day$_{(t)}$;
$FX_{i,date}$ means the applicable Currency Exchange Rate for Underlying Asset $_{(i)}$ as of date$_{(t)}$;
$DFA_{i,date}^{USD}$ means the U.S. Dollar Financing Amount Level (determined as described under "*5.2.2. Calculation of the U.S. Dollar Financing Amount Level*") as of date$_{(date)}$; and
$CFA_{i,date}^{CCY}$ means the Currency Financing Amount Level (determined as described under "*5.2.3. Calculation of the Currency Financing Amount Levels"*) for the currency in which the non-U.S. dollar denominated Underlying Asset$_{(i)}$ is denominated as of date$_{(date)}$.
Note: If on any day the U.S. Dollar Financing Amount Level or the Currency Financing Amount Level is zero, the Index Committee may determine in its sole discretion to instruct the Calculation Agent to calculate the Underlying Asset Value using an alternative formula.

5.2.2. Calculation of the U.S. Dollar Financing Amount Level

The U.S. Dollar Financing Amount Level has an initial value of 100 as of the U.S. Dollar Financing Amount Base Date (as defined in Annex A).

On any calendar date $_{(t)}$ that is not a Saturday or Sunday following the U.S. Dollar Financing Amount Base Date, the "**U.S. Dollar Financing Amount Level"** will be calculated according to the following formula:

$$DFA_t^{USD} = DFA_{NRt}^{USD} \times \left(1 + NIR_{NRt} \times DCF_{NRt,t}\right)$$

Where:

Subscript (t) refers to the given calendar day that is not a Saturday or Sunday;
Subscript (NRt) refers to the Notional Interest Rate Reset Day (as defined in Annex A) immediately preceding day$_{(t)}$;
DFA_t^{USD} means the U.S. Dollar Financing Amount Level as of date$_{(t)}$;
DFA_{NRt}^{USD} means the U.S. Dollar Financing Amount Level as of date$_{(NRt)}$;
NIR_{NRt} means the Notional Interest Rate as of date$_{(NRt)}$; and
$DCF_{NRt,t}$ is the day count fraction for the period from (but excluding) date$_{(NRt)}$ to (and including) date$_{(t)}$, determined by using the USD Rate Day Count Convention (as specified in Annex A).
Note: If on any day the level is equal to or less than zero, the level shall be deemed to be zero on such day and for all future days.

5.2.3. Calculation of the Currency Financing Amount Levels

The Currency Financing Amount Level of each of the relevant currencies has an initial value of 100 as of the Currency Financing Amount Base Date (as specified in Annex A).

On any calendar date$_{(t)}$ that is not a Saturday or Sunday following the Currency Financing Amount Base Date, the "**Currency Financing Amount Level**" for each of the relevant currencies will be calculated according to the following formula (on the Currency Financing Amount Base Date, the level is 100):

$$CFA_t^{CCY} = CFA_{CRt}^{CCY} \times \left(1 + R_{CRt}^{CCY} \times DCF_{CRt,t}^{CCY}\right)$$

Where:

Subscript (t) refers to the given calendar day that is not a Saturday or Sunday;
Subscript (CRt) refers to the Currency Financing Amount Rate Reset Day (as specified in Annex A) immediately preceding day$_{(t)}$;
Superscript (CCY) refers to the relevant currency;
CFA_t^{CCY} means the Currency Financing Amount Level of the relevant currency as of date$_{(t)}$;
CFA_{CRt}^{CCY} means the Currency Financing Amount Level of the relevant currency as of date$_{(CRt)}$;
R_{CRt}^{CCY} means the Currency Financing Amount Rate of the relevant currency as of date$_{(CRt)}$; and

$DCF_{CRt,t}^{CCY}$ is the day count fraction for the period from (but excluding) $date_{(CRt)}$ to (and including) $date_{(t)}$, determined by using the Currency Financing Amount Rate Day Count Convention of the relevant currency (as specified in Annex A).

Note: If on any day the level is equal to or less than zero, the level shall be deemed to be zero on such day and for all future days.

Historical Data

The "**Launch Date**" for the Index, which is the date the Calculation Agent began calculating the Index, is specified in Annex A. Therefore, historical information provided for the period from the Index Base Date until the Launch Date is hypothetical and is provided as an illustration of how the Index would have performed during the period had the Calculation Agent begun calculating the Index on the Index Base Date using the Methodology. This data does not reflect actual performance, nor was a contemporaneous investment model run of the Index. Historical information for the period from and after the Launch Date is based on the actual performance of the Index.

Historical levels of the Index are calculated with reference to the Reference Levels of the Underlying Assets and Inflation Data determined based on the latest available data published by the relevant data sponsors (as specified in Annex A). The historical levels of Underlying Core Credit Assets before March 2007 (the relevant start date of the available time series published by the relevant Underlying Asset Sponsors (as specified in Annex A)) are assumed to be the same as the first available levels published by the relevant Underlying Asset Sponsors in March 2007 and the corresponding Credit Spread Index Levels prior to March 2007 are assumed to be zero for backtesting purposes. For the historical values of Credit Spread Index Levels not available from the data source as specified in Annex A, the historical values are collected by the Calculation Agent on a best-efforts basis for backtesting purposes. The historical values of Forward Scores of Underlying Core Credit Assets are assumed to be zero before March 2007 for "US Investment Grade Credit" and "Europe Investment Grade Credit", July 2007 for "US High Yield Credit", and November 2007 for "Europe High Yield Credit" due to limited data history from the relevant data sponsor. In addition, the historical Reference Levels of the Satellite Intraday Equity Component before January 2005 (the start date of the available time series published by the relevant Underlying Asset Sponsor (as specified in Annex A)) are assumed to be the same as the first available Reference Level published by the relevant Underlying Asset Sponsor (i.e., January 2005) for backtesting purposes. See "Certain Risk Factors and Additional Information About the Index" below.

Market Disruption Events

A "**Market Disruption Event**" may be deemed by the Index Committee to have occurred in any of the following situations:

(i) The official closing price, level, rate or other measure of any Index Constituent is unavailable on any relevant day on which such measure is scheduled to be published (including cases where a member of the Goldman Sachs Group is the Index Component Sponsor, publisher or benchmark provider of an Index Constituent);

(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 a material Exchange and Trading Venue Disruption (as determined by the Calculation Agent);

(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;

(iv) the net asset value per share of the Underlying ETF is not calculated or is not announced by the Underlying ETF or the sponsor of such Underlying ETF and such event has a material impact on the Index as determined by the Index Sponsor;

(v) the ETF or the relevant sponsor of any Underlying ETF suspends creations or redemptions of shares of such Underlying ETF and such event has a material impact on the Index as determined by the Index Sponsor;

(vi) upon the occurrence or existence of an Index Dislocation;

(vii) upon the occurrence or existence of a Force Majeure Event;

(viii) upon the occurrence or existence of a Currency Exchange Rate Disruption Event; or

(ix) upon the occurrence or existence of an Interest Rate Disruption Event.

A "**Trading Disruption**" means

(i) with respect to the Underlying ETF, 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 ETF shares, related Reference Index or futures or options on the Underlying ETF shares or Reference Index; or

(ii) with respect to an Underlying Asset that is not the Underlying ETF, any suspension of or limitation imposed on trading by the relevant Exchange, and whether by reason of movements in price exceeding limits permitted by the relevant reference exchange or otherwise, relating to any component of an Index Component.

An "**Exchange and Trading Venue Disruption**" means

(i) with respect to the Underlying ETF, any event that disrupts or impairs (as determined by the Calculation Agent in consultation with the Index Committee) the ability of market participants in general to effect transactions in, or obtain market values for, the shares of the Underlying ETF on the relevant Exchange or futures or options on the Underlying ETF shares or Reference Index, in each case on the relevant Related Exchange; or

(ii) with respect to an Underlying Asset that is not the Underlying ETF, any event that disrupts or impairs (as determined by the Calculation Agent in consultation with the Index Committee) the ability of market participants in general to effect transactions in, materially increases the costs of transacting in, or obtain market values for, any Index

Component or its underlying constituents on the relevant Exchange (if applicable), or the credit trading venue (Tradeweb as of the date of this document, or a successor trading venue) in respect of Underlying Assets in the Credits Asset Class.

"**Exchange**" means

(i) with respect to the Underlying ETF, the primary exchange on which shares of such Underlying ETF are listed; or

(ii) with respect to an Underlying Asset that is not the Underlying ETF, the relevant exchanges on which the components of the Index Components are traded as set forth in Annex A.

"**Related Exchange**" means, in respect of the Underlying ETF or Reference Index, as the case may be, the primary exchange (or exchanges) or quotation system (or quotation systems) on which futures or options contracts relating to such Underlying ETF or Reference Index, as the case may be, are traded, if any.

An "**Index Dislocation**" means the Calculation Agent (in consultation with the Index Committee) determines that a market participant, as a result of a market-wide condition relating to the Index or any Index Constituent 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 Index Constituent, 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 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, Calculation Agent or any of their respective affiliates that the Calculation Agent determines is likely to have a material effect on an Index Constituent, or on its ability to perform its role in respect of the Index.

"**Currency Exchange Rate Disruption Event**" means (and a Currency Exchange Rate Disruption Event shall be deemed to have occurred if):

(i) in respect of a Currency Exchange Rate and a relevant day:

a) such currency exchange rate splits into dual or multiple currency exchange rates;

b) the currency exchange rate specified in Annex A is not published on a date on which it is scheduled for publication and the Calculation Agent is unable to determine (after consultation with the Index Committee) any commercially reasonable substitute;

c) an event has occurred in or affecting any relevant jurisdiction that generally makes

it impossible to deliver (1) a relevant currency (as specified in Annex A) from accounts inside such jurisdiction to accounts outside such jurisdiction, or (2) a relevant currency (as specified in Annex A) between accounts inside such jurisdiction for the applicable reference currency or to a party that is a non-resident of such jurisdiction; or

d) the applicable reference currency ceases to exist and has not been replaced by a new currency; and

(ii) in respect of a Currency Financing Amount Rate and a relevant day:

a) such Currency Financing Amount Rate is not published on a date on which it is scheduled for publication; or

b) such Currency Financing Amount Rate is no longer published.

"**Interest Rate Disruption Event"** means (and an Interest Rate Disruption Event shall be deemed to have occurred if), in respect of the Notional Interest Rate and a relevant day:

(a) such Notional Interest Rate is not published on a date on which it is scheduled for publication; or

(b) such Notional Interest Rate is no longer published.

The Calculation Agent, in consultation with the Index Committee, may use the Currency Financing Amount Rate or Notional Interest Rate in effect prior to such market disruption during the period of any market disruption event with respect to a Currency Financing Amount Rate or Notional Interest Rate.

Rebalancing; Impact of Disruptions

If an Index rebalancing (as described in Sections 1.2 and 1.3) must be effected on an Index Trading Day on which a Market Disruption Event occurs with respect to any Underlying Asset included in the Index, the Calculation Agent shall then calculate and publish a timely index value for such day assuming (i) for each Underlying Asset that had not been affected by such Market Disruption Event, the Underlying Asset Value calculated with the official reference level of Underlying Asset on such day and (ii) for each Underlying Asset that had been affected by such Market Disruption Event, the Underlying Asset Value calculated with the timely reference level of Underlying Asset on such day (for the avoidance of doubt, if a timely reference level of Underlying Asset is not available to the Calculation Agent using commercial reasonable efforts, the Calculation Agent may use the reference levels of Underlying Asset on the immediately preceding asset business day). After the given Market Disruption Event ends and the final tradable reference levels of the affected Underlying Asset become available by the relevant sponsor, the Calculation Agent may recalculate the index values using the final tradable reference levels with the previously calculated underlying asset quantities (calculated with timely reference levels and implied by the underlying asset weights, volatility target exposures, scaling factors, and other values) as the calculation base for

the Index Value going forward, and for the avoidance of doubt may not restate the previously published timely index value unless described otherwise under *"Revision to Index Values in the Event of Data Error"*.

On the sixth New York business day following the occurrence of a Market Disruption Event with respect to any Underlying Asset included in the Index, if such Market Disruption Event is continuing, the Index Committee may determine in its sole discretion to instruct the Calculation Agent to calculate the Index using a specified price. In the event the Index Committee determines on such sixth New York business day, in its sole discretion, that no such instructions should be given to the Calculation Agent, the Index Committee may revisit such determination on any business day thereafter on which the Market Disruption Event is continuing.

Notwithstanding the foregoing, in the event of a Force Majeure Event in which all Underlying Assets are affected, the calculation and publication of the Index will be postponed until, in the determination of the Calculation Agent, such Force Majeure Event has been resolved.

Potential Adjustment Events

In the event that the Underlying ETF is affected by a "**potential adjustment event**", the Calculation Agent may make adjustments to the level of such Underlying ETF and/or the quantities of the Underlying ETF if it determines that the event could have a diluting or concentrative effect on the theoretical value of the Underlying ETF shares and would not otherwise be accounted for in the Index. Table 1 below describes the potential adjustment events for which adjustments may be made by the Calculation Agent.

Table 1. Potential Adjustment Events.

Potential Adjustment Event	Adjustment	Adjustment Description
Cash Dividends	Yes	The Dividend is reinvested in that Underlying ETF.
Special / Extraordinary Dividends	Yes	The Dividend is reinvested in that Underlying ETF.
Return on Capital	Yes	The Dividend is reinvested in that Underlying ETF.
Stock Dividend	Yes	Where shareholders receive "B" new shares for every "A" share held, the number of shares is adjusted by multiplying the original number of shares by the

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

For potential adjustment events not listed in the table above, the 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 ETF shares and would not otherwise be accounted for in the Index. Any such adjustments are publicly announced in advance wherever practicable.

Revision to Index Values in the Event of Data Error

If the Calculation Agent determines that the price made available for an Index Constituent (or the published level of a Notional Interest Rate, Currency Exchange Rate, Currency Financing Amount Rate or Credit Spread Index Level) 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 with respect to an Index Constituent is not made available on a timely basis, or in the event that the price made available for an Index Constituent is subsequently corrected and such correction is published, then the Calculation Agent may, if practicable, adjust or correct the relevant calculation or determination, including the level of the Index Constituent, as of any Index Business Day to take into account such correction.

On any Index Business Day during which the price, level or rate of an Index Constituent reflects such an error (and such error has not been corrected), the underlying asset weights, volatility target exposures, scaling factors, and other values will be calculated using the price, level or rate made available by the relevant sponsor, publisher or provider of such Index Constituent (an "**Index Constituent Sponsor**") (notwithstanding any manifest error). If the relevant Index Constituent Sponsor subsequently corrects the price it has made available, the Index Value may be calculated using such corrected price, but the quantities of Index Constituents implied by the underlying asset weights, volatility target exposures, scaling factors, and other values (prior to the error being corrected) may or may not be adjusted by the Index Committee.

Changes to the Index Constituents

The designated Index Components, Currency Financing Amount Rates (as defined in Annex A), Currency Exchange Rates, the Notional Interest Rate, relevant forward score input data and Credit Spread Index Levels (or a stock, government bond instrument or other market measure and financial instrument underlying such Index Constituent, or option, futures contract, forward, or

swap related thereto, which the Index Committee determines is necessary to effectively replicate its performance) (collectively, the "**Index Constituents**" and each an "**Index Constituent**"), are not expected to be changed or replaced. However, if the Index Committee determines that any of the following events has occurred:

- the Index Component Sponsor (as described as Underlying Asset Sponsor under "*Overview of the Underlying Core Assets*" and under "*Overview of the Underlying Alternative Assets*" in Annex A) of an Index Component announces that it will make a material change in the formula for or the method of calculating such Index Component or an index included in such Index Component in the case of an Underlying Alternative Asset (or the selection of the components thereof) or otherwise materially modifies such Index Component or an index included in such Index Component in the case of an Underlying Alternative Asset (or the selection of the components thereof) for the purpose of maintaining such Index Component;

- an Index Component or an index included in an Index Component in the case of an Underlying Alternative Asset is no longer published by its Index Component Sponsor;

- an Index Component or an index included in an Index Component in the case of an Underlying Alternative Asset, its constituents or derivative instruments linked thereto, are no longer tradable on commercially reasonable terms (as determined by the Calculation Agent in consultation with the Index Committee) in light of changes to financial market conditions (including market liquidity), regulatory or similar factors;

- any third-party Index Component Sponsor of an Index Component or an index included in an Index Component in the case of an Underlying Alternative Asset terminates its license with the Index Sponsor and its affiliates such that the Index Sponsor may not use the Index Component or any related index in connection with any financial product or index;

- the Index Sponsor and its affiliates cease to have the relevant data license in respect of an Index Component or an index included in an Index Component in the case of an Underlying Alternative Asset;

- the Underlying ETF ceases to exist, is delisted, terminated, wound up, liquidated or files for bankruptcy, is combined with another ETF that has a different investment objective, or changes its currency of denomination;

- the Underlying ETF suspends creations or redemptions for five consecutive Index Business Days or announces a suspension of unlimited or unspecified duration for such creations or redemptions;

- the net asset value of the Underlying ETF is not calculated or is not announced by either the Underlying ETF or its sponsor for five consecutive Index Business Days, or a Market Disruption Event with respect to the Underlying ETF occurs and is continuing for five consecutive Index Business Days;

- there has been a material diminution in the daily trading volume of the Underlying ETF or the net asset value of such Underlying ETF (where net asset value is measured as the value of an entity's assets less the value of its liabilities as publicly disclosed by the Underlying ETF or its sponsor);

- the sponsor or investment adviser of the Underlying ETF files for bankruptcy and there is no solvent immediate successor;

- limitations on ownership are imposed on the Underlying ETF due, amongst others, to a change in law or regulation, loss of regulatory exemptive relief or otherwise, and the Index Committee, in its sole discretion, determines that such limitations materially adversely affect the ability of holders of such Underlying ETF to hold, acquire or dispose of shares of such Underlying ETF;

- the tax treatment of the Underlying ETF changes in a way that would have a material adverse effect on holders of shares of such Underlying ETF;

- there has been a material change to the expense ratio or fee structure of such Underlying ETF that is adverse to holders of shares of such Underlying ETF;

- the Index Committee, in its sole discretion, determines that the Underlying ETF has changed the index underlying or otherwise referenced by such Underlying ETF (the "**Reference Index**" for such Underlying ETF) to an index that is materially different, or the methodology for the Reference Index is materially modified (other than a modification in the ordinary course of administration of the Reference Index);

- the Reference Index of the Underlying ETF is no longer compiled, or the closing level of such Reference Index is not calculated or published for five consecutive Index Business Days;

- the Index Sponsor determines in its sole discretion that it is not practicable for the Underlying ETF to continue to be included in the Index for any reason, including due to

    a) a dispute as to whether a license is required to use the Underlying ETF or the related Reference Index, or

    b) to the extent there is an agreement in place governing such use, changes in the terms upon which the Underlying ETF or related Reference Index is made available to the Index Sponsor for inclusion in the Index that the Index Sponsor, in its sole discretion, determines to be materially adverse to it;

- the sponsor or investment adviser in respect of the Underlying ETF or the Relevant Exchange (as described in Annex A under "*Overview of the Underlying Core Assets*") of an Underlying Asset announces that it will make a material change in the formula for or the method of calculating such Underlying Asset (or the selection of the components

thereof) or otherwise materially modifies such Underlying Asset (or the selection of the components thereof) for the purpose of maintaining such Underlying Asset;

- the Underlying ETF is no longer published by its sponsor or investment adviser in respect of the Underlying ETF or the Relevant Exchange;

- the applicable Currency Exchange Rate, related currency or Currency Financing Amount Rate ceases to exist;

- the Notional Interest Rate ceases to exist;

- the relevant forward score input data ceases to exist, the relevant data sponsor announces that it will make a material change in the formula for or the method of calculating such forward score input data or otherwise materially modifies such forward score input data, or the Index Sponsor and its affiliates cease to have the relevant data license in respect of such forward score input data;

- the applicable Credit Spread Index Level is no longer published by its sponsor, or its sponsor announces that it will make a material change in the formula for or the method of calculating such Credit Spread Index Level or otherwise materially modifies such Credit Spread Index Level, or the Index Sponsor and its affiliates cease to have the relevant data license in respect of such Credit Spread Index Level; or

- it is not practicable or commercially reasonable for an Index Constituent to continue to be included in the Index for reasons including, but not limited to, requirements, guidance or recommendations by the relevant regulators, relevant industry associations or the relevant sponsor of the Index Constituent, changes in industry practice or a change in law,

then the affected Index Constituent will be replaced by a successor constituent that, in the determination of the Index Committee in its sole discretion, most closely replicates, in the case of an index, the constituents and method of calculation of the Index Component, or, with respect to a successor interest, exchange rate, yield, rate, spread, or a credit spread index level, most closely captures the relevant market measure and satisfies any other criteria of an effective benchmark identified by the Index Committee, and the Index Sponsor may use such constituent as a successor Index Constituent. If the Index Committee determines in its sole discretion that no successor constituent exists, such Index Constituent will be removed from the Index.

Such deletions and substitutions may be undertaken on any date. The effective date will be determined at the discretion of the Index Committee and may be applied retroactively (although the Index Committee will seek to announce any such deletions or substitutions as promptly as is reasonably practicable), and will be reflected in an updated version of this Methodology. The Index Committee may permit the use of a temporary Index Constituent until a permanent successor Index Constituent is identified.

Changes to the Inflation Data

The Inflation Data are not expected to be changed or replaced. However, if the Index Committee determines that any of the following events has occurred:

- the relevant Data Sponsor (as described in Annex A) of an Inflation Data announces that it will make a material change in the formula for or the method of calculating such Inflation Data (or the selection of the components thereof) or otherwise materially modifies such Inflation Data (or the selection of the components thereof) for the purpose of maintaining such Inflation Data;

- an Inflation Data is no longer published by its Data Sponsor;

- the Data Sponsor of an Inflation Data terminates its license with the Index Sponsor and its affiliates such that the Index Sponsor may not use the Inflation Data in connection with any financial product or index;

- the Index Sponsor and its affiliates cease to have the relevant data license in respect of an Inflation Data; or

- in the case of an Inflation Data that is scheduled to publish monthly, the publication of the Inflation Data has been suspended for three (3) consecutive months; or in the case of an Inflation Data that is scheduled to publish quarterly, the publication of the Inflation Data has been suspended for two (2) consecutive quarters,

then the affected Inflation Data may be replaced by a successor data that, in the determination of the Index Committee in its sole discretion, works in a similar manner with the affected Inflation Data. If the Index Committee determines in its sole discretion that no successor data exists, such Inflation Data may be removed from the Index, or the Index Sponsor may cease publication of the Index in the determination of the Index Committee in its sole discretion.

Such deletions and substitutions may be undertaken on any date. The effective date will be determined at the discretion of the Index Committee (although the Index Committee will seek to announce any such deletions or substitutions as promptly as is reasonably practicable), and will be reflected in an updated version of this Methodology. The Index Committee may permit the use of a temporary Inflation Data constituent until a permanent successor Inflation Data is identified.

Inflation Data Extraordinary Events

An "**Inflation Data Extraordinary Event"** means (and an Inflation Data Extraordinary Event shall be deemed to have occurred if), in respect of an Inflation Data and a relevant observation Day:

(a) in the case of an Inflation Data that is scheduled to publish monthly, the value of the Inflation Data for the target reference month is not available on the relevant observation day by which it should be theoretically available based on the regular publication schedule; or

(b) in the case of an Inflation Data that is scheduled to publish quarterly, the value of the Inflation Data for the target reference quarter is not available on the relevant observation day by which it should be theoretically available based on the regular publication schedule.

The Calculation Agent may use the latest available value of such Inflation Data prior to such Inflation Data Extraordinary Event during the period of any extraordinary event with respect to the Inflation Data.

Publication of Changes to the Index and to the Methodology

Changes to the components of the Index made by the Calculation Agent or, in certain cases, the Index Committee, will be publicly announced as promptly as is reasonably practicable and normally at least five Index Business Days prior to the effective date of the changes. Changes to the Methodology made by the Index Committee will be publicly announced at least 60 New York business days prior to their effective date. Adjustments made by the Calculation Agent in response to market adjustment events and potential adjustment events will be publicly announced as promptly as is reasonably practicable. Notwithstanding the foregoing, the Index Committee may modify the Index (including its composition), the Methodology or any data obtained from a third party, in its sole discretion and without notice to correct any manifest error, or to cure or correct any ambiguity, contradiction or defect, in the description or operation of the Index.

Index Restatement

In the event of an error or anomaly in the published level of the Index arising from certain specified circumstances, the Index Sponsor, under the oversight of the Index Committee, may restate the level of the Index. If the Index Sponsor determines that the Index level will be restated, the Index level will only be restated from the date falling three weekdays (Monday to Friday of each calendar week) prior to the date on which the Index Sponsor becomes aware of or identifies such error or anomaly to and including the date the restated levels are effected and published. For the restatement policy applicable to the Index as of the date of this Methodology, including the circumstances that may give rise to an error or anomaly that may result in a restatement (defined as an "Incident" in the following linked document), see https://www.goldmansachs.com/disclosures/euro-benchmark-reg-iosco-principles-for-financial-benchmarks-f/summary-of-gs-policy-on-global-benchmark-incidents.pdf. The restatement policy applicable to the Index may be revised or updated from time to time in the sole discretion of the Index Sponsor.

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Contact Information

STS Group

gs-sts-all@gs.com

Calculation Agent Website

https://www.goldmansachsindices.com (or any successor page).

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or delays on the part of, any third party in calculating or publishing the level of any Underlying Asset.

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Without limiting any of the foregoing, in no event shall Goldman Sachs International or any of its affiliates have any liability for any special, punitive, indirect, or consequential damages (including lost profits), even if notified of the possibility of such damages.

Annex A

Index Value Publication Precision	2 decimal places with 0.005 rounded upwards
Index Base Date	January 8, 2021
Base Index Base Date	December 22, 2020
Core Portfolio Optimization Base Date	October 16, 2020
Underlying Asset Base Date	June 3, 2019
Launch Date	March 2, 2022
Index Bloomberg Ticker	GSNHRZON Index
Index Reuters Ticker	.GSNHRZON
Index Trading Day	Each calendar day which satisfies each of the following criteria: (i) such day is an Index Business Day; (ii) such calendar day is an Asset Business Day for all of the Underlying Assets; (iii) such calendar day on which Markit Group Limited (or any successor index sponsor) publishes the reference levels of Underlying Assets in the Credits Asset Class and not a UK holiday or SIFMA recommended US holiday; and (iv) such calendar day is a "Strategy Trading Day" in respect of each Underlying Alternative Asset (such " Strategy Trading Day" as defined in the description applicable to the Underlying Alternative Asset).
Index Business Day	Each day on which the New York Stock Exchange are open for trading.

Asset Business Day	Each day which is a business day for the associated Index Component according to the holiday calendar of such associated Index Component (see "Additional Information" as specified in "*Overview of the Underlying Core Assets*" in Annex A and "Additional Information" as specified in "*Overview of the Underlying Alternative Assets*" in Annex A for Underlying Alternative Assets).
Reference Level	On any given calendar day in respect of such Underlying Asset, (i) the closing price as reported on NYSE Arca or its successor in respect of the Underlying ETF in respect of such calendar day, or (ii) the closing level of the relevant Underlying Asset as published by the relevant Underlying Asset Sponsor in respect of other Underlying Assets in respect of such calendar day.
Volatility Control Level	5%
Volatility Target	5%
Deduction Rate	0.50% per annum
Core Portfolio Leverage Cap	300%
Money Market Base Date	January 10, 1994
Notional Interest Rate	USD-FEDERAL-FUNDS-H15 (as provided by Reuters on page FEDFUNDS1 or by another recognized source used for the purpose of displaying such rate). For any given calendar day which is not a scheduled publication day for the Notional Interest Rate, the Calculation Agent will use for such calendar day the Notional Interest Rate for the scheduled publication day immediately preceding such calendar day.
Notional Interest Rate Reset Day	Each day which is a New York business day
USD Rate Day Count Convention	Actual/360, meaning the number of days in the relevant period divided by 360.

<table>
<tr>
<td>“Currency Financing Amount Rates” and “Currency Financing Amount Business Days”</td>
<td>
<table>
<tr><th>Currency</th><th>Currency Financing Amount Rate</th><th>Currency Financing Amount Rate Business Days</th><th>Currency Financing Amount Rate Day Count Convention</th><th>Currency Financing Amount Base Date</th></tr>
<tr><td>EUR</td><td>On or before December 31, 2021, EUR-EONIA (as provided by Reuters on EONIA RSF.REC.EONIA=.NaE or another recognized source, as determined by the Calculation Agent, used for the purpose of displaying such rate).
On or after January 3, 2022, 8.5bps + €STR (as provided by Reuters on EUROSTR= or another recognized source, as determined by the Calculation Agent, used for the purpose of displaying such rate).</td><td>Business days as per TARGET system</td><td>Actual/360, meaning the number of days in the relevant period divided by 360</td><td>January 4, 1999</td></tr>
<tr><td>JPY</td><td>JPY-BOJ-TONAT (as provided by Reuters on RSF.REC.JPONMU=RR.NaE or another recognized source, as determined by the Calculation Agent, used for the purpose of displaying such rate)</td><td>Business days in Tokyo</td><td>Actual/365 Fixed, meaning the number of days in the relevant period divided by 365</td><td>December 3, 2004</td></tr>
</table>

For any given calendar day which is not Currency Financing Amount Rate Business Day, the Calculation Agent will use the level of such Currency Financing Amount Rate published for the Currency Financing Amount Rate Business Day immediately preceding such calendar day.
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</tr>
<tr><td>Currency Financing Amount Rate Reset Day</td><td>In respect of a Currency Financing Amount Rate, each day which is a Currency Financing Amount Rate Business Day</td></tr>
<tr><td>“U.S. Dollar Financing Amount Base Date”</td><td>January 10, 1994</td></tr>
</table>

Currency Exchange Rate	**One JPY into USD:** The 4 p.m. London time closing spot mid rate for converting one unit of Japanese yen into US dollar as published by WM Performance Services or any successor company. **One EUR into USD:** The 4 p.m. London time closing spot mid rate for converting one unit of Euro into US dollar as published by WM Performance Services or any successor company. **One AUD into USD:** The 4 p.m. London time closing spot mid rate for converting one unit of Australian dollar into US dollar as published by WM Performance Services or any successor company. The days on which the Currency Exchange Rates are usually fixed and published, as determined by the Calculation Agent, by WM Performance Services or any successor company are referred to herein as "**Fixing Days**". If any calendar day is not a Fixing Day, the Calculation Agent will use the level of the relevant Currency Exchange Rate published for the applicable Fixing Day immediately preceding such calendar day. If any calendar day is a Fixing Day but the applicable Currency Exchange Rate is not available on such day at the applicable time indicated above, the Calculation Agent (after consultation with the Index Committee) shall determine the Currency Exchange Rate in a commercially reasonable manner.
Credit Roll Date	In respect of an Underlying Asset in the Credits Asset Class, each official roll date of the relevant index series published by Markit Group Limited (or any successor index sponsor) as the index sponsor of the relevant Credit Spread Index, as determined by the Calculation Agent. As of the date of this document, it is anticipated that for "Europe High Yield Credit", "US Investment Grade Credit", and "Europe Investment Grade Credit" the Credit Roll Dates will occur on a semi-annual basis around March 20 and September 20 of each calendar year and for "US High Yield Credit", the Credit Roll Dates will occur on a semi-annual basis around March 27 and September 27 of each calendar year.
Credit Roll Period	In respect of an Underlying Asset in the Credits Asset Class and a corresponding Credit Roll Date, the period: (i) from (and including) such Credit Roll Date or the immediately following Asset Business Day if such day is not an Asset Business Day; (ii) to (but excluding) the 5th Asset Business Day after the day specified in paragraph (i).

<table>
<tr><td>Credit Asset Rolling Day</td><td>In respect of an Underlying Asset in the Credits Asset Class, each Asset Business Day within the relevant Credit Roll Period.</td></tr>
<tr><td>Number of Credit Roll Days (“NCRD”)</td><td>5</td></tr>
<tr><td>Credit Spread Index Level</td><td>In respect of an Underlying Asset in the Credits Asset Class and a Credit Spread Index Fixing Day, the closing level of the “on-the-run” series of the Credit Spread Index (as specified below) for such Underlying Asset (rounded to 3 decimal places), as published by the sponsor of such index in respect of such day at the end of such day, as determined by the Calculation Agent, expressed as a number of basis points. (If the Credit Spread Index Level in respect of a Credit Spread Index Fixing Day is subsequently modified or restated, the Calculation Agent may continue to use the original Credit Spread Index Level as published by the sponsor of such index in respect of such day at the end of such Credit Spread Index Fixing Day.)

For any calendar day which is not a Credit Spread Index Fixing Day, the Calculation Agent will use the Credit Spread Index Level published for the Credit Spread Index Fixing Day immediately preceding such calendar day.

The days on which the Credit Spread Index Level is usually fixed and published, as determined by the Calculation Agent, by its index sponsor or any successor company, which are usually the Asset Business Days of the relevant Underlying Asset, are referred to herein as "Credit Spread Index Fixing Days".

In respect of an Underlying Asset in the Credits Asset Class, for a given Asset Business Day, the "on-the-run" series of an index on any day is the series of the index most recently created (for the avoidance of doubt, the latest quoted version of the series, as defined by the sponsor of such index as of such day, as determined by the Calculation Agent).

<table>
<tr><th>Underlying Asset</th><th>Credit Spread Index</th><th>Bloomberg Page of Credit Spread Index Level (or any successor closing level of the “on-the-run” series of the Credit Spread Index as published by the sponsor of such index, or any closing level of the “on-the-run” series of the Credit Spread Index as published by the sponsor of such index on another recognized source, as determined by the Calculation Agent, used for the purpose of displaying such level)</th></tr>
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<tr><td></td><td>
<table>
<tr><td>US High Yield Credit</td><td>Markit CDX.NA.HY 5Y Index</td><td>IBOXHYSE MKIT Curncy</td></tr>
<tr><td>Europe High Yield Credit</td><td>Markit iTraxx Europe Crossover 5Y Index</td><td>ITRXEXE MKIT Curncy</td></tr>
<tr><td>US Investment Grade Credit</td><td>Markit CDX.NA.IG 5Y Index</td><td>IBOXUMAE MKIT Curncy</td></tr>
<tr><td>Europe Investment Grade Credit</td><td>Markit iTraxx Europe 5 Year Index</td><td>ITRXEBE MKIT Curncy</td></tr>
</table>
</td></tr>
<tr><td>Credit Transaction Cost Rate Floor</td><td>
<table>
<tr><th>Underlying Asset</th><th>Credit Transaction Cost Rate Floor</th></tr>
<tr><td>US High Yield Credit</td><td>1</td></tr>
<tr><td>Europe High Yield Credit</td><td>1</td></tr>
<tr><td>US Investment Grade Credit</td><td>0.1875</td></tr>
<tr><td>Europe Investment Grade Credit</td><td>0.1875</td></tr>
</table>
</td></tr>
</table>

Core Portfolio Optimization Algorithm - Asset Class Weight Cap

Asset Class	Asset Class Weight Cap
Equities	50%
Rates	300%
Credits	25%
Commodities	50%
Real Estate	25%

OVERVIEW OF THE UNDERLYING CORE ASSETS

Asset Class	Underlying Asset	Return Type	Underlying Asset Currency	Underlying Asset Sponsor	Index/ETF Name	Bloomberg/Reuters Page	Index Calculation Agent	Reference Exchange	Underlying Financial Instruments	Weight Cap	Asset Transaction Cost Rate	Asset Servicing Cost Rate	Additional Information
Equities	US Large-Cap Equity	Total Return	USD	Goldman Sachs International	US Equity Futures Rolling Strategy Index	FRSIUSE Index	S&P Dow Jones LLC	Chicago Mercantile Exchange	E-mini S&P 500® Index futures contracts	20%	0.015%	0.10%	https://www.goldmansachsindices.com
	US Technology Equity	Excess Return	USD	Goldman Sachs International	US Technology Equity Futures Rolling Strategy Series Q Excess Return Index	FRSINQEE Index	Solactive AG	Chicago Mercantile Exchange	E-mini NASDAQ 100 Stock Index futures contracts	20%	0.015%	0.10%	https://www.goldmansachsindices.com
	European Equity	Total Return	EUR	Goldman Sachs International	European Equity Futures Rolling Strategy Index	FRSIEUE Index	STOXX Limited	Eurex	Dow Jones EURO STOXX 50® Index futures contracts	20%	0.015%	0.10%	https://www.goldmansachsindices.com
	Japanese Equity	Total Return	JPY	Goldman Sachs International	Japanese Equity Futures Rolling Strategy Index	FRSIJPE Index	S&P Dow Jones LLC	Osaka Securities Exchange	TOPIX® Stock Price Index futures contracts	20%	0.015%	0.10%	https://www.goldmansachsindices.com
	Australian Equity	Excess Return	AUD	Goldman Sachs International	Australian Equity Futures Rolling Strategy Excess Return Index	FRSIAUEE Index	Solactive AG	Australian Stock Exchange	S&P/ASX 200 Index futures contracts	20%	0.02%	0.10%	https://www.goldmansachsindices.com
Rates	2-Year US Treasury	Excess Return	USD	Goldman Sachs International	Goldman Sachs 2-year Treasury Future Exchange Close Index N1 Class C	GSCCTU01 Index	Goldman Sachs International	Chicago Mercantile Exchange	US 2-year Treasury Note Future (with specifications as set out on the CME website: http://www.cmegroup.com/trading/interest-rates/us-treasury/2-year-us-treasury-	18.75%	0.005%	0.02%	https://www.goldmansachsindices.com

Asset Class	Underlying Asset	Return Type	Underlying Asset Currency	Underlying Asset Sponsor	Index/ETF Name	Bloomberg/Reuters Page	Index Calculation Agent	Reference Exchange	Underlying Financial Instruments	Weight Cap	Asset Transaction Cost Rate	Asset Servicing Cost Rate	Additional Information
									note_contract_specifications.html)				
	5-Year US Treasury	Excess Return	USD	Goldman Sachs International	Goldman Sachs 5-year Treasury Future Exchange Close Index N1 Class C	GSCCFV01 Index	Goldman Sachs International	Chicago Mercantile Exchange	US 5-year Treasury Note Future (with specifications as set out on the CME website: http://www.cmegroup.com/trading/interest-rates/us-treasury/5-year-us-treasury-note_contract_specifications.html)	18.75%	0.01%	0.03%	https://www.goldmansachsindices.com
	10-Year US Treasury	Excess Return	USD	Goldman Sachs International	Goldman Sachs 10-year Treasury Future Exchange Close Index N1 Class C	GSCCTY01 Index	Goldman Sachs International	Chicago Mercantile Exchange	US 10-year Treasury Note Futures (with specifications as set out on the CME website: http://www.cmegroup.com/trading/interest-rates/us-treasury/10-year-us-treasury-note_contract_specifications.html)	18.75%	0.015%	0.10%	https://www.goldmansachsindices.com
	Euro Schatz	Excess Return	EUR	Goldman Sachs International	Goldman Sachs 2-year Schatz Future Exchange Close Index N1 Class C	GSCCDU01 Index	Goldman Sachs International	Eurex	Euro-Schatz Futures (with specifications as set out on the Eurex Exchange website: http://www.eurexchange.com/exchange-en/products/int/fix/government-bonds/16134/)	18.75%	0.005%	0.02%	https://www.goldmansachsindices.com
	Euro Bobl	Excess Return	EUR	Goldman Sachs International	Goldman Sachs 5-year Bobl Future Exchange Close Index N1 Class C	GSCCOE01 Index	Goldman Sachs International	Eurex	Euro-Bobl Futures (with specifications as set out on the Eurex Exchange website: http://www.eurexchange.com/exchange-en/products/int/fix/government-bonds/15644/)	18.75%	0.01%	0.03%	https://www.goldmansachsindices.com

Asset Class	Underlying Asset	Return Type	Underlying Asset Currency	Underlying Asset Sponsor	Index/ETF Name	Bloomberg/Reuters Page	Index Calculation Agent	Reference Exchange	Underlying Financial Instruments	Weight Cap	Asset Transaction Cost Rate	Asset Servicing Cost Rate	Additional Information
	Euro Bund	Excess Return	EUR	Goldman Sachs International	Goldman Sachs 10-year Bund Future Exchange Close Index N1 Class C	GSCCRX01 Index	Goldman Sachs International	Eurex	Euro-Bund Futures (with specifications as set out on the Eurex Exchange website: http://www.eurexchange.com/exchange-en/products/int/fix/government-bonds/14770/)	18.75%	0.015%	0.10%	https://www.goldmansachsindices.com
	Japan Government Bond	Total Return	JPY	Goldman Sachs International	Japanese Government Bond Futures Rolling Strategy Index	FRSIJPB Index	S&P Dow Jones LLC	Osaka Securities Exchange	Futures contracts on government bonds of Japan	18.75%	0.015%	0.05%	https://www.goldmansachsindices.com
	Australian Government Bond	Excess Return	AUD	Goldman Sachs International	Goldman Sachs 10-year Australian Treasury Future Exchange Close Index N1 Class C	GSCCXM01 Index	Goldman Sachs International	Australian Stock Exchange	ASX 10 Year Treasury Bond Futures (with specifications as set out on the Australian Stock Exchange website: http://www.asx.com.au/products/interest-rate-derivatives/bond-derivatives.htm)	18.75%	0.015%	0.05%	https://www.goldmansachsindices.com
Credits	Europe Investment Grade Credit	Excess Return	EUR	Markit Group Limited	iTraxx Main 5Y Long Mid Excess Return 5-Day Rollover	IM5LMER5 Index	Markit Group Limited	N/A	Investment Grade Europe 5Y credit default swap	25%	The Credit Transaction Cost for such Underlying Asset (calculated as described under *"1.8. Calculation of the Credit Transaction Costs"*)	The Credit Roll Cost for such Underlying Asset (calculated as described under *"1.7. Calculation of the Credit Roll Costs"*)	https://www.markit.com
	US Investment Grade Credit	Excess Return	USD	Markit Group Limited	CDX.NA.IG 5Y Long Mid Excess Return 5-Day Rollover	CI5LMER5 Index	Markit Group Limited	N/A	Investment Grade US 5Y credit default swap	25%	The Credit Transaction Cost for such Underlying Asset (calculated as described under *"1.8. Calculation of the Credit Transaction Costs"*)	The Credit Roll Cost for such Underlying Asset (calculated as described under *"1.7. Calculation of the Credit Roll Costs"*)	https://www.markit.com

Asset Class	Underlying Asset	Return Type	Underlying Asset Currency	Underlying Asset Sponsor	Index/ETF Name	Bloomberg/Reuters Page	Index Calculation Agent	Reference Exchange	Underlying Financial Instruments	Weight Cap	Asset Transaction Cost Rate	Asset Servicing Cost Rate	Additional Information
	US High Yield Credit	Excess Return	USD	Markit Group Limited	CDX.NA.HY 5Y Long Mid Excess Return 5-Day Rollover	CH5LMER5 Index	Markit Group Limited	N/A	High Yield US 5Y credit default swap	25%	The Credit Transaction Cost for such Underlying Asset (calculated as described under *"1.8. Calculation of the Credit Transaction Costs"*)	The Credit Roll Cost for such Underlying Asset (calculated as described under *"1.7. Calculation of the Credit Roll Costs"*)	https://www.markit.com
	Europe High Yield Credit	Excess Return	EUR	Markit Group Limited	iTraxx Crossover 5Y Long Mid Excess Return 5-Day Rollover	IX5LMER5 Index	Markit Group Limited	N/A	High Yield Europe 5Y credit default swap	25%	The Credit Transaction Cost for such Underlying Asset (calculated as described under *"1.8. Calculation of the Credit Transaction Costs"*)	The Credit Roll Cost for such Underlying Asset (calculated as described under *"1.7. Calculation of the Credit Roll Costs"*)	https://www.markit.com
Commodities	Crude Oil	Excess Return	USD	Goldman Sachs International	Enhanced Strategy CLE205 on S&P GSCI® Crude Oil Index	AGGSCL05 Index	Goldman Sachs International	Trading Facilities* of the Commodity Contracts included in the Enhanced Strategy CLE205 on S&P GSCI® Crude Oil Index	Commodity Contracts included in the Enhanced Strategy CLE205 on S&P GSCI® Crude Oil Index	25%	0.02%	0.15%	https://www.goldmansachsindices.com
	Gold	Excess Return	USD	Goldman Sachs International	Enhanced Strategy GDE205 on S&P GSCI® Gold Index	AGGSGD05 Index	Goldman Sachs International	Trading Facilities* of the Commodity Contracts included in the Enhanced Strategy GDE205 on S&P GSCI® Gold Index	Commodity Contracts included in the Enhanced Strategy GDE205 on S&P GSCI® Gold Index	25%	0.02%	0.15%	https://www.goldmansachsindices.com
	Copper	Excess Return	USD	Goldman Sachs International	Enhanced Strategy ICE205 on S&P GSCI® Copper Index	AGGSIC05 Index	Goldman Sachs International	Trading Facilities* of the Commodity Contracts included in the Enhanced Strategy ICE205 on S&P GSCI® Copper Index	Commodity Contracts included in the Enhanced Strategy ICE205 on S&P GSCI® Copper Index	25%	0.02%	0.15%	https://www.goldmansachsindices.com
	Soybeans	Excess Return	USD	Goldman Sachs International	Enhanced Strategy SOE205 on S&P GSCI® Soybeans Index	AGGSSO05 Index	Goldman Sachs International	Trading Facilities* of the Commodity Contracts included in the Enhanced Strategy SOE205 on S&P	Commodity Contracts included in the Enhanced Strategy SOE205 on S&P GSCI® Soybeans Index	25%	0.02%	0.15%	https://www.goldmansachsindices.com

Asset Class	Underlying Asset	Return Type	Underlying Asset Currency	Underlying Asset Sponsor	Index/ETF Name	Bloomberg/Reuters Page	Index Calculation Agent	Reference Exchange	Underlying Financial Instruments	Weight Cap	Asset Transaction Cost Rate	Asset Servicing Cost Rate	Additional Information
								GSCI® Soybeans Index					
Real Estate	U.S. Real Estate ("Underlying ETF")	Total Return	USD	BlackRock Institutional Trust Company, N.A.	iShares U.S. Real Estate ETF	IYR UP Equity	N/A	NYSE Arca or its successor for the ETF primary exchange**	iShares U.S. Real Estate ETF	25%	0.02%	0.60%	https://www.ishares.com/

* "**Trading Facility"** means, in respect of a relevant Commodity Contract, the exchange or trading facility or principal trading market on which such Commodity Contract is traded, or any successor to such exchange or trading facility or principal trading market to which trading in such Commodity Contract has temporarily relocated, as determined by the Calculation Agent.

** With respect to the Underlying Asset "U.S. Real Estate", prior to December 6, 2007 the primary exchange was New York, and prior to November 30, 2005 the primary exchange was NYSE Amex. The Reference Levels used for the calculation of the Underlying Asset Level were the closing price as reported by the primary exchange.

OVERVIEW OF THE UNDERLYING ALTERNATIVE ASSETS

Underlying Asset	Return Type	Underlying Asset Currency	Underlying Asset Sponsor	Index Name	Bloomberg/Reuters Page	Index Calculation Agent	Reference Exchange	Underlying Financial Instruments	Alternative Asset Target Weight	Asset Transaction Cost Rate	Asset Servicing Cost Rate	Additional Information
Satellite Intraday Equity Component	Excess Return	USD	Goldman Sachs International	Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy	GSISMEBR Index	Goldman Sachs International	Chicago Mercantile Exchange	Contracts included in the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy	20%	0	0	Annex B. For additional resources, see "*Index Summary— Where You Can Find More Information*"
Satellite Commodity Component	Excess Return	USD	Goldman Sachs International	Goldman Sachs Commodity Enhanced Carry TimeSpread Series 5 Excess Return Strategy	ABGSCCC5 Index	Goldman Sachs International	Trading Facilities* of the Commodity Contracts included in the Goldman Sachs Commodity Enhanced Carry TimeSpread Series 5 Excess Return Strategy	Commodity Contracts included in the Goldman Sachs Commodity Enhanced Carry TimeSpread Series 5 Excess Return Strategy	20%	0.08%	0	https://www.goldmansachsindices.com

* "**Trading Facility"** means, in respect of a relevant Commodity Contract, the exchange or trading facility or principal trading market on which such Commodity Contract is traded, or any successor to such exchange or trading facility or principal trading market to which trading in such Commodity Contract has temporarily relocated, as determined by the Calculation Agent.

Forward Score Specification Additional Details

For "Commodities Forward Score":	
Number of Lookback Years	5
Seasonal Window End Date	In respect of each Observation Date and a calendar year, the day falling 15 calendar days after the Equivalent Observation Date in such calendar year, or if such day is not a day on which the offices of the Calculation Agent in New York are open for business, the immediately preceding day on which the offices of the Calculation Agent in New York are open for business
Seasonal Window Start Date	In respect of each Observation Date and a calendar year, the day falling 15 calendar days before the Equivalent Observation Date in such calendar year, or if such day is not a day on which the offices of the Calculation Agent in New York are open for business, the immediately following day on which the offices of the Calculation Agent in New York are open for business
For "Credit Forward Score":	
Credit Index Data Source	http://www.markit.com or any successor page

ADDITIONAL DETAILS FOR RATES FORWARD SCORE CALCULATION

Name	Long Yield Data Source	Short Yield Data Source	Short Rate Data Source	Short Rate Style(t)	Long Tenor	Short Tenor	Inflation Data Source
10-Year US Treasury	The field "YIELD" on Reuters page "US10YT=RR"	The field "YIELD" on Reuters page "US5YT=RR"	Before April 30, 2021: The field "PRIMACT_1" on Reuters page "USD3MFSR=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "USDSOFR="	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	10	5	US CPI Urban Consumers YOY NSA as published by Bureau of Labor Statistics Bloomberg page "CPI YOY Index"
5-Year US Treasury	The field "YIELD" on Reuters page "US5YT=RR"	The field "YIELD" on Reuters page "US2YT=RR"	Before April 30, 2021: The field "PRIMACT_1" on Reuters page "USD3MFSR=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "USDSOFR="	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	5	2	US CPI Urban Consumers YOY NSA as published by Bureau of Labor Statistics Bloomberg page "CPI YOY Index"
2-Year US Treasury	The field "YIELD" on Reuters page "US2YT=RR"	The field "CYLD" on Reuters page "US1YT=RR"	Before April 30, 2021: The field "PRIMACT_1" on Reuters page "USD3MFSR=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "USDSOFR="	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	2	1	US CPI Urban Consumers YOY NSA as published by Bureau of Labor Statistics Bloomberg page "CPI YOY Index"
Euro Bund	The field "BYLD" on Reuters page "DE10YT=RR"	The field "BYLD" on Reuters page "DE5YT=RR"	Before April 30, 2021: The field "BID" on Reuters page "EURIBOR3MD=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "EUROSTR="	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	10	5	Germany CPI All Items YOY as published by German Federal Statistical Office Bloomberg page "GRCP20YY Index"
Euro Bobl	The field "BYLD" on Reuters page "DE5YT=RR"	The field "BYLD" on Reuters page "DE2YT=RR"	Before April 30, 2021: The field "BID" on Reuters page "EURIBOR3MD=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "EUROSTR="	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	5	2	Germany CPI All Items YOY as published by German Federal Statistical Office Bloomberg page "GRCP20YY Index"
Euro Schatz	The field "BYLD" on Reuters page "DE2YT=RR"	The field "BYLD" on Reuters page "DE1YT=RR"	Before April 30, 2021: The field "BID" on Reuters page "EURIBOR3MD=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "EUROSTR="	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	2	1	Germany CPI All Items YOY as published by German Federal Statistical Office Bloomberg page "GRCP20YY Index"

Japan Government Bond	The field "YIELD" on Reuters page "JP10YT=RR"	The field "CYLD" on Reuters page "JP5YT=RR"	Before April 30, 2021: The field "PRIMACT_1" on Reuters page "JPY3MFSR=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "JPONMU=RR"	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	10	5	Japan CPI Nationwide YOY as published by Ministry of Internal Affairs and Communications Bloomberg page "JNCPIYOY Index
Australian Government Bond	The field "BYLD" on Reuters page "AU10YT=RR"	The field "BYLD" on Reuters page "AU5YT=RR"	Before April 30, 2021: The field "TRDPRC_1" on Reuters page "AU3MBA=" From and including April 30, 2021: the field "PRIMACT_1" on Reuters page "AUCASH=RBAA"	Before April 30, 2021: "Not Specified" From and including April 30, 2021: "RFR"	10	5	Australia Consumer Price Index (YOY%) as published by Australian Bureau of Statistics Bloomberg page "AUCPIYOY Index"

ADDITIONAL DETAILS FOR CREDIT FORWARD SCORE CALCULATION

Underlying Core Credit Asset	Long Credit Spread Data Source	Short Credit Spread Data Source	Credit Spread Index	Long Yield Data Source	Swap Rate Fixing	Recovery Rate	Tenor Long	Tenor Short
Europe Investment Grade Credit	The official closing level of the On-the-run series of the Markit iTraxx Europe 5 Year Index, as published by the sponsor of such index, expressed as a number of basis points	The official closing level of the On-the-run series of the Markit iTraxx Europe 3 Year Index, as published by the sponsor of such index, expressed as a number of basis points	Markit iTraxx Europe 5Y Index	The field "BYLD" on Reuters page "DE5YT=RR"	5 year ICE Swap EUR Rates 11:00 Frankfurt, Reuters Page EURSFIX=	40%	5	3
Europe High Yield Credit	The official closing level of the On-the-run series of the Markit iTraxx Europe Crossover 5 Year Index, as published by the sponsor of such index, expressed as a number of basis points	The official closing level of the On-the-run series of the Markit iTraxx Europe Crossover 3 Year Index, as published by the sponsor of such index, expressed as a number of basis points	Markit iTraxx Europe Crossover 5Y Index	The field "BYLD" on Reuters page "DE5YT=RR"	5 year ICE Swap EUR Rates 11:00 Frankfurt, Reuters Page EURSFIX=	40%	5	3
US Investment Grade Credit	The official closing level of the On-the-run series of the Markit CDX.NA.IG 5 Year Index, as published by the sponsor of such index, expressed as a number of basis points	The official closing level of the On-the-run series of the Markit CDX.NA.IG 3 Year Index, as published by the sponsor of such index, expressed as a number of basis points	Markit CDX.NA.IG 5Y Index	The field "YIELD" on Reuters page "US5YT=RR"	5 year ICE Swap USD Rates 11:00 New York, Reuters Page USDSFIX=	40%	5	3
US High Yield Credit	The official closing level of the On-the-run series of the Markit CDX.NA.HY 5 Year Index, as published by the sponsor of such index, expressed as a number of basis points	The official closing level of the On-the-run series of the Markit CDX.NA.HY 3 Year Index, as published by the sponsor of such index, expressed as a number of basis points	Markit CDX.NA.HY 5Y Index	The field "YIELD" on Reuters page "US5YT=RR"	5 year ICE Swap USD Rates 11:00 New York, Reuters Page USDSFIX=	30%	5	3

ADDITIONAL DETAILS FOR COMMODITIES FORWARD SCORE CALCULATION

Table – Seasonal Adjustment

Underlying Core Commodity Asset	Seasonal Adjustment
Gold	Not Applicable
Copper	Not Applicable
Soybeans	Applicable
Crude Oil	Not Applicable

Table - Designated Contract Expirations

Commodity (Contract)	Trading Facility	Designated Contract Expirations(#)
Gold	CMX	G,J,M,Q,Z
Copper	LME	F,G,H,J,K,M,N,Q,U,V,X,Z
Soybeans	CBT	F,H,K,N,Q,U,X
Crude Oil	NYM	F,G,H,J,K,M,N,Q,U,V,X,Z

Table - Month Letter Codes

Month	Month Letter Code
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Annex B

Methodology Summary of Satellite Intraday Equity Component

*The following methodology summary (the "**Methodology Summary**") of the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy (the "**Satellite Intraday Equity Component**") is necessarily incomplete. This methodology summary should be read in conjunction with, and is qualified in its entirety by, the more detailed methodology documents associated with the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy and its constituents, and their operations, that are available upon request from whom you purchase any products linked to the Goldman Sachs New Horizons Index (the "**Satellite Intraday Equity Component Methodology**").*

For further information relating to selected risks associated with the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy, see the "Certain Risk Factors and Additional Information about the Index—Selected Additional Risks Relating to the Satellite Intraday Equity Component" section at the end of the Methodology for the Index. The "Selected Additional Risks Relating to the Satellite Intraday Equity Component" section is not complete, omits important risks associated with the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy and should not be regarded as offering advice on the advisability of investing in products or other indices (including the Goldman Sachs New Horizons Index) that may be linked to the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy. You should also read any relevant materials which may describe additional risks associated with the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy and its constituents, highlight further risks particular to products linked to the Goldman Sachs New Horizons Index, or arising from the relationship between the terms of such products and the features of the Goldman Sachs New Horizons Index and the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy (see "Index Summary—Where You Can Find More Information" above for resources providing further information relating to the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy and other Underlying Assets). In particular, you should read the relevant materials relating to the constituents of the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy described below and any discussions of risks contained therein. Neither Goldman Sachs International nor any of its affiliates guarantees the quality, accuracy and/or the completeness of the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy or any data included therein or on which the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy or any Satellite Intraday Equity Component Constituent (as defined below) is based, and neither Goldman Sachs International nor any of its affiliates shall be liable to any third party for any loss or damage, direct, indirect or consequential, arising from (i) any inaccuracy or incompleteness in, or delays, interruptions, errors or omissions in the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy or any data included therein or on which the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy is based or (ii) any decision made or action taken by any third party in reliance upon the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy or any data included therein or on which the Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy is based.

The Goldman Sachs Intraday Momentum Equity Basket Series R Excess Return Strategy (the "**Satellite Intraday Equity Component**") represents a notional (i.e., reflecting a synthetic position rather than an actual investment) exposure to a basket of two underlying strategies (each, an "**Satellite Intraday Equity Component Constituent**", and together, the "**Satellite Intraday Equity Component Constituents**"). At any given time, the Satellite Intraday Equity Component seeks to provide fixed-weight exposure to the two Satellite Intraday Equity Component Constituents as described below:

- *Goldman Sachs Intraday Momentum Series RES Excess Return Strategy (GSISMRES)* (70%) – GSISMRES (the "**Intraday SPX Constituent**") attempts to benefit from intraday momentum in S&P 500 E-mini Futures without taking overnight exposures. The Intraday SPX Constituent aims to be long futures contracts if the S&P 500 E-mini Futures market has risen beyond a certain threshold since the previous close, or short futures contracts if the S&P 500 E-mini Futures market has fallen beyond a certain threshold since the previous close. Notional long positions will generally be expected to benefit if the market continues to rise after it has risen from the previous close, and notional short positions will generally be expected to benefit if the market continues to fall after it has fallen from the previous close. All positions of the Intraday SPX Constituent are exited at the close to avoid any overnight market risk in the strategy.

- *Goldman Sachs Intraday Momentum Series RNQ Excess Return Strategy (GSISMRNQ)* (30%) – GSISMRNQ (the "**Intraday NDX Constituent**") attempts to benefit from intraday momentum in Nasdaq 100 E-mini Futures without taking overnight exposures. The Intraday NDX Constituent aims to be long futures contracts if the Nasdaq 100 E-mini Futures market has risen beyond a certain threshold since the previous close, or short futures contracts if the Nasdaq 100 Futures market has fallen beyond a certain threshold since the previous close. Notional long positions will generally be expected to benefit if the market continues to rise after it has risen from the previous close, and notional short positions will generally be expected to benefit if the market continues to fall after it has fallen from the previous close. All positions of the Intraday NDX Constituent are exited at the close to avoid any overnight market risk in the strategy.

Satellite Intraday Equity Component – General Methodology

The Satellite Intraday Equity Component attempts to benefit from intraday momentum in S&P 500 E-mini Futures and Nasdaq 100 E-mini Futures without taking overnight exposures, as described in more detail below.

Intraday Rebalancing Calculations

Except under extenuating circumstances, at the beginning of each trading day, the Intraday Equity Component Constituent holds no position in S&P 500 E-mini Futures or Nasdaq 100 E-mini Futures. For each of the Satellite Intraday Equity Component Constituent, the strategy methodology determines the time-weighted average price (**"TWAP"**, i.e., the average price giving equal weight to prices observed during each observation time without regard to the volume of notional transactions) of S&P 500 E-mini Futures or Nasdaq 100 E-mini Futures, and

calculates a "signal" for each of them independently based on the move since the previous close for such TWAP window (as used in this Annex B, the "**Signal**").

Based on the Signal with respect to a TWAP window, a "**Target Weight Band**" is calculated for each of the Satellite Intraday Equity Component Constituent independently.

Intraday Rebalancing Execution

For each of the Satellite Intraday Equity Component Constituent independently, during the *next* TWAP window, to the extent that the cumulative position of the Satellite Intraday Equity Component Constituent is outside the Target Weight Band calculated with respect to the prior TWAP window, the Satellite Intraday Equity Component Constituent notionally rebalances closer to the Target Weight Band, subject to a floor of -100% (reflecting the maximum short position) and a cap of +100% (reflecting the maximum long position) and a maximum rebalancing cap in any given TWAP window. Notional transactions described in this paragraph are deemed to be executed at the "**Futures Execution TWAP**", which is the time-weighted average price during which such transactions are notionally executed (i.e., the average price during the execution window giving equal weight to each observation time without regard to the volume of notional transactions). If the cumulative position is within the Target Weight Band, no notional rebalancing is effected during such TWAP window.

Close of Trading Unwinds

At or near the close of each trading day, the Satellite Intraday Equity Component Constituents unwind any remaining notional positions with respect to S&P 500 E-mini Futures and Nasdaq 100 E-mini Futures except under extenuating circumstances.

Satellite Intraday Equity Component Constituent Returns and Deductions

The daily returns of the Satellite Intraday Equity Component Constituents are the notional performance for each of the transactions at the notional execution prices described above, less transaction costs. With respect to any notional transaction, transaction costs are calculated as the *product of* (i) the notional value of such transaction executed during the relevant trading day (the *product of* volume *multiplied by* the applicable notional execution price described above) multiplied by the Transaction Cost Rate, as defined in the Satellite Intraday Equity Component Methodology.

Contact Information

STS Group

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Satellite Intraday Equity Component Index Sponsor Website

https://www.goldmansachsindices.com (or any successor page).

CERTAIN RISK FACTORS AND ADDITIONAL INFORMATION ABOUT THE INDEX

Please note: This "Certain Risk Factors and Additional Information about the Index" section is intended to summarize certain risks associated with the Index, but does not purport to be exhaustive, nor should it be regarded as offering advice on the advisability of investing in products that may be linked to the Index or the investment strategy underlying the Index. You should also read any relevant documentation, such as any prospectuses, term sheets or offering memoranda, which may highlight further risks particular to such products, or arising from the relationship between the terms of such products and the features of the Index. Capitalized terms used but not defined in this "Certain Risk Factors and Additional Information about the Index" section have the meanings given to them in the methodology.

Risk Factors

The returns of the Index will be reduced by a number of synthetic costs and deductions at various levels of the Index, including at the Underlying Asset level for the Goldman Sachs International-sponsored Satellite Portfolio constituents, which deductions may exceed the costs of market participants (including Goldman Sachs International and its affiliates, who may engage in hedging or other transactions relating to the Index, its Underlying Assets or constituents of the Underlying Assets). The return of the **Base Index** (i.e., the return of the Index *before* the deduction of any Servicing Costs (including Credit Roll Costs), Rebalancing Costs (including Credit Transaction Costs) or the Deduction Rate, and *before* giving effect to the Base Index-level volatility control of 5% (but *after* giving effect to the Underlying Core Asset-level volatility target of 5% and the application of the Core Portfolio Optimization Algorithm, which includes a 5% volatility constraint)) is calculated on an excess return basis at the Underlying Asset level by reference to the excess returns of each Underlying Asset. The Volatility Control Exposure-adjusted weighted returns based on the **Underlying Asset Look-Through Weights** (i.e., the return *before* the deduction of any Servicing Costs (including Credit Roll Costs), Rebalancing Costs (including Credit Transaction Costs) or the Deduction Rate, but *after* giving effect to the Index's various volatility control features) will be reduced by Underlying Asset-specific Servicing Costs applied to any non-zero-weighted notional positions in the Underlying Assets. The return of the **Preliminary Net Index** (i.e., the return *after* the deduction of Servicing Costs (including Credit Roll Costs), and *after* giving effect to the Index's various volatility control features, but *before* the deduction of Rebalancing Costs (including Credit Transaction Costs)) is reduced based on the *sum of* notional turnover-based Rebalancing Costs across all Underlying Assets, calculated with respect to each Underlying Asset as the *product of* (i) the Index's rebalancing of the Underlying Asset (i.e., the notional change required to get from (a) the "effective look-through weight" of the Underlying Asset (the actual weight of the Underlying Asset in an index) *before* rebalancing to (b) the "look-through weight" of the Underlying Asset *after* rebalancing), *multiplied by* (ii) an Underlying Asset-specific Asset Transaction Cost Rate specified in Annex A. The returns of the **Net Index** (i.e., the return of the Index after the deduction of Servicing Costs (including Credit Roll Costs) and Rebalancing Costs (including Credit Transaction Costs), and after giving effect to the Index's various volatility control features) are further reduced by an additional Deduction Rate of 0.50% per annum (accruing daily). The reductions associated with the Servicing Costs (including Credit Roll Costs), Rebalancing Costs (including Credit Transaction Costs) and the Deduction Rate may offset in whole or in part increases in the excess return of the Underlying Assets. Generally speaking, on any day the weighted excess returns of the Underlying Assets must be at least as great

as the sum of (1) the sum of the Servicing Costs associated with such day *plus* (2) the sum of the Rebalancing Costs associated with such day *plus* (3) the daily deduction at the per annum Deduction Rate before the Index will have a positive return. In addition, the total return of the constituents underlying an Underlying Asset must exceed the relevant cash rate (i.e., the rate that the Underlying Asset's performance is compared against) applicable to it in order to have a positive return on an excess return basis. As a result, any return on the Underlying Assets may be reduced or eliminated by the deductions described above, which may have the effect of reducing the value of the Index and the amount payable in respect of any investment in a product linked to the Index. In addition, the returns of the Goldman Sachs International-sponsored Satellite Components or their constituents are reduced by basket rebalancing costs and asset servicing costs at the Underlying Asset- or Underlying Asset constituent-level as applicable. To the extent that such deductions are based on notional transactions, holdings or servicing, they will generally not reflect—and will generally be higher than—the costs of market participants (including Goldman Sachs International and its affiliates, who may engage in hedging or other transactions relating to the Index, its Underlying Assets or constituents of the Underlying Assets). **Based on hypothetical historical data from March 27, 2007 (the date when historical levels of all Underlying Assets became available) to the Launch Date, the rolling 1-year sum of the aggregate costs (including the costs within the Underlying Assets or their constituents) and 0.50% per annum deduction rate of the Index has been as high as approximately 1.87% per annum at times, and has been approximately 1.52% per annum on average.**

Because certain costs are based on both turnover- and a market-based rates tied to indices reflecting the credit risk of underlying corporate credits, such costs may increase substantially in the future, especially during periods of market stress. Notionally embedded costs in respect of an Underlying Asset that are dependent on the value or performance of one or more reference assets (which include credit spread indices for certain Underlying Assets) do not apply any maximum amount (or "cap") to such costs for any relevant day. Such performance and, therefore, the corresponding cost rate in respect of an Underlying Asset, will vary from time to time with market conditions, perhaps materially so. In particular, the relevant costs rates are expected to be higher during periods of high market stress than during periods of low market stress – and, as a result, may be higher during periods in which the Index performs poorly. Furthermore, periods of higher market stress may be associated with greater volatility and more turnover in the composition of the Index. Accordingly, the amount by which the value of the Index is reduced at any time by the application of the relevant cost rates will vary from time to time and, during periods where such rate is increased due to market stress, will have a greater negative impact on the value of the Index as compared to a fixed synthetic transaction cost rate or costs calculated by reference to fixed values (or otherwise being subject to a cap) or compared to an index that more strongly limits turnover in its components. Such variation may result in the aggregate synthetic transactions costs deducted from the value of the Index being higher (perhaps materially so) on any future date, or over any future period, as compared to historical periods. Furthermore, to the extent that the Index experiences significant turnover or significant allocation to such Underlying Assets, rebalancing and credit roll deductions could be significant even in the absence of higher market-based cost rates. As a result, any return on such Underlying Assets may be reduced or eliminated by reductions associated with the deductions to the Index described above, which may reduce the amount payable in respect of any investment in a product linked to the Index.

Investors in products linked to the Index will be subject to the market risks associated with the Underlying Assets. The value of the Index depends on the values of the Underlying Assets, each of which may increase or decrease in value over time. Neither the Index nor any of the Underlying Assets includes any element of downside protection or guaranteed return. The value of an Underlying Asset, or the Index itself, may fall substantially below its value at the Launch Date or on any particular day and may fall to or below zero. If the value of the Index should fall to or below zero in respect of an Index Business Day, then the Index Value in respect of such Index Business Day and all following Index Business Days shall be zero.

Any allocation to an Underlying Core Rates Asset is likely to have a low return, which may be further reduced by the Index's synthetic costs and deductions. The Underlying Core Rates Assets may account for a significant portion of the Index's overall allocation, particularly during periods when other Underlying Core Assets are experiencing significant volatility. As a result, the Index may have significant allocations to assets with relatively low historical realized volatility, which could offer lower return potential.

The Effective Forward Score for the Underlying Core Rates Assets will be reduced in circumstances where the applicable historical realized inflation corresponding to an Underlying Core Rates Asset is higher than the applicable short term rate. Such Effective Forward Score reduction may cause exposure to be moved out of an Underlying Core Rates Asset, and, in circumstances where such Underlying Core Rates Asset subsequently rises, it may have a material adverse impact on Index performance. For example, in a market condition where inflation is decreasing and the fixed income market is rising, if the applicable historical realized inflation corresponding to an Underlying Core Rates Asset is still higher than its applicable short term rate, the Effective Forward Score for such Underlying Core Rates Asset will still be reduced, even though the performance of such Underlying Core Rates Asset may increase, which could have a material adverse impact on Index performance. The historical realized inflation metrics are backward-looking measures based on data from past periods, and are published by the relevant data sponsors with publication lag. As a result, the Index may underperform a strategy that looks at other inflation metrics. Although the Index will use the most recent Inflation Data as of the relevant Inflation Observation Day to calculate Adjusted Forward Scores, if revised or restated values of the Inflation Data are available in respect of previous months or quarters, the Index will not revise or restate any previously calculated Adjusted Forward Scores, any resulting allocations or the calculation of any past Index Values in response to a revision or restatement of the Inflation Data.

Past performance or hypothetical past performance of the Index is no guide to future performance. The actual performance of the Index in the future may bear little relation to the historical performance or hypothetical historical past performance of the Index. The Index may under-perform a static or managed allocation to the relevant Underlying Assets. Among other things, this is because the Index could be over-weighted in an Underlying Asset that suffers a significant decline in performance or be under-weighted in an Underlying Asset that experiences a major rise in performance. In addition, the Index relies on strategies that are based on widely available financial and academic research, and any historical premiums associated with such strategies may not continue into the future as the benefits of such strategies become more widely recognized and implemented by market participants.

The Core Portfolio (due to the weighting influence of forward scores) and Satellite Portfolio (due to its generally "market neutral" components) may perform poorly, especially compared to riskier assets during periods of market growth.

The components of the Satellite Portfolio may not be as uncorrelated to the other Underlying Assets as it has been historically, which would reduce their attractiveness as components of the Index and potentially increase the risk of the Index for a given level of returns, or decrease the returns of the Index for a given level of risk.

The Index's backward-looking historical volatility control mechanisms may fail to limit the actual volatility of the Index. Although the Index includes volatility control mechanisms and constraints at various levels, such controls rely on historical realized volatility, which may not reflect the current or future volatility of one or both Underlying Assets. Even in an environment where increased volatility is observable in historical realized volatility, the Base Index-level and Underlying Core Asset-level volatility controls use a "long-term decay factor" of 97% to calculate long-term volatility, and a "short-term decay factor" of 94% to calculate short-term volatility, meaning lower historical volatilities may continue to exert significant influence over volatility calculations even following an increase in volatility which will only diminish gradually over time, particularly with respect to the long-term volatility measure. As a result, the Index may be slow to rebalance allocations or reduce exposure to market risk following a sudden increase in volatility. All of these factors may cause the performance of the Index to be adversely and disproportionately affected by the poor performance of one or more Underlying Assets, particularly if such poor performance is associated with a sudden increase in volatility following a period of lower volatility (such as may be the case in a market crisis affecting such Underlying Asset).

The composition of the Index may change dramatically over time, which may lead to unpredictable Index performance characteristics and increase turnover-based costs. The weights assigned to the Underlying Assets within the Base Index and within the Index may be rebalanced daily. Although the Core Portfolio includes a weight averaging feature to promote some degree of continuity in the Core Portfolio, such limits may have limited practical impact. As a result, the composition and performance characteristics of the Index may change dramatically over time, which may increase turnover-based costs associated with the Index.

The Index may not fully account for revisions or restatements in the CFTC Commitments of Traders report. In addition, in the event of a government shutdown or the unavailability of the CFTC Commitments of Traders report, if a COT report has been published within the past 4 weeks, the determinations of current net speculative positions will be based on the most recently available COT report data, and the one-year median net speculative positions will be based on the available data during the past one-year period; If no COT report has been published for, at least, 4 consecutive weeks, the long leg of the Commodity Congestion Constituent (ENHG226P) will default to pre-pre roll implementation until the first week in which COT report data is published, and the Commodity Commitment of Traders Constituent will default to the implementation of short short-dated futures and long long-dated futures until the first week in which COT report data is published. This may result in different positions if the COT report data were available.

The Calculation Agent employs commercially available computer software in its Core Portfolio Optimization Algorithm that determines mathematical solutions to predefined mathematical

problems (a "solver") which uses a pre-defined set of optimization formulae to select the relevant Underlying Core Assets. If the Calculation Agent employed different "solvers," the final Index composition might be different and possibly materially so. As such, the performance of the Index could be materially different.

The Index has a very limited performance history. The Index will only be calculated live from the Launch Date March 2, 2022 and as such, there will be no historical live performance data available in respect of it prior to that time. There may be only limited historical performance data with respect to certain Underlying Assets. The past performance or hypothetical past performance of the Index may reflect the influence of market environments that may be significantly different from future market environments. In addition, the historical levels of Underlying Core Credit Assets before March 2007 (the relevant start date of the available time series published by the relevant Underlying Asset Sponsors (as specified in Annex A)) are assumed to be the same as the first available level published by the relevant Underlying Asset Sponsors in March 2007 and the corresponding Credit Spread Index Levels prior to March 2007 are assumed to be zero for backtesting purposes. For the historical values of Credit Spread Index Levels not available from the data source as specified in Annex A, the historical values are collected by the Calculation Agent on a best-efforts basis for backtesting purposes. The historical values of Forward Scores of Underlying Core Credit Assets are assumed to be zero before March 2007 for "US Investment Grade Credit" and "Europe Investment Grade Credit", July 2007 for "US High Yield Credit", and November 2007 for "Europe High Yield Credit" due to limited data history from the relavant data sponsor. In addition, the historical Reference Levels of the Satellite Intraday Equity Component before January 2005 (the start date of the available time series published by the relevant Underlying Asset Sponsor (as specified in Annex A)) are assumed to be the same as the first available Reference Level published by the relevant Underlying Asset Sponsor (i.e., January 2005) for backtesting purposes. As a result of these factors, any investment the return of which is linked to the Index or such Underlying Assets may involve greater risk and uncertainty than an exposure linked to indices or strategies with a longer-term track record.

The Index was launched on the Launch Date and may reflect assumptions rather than actual performance data, which are not available in all cases. Each of the Underlying Assets or the respective reference instruments also had an inception date that is different from the Underlying Asset Base Date shown above. Performance indicated before the relevant inception date is hypothetical and has been calculated back to the relevant base date using the methodology and assumptions about certain of the components and decisions the Index Committee or Calculation Agent of the Index or the Index Components may have made. Index Values calculated for periods in which the Index or any Underlying Asset did not yet exist may not reflect the actual levels that would have been calculated on that date if, in fact, such strategy had existed at that point in time or earlier.

Goldman Sachs International, the sponsor of the Index, certain Underlying Assets and certain constituents of the Underlying Assets, is under no obligation to consider the interests of licensees of the Index, investors in products linked to the Index or any other party in performing its roles as sponsor or calculation agent. Each of the Index, certain Underlying Assets and certain constituents of the Underlying Assets is structured by Goldman Sachs International as index sponsor without regard to any products linked to them. Goldman Sachs International also acts as the Calculation Agent of the Index and, in that capacity, is responsible for the day-to-day implementation of the

Methodology, for the calculation of the Index, including responding to Market Disruption Events and potential adjustment events, and for publication of the Index Values. The decisions of the Calculation Agent could have an impact, positive or negative, on the closing level of the Index. In its role as Index Sponsor, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in structuring the Index or revising the Methodology. In its role as Calculation Agent, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in determining and calculating the Index.

Goldman Sachs members are sponsors of certain Underlying Assets. In that capacity, each of them has the power to make determinations that could materially affect the value of those Underlying Assets and, in turn, the Index Value.

Goldman Sachs is a full service financial services firm engaged in a range of market activities. Goldman Sachs may issue, arrange for the issue of, or enter into financial instruments or derivatives linked to, the Index, other indices that are based on some or all of the Underlying Assets, or any of the Index Components and arrange for the distribution of these financial instruments or derivatives, including the payment of distribution fees and commissions to any intermediaries. These activities could adversely affect the Index Value and any of the Underlying Assets.

Members of Goldman Sachs are under no obligation to confirm third-party data that may be relied on by the Methodology. With respect to any Index Component not sponsored by any member of Goldman Sachs, the Methodology relies on information from third-party sponsors of such Index Component or their calculation agents and other public sources. If you are considering acquiring or making an investment in a product linked to the Index, you should carefully read and understand the information about those Index Components; see "*Index Summary—Where You Can Find More Information*" above for resources providing further information relating to the Index Components. However, Goldman Sachs Group makes no warranty as to the correctness of that information and takes no responsibility for the accuracy of such data or the impact of any inaccuracy of such data on the Index. Although some of Underlying Assets are currently sponsored by a member of Goldman Sachs, there is no assurance that a member of Goldman Sachs will continue to sponsor these Underlying Assets.

Futures markets are vulnerable to disruption. The futures markets occasionally experience disruptions in trading (including temporary distortions or other disruptions due to various factors, such as the lack of liquidity in markets, the participation of speculators and governmental regulation and intervention). These disruptions include the cessation, for a material time, of trading in the futures contracts underlying an Index Component or the imposition by the futures exchange on which one or more such futures contracts are traded of a "limit price," a range outside of which these futures contracts are not permitted to trade. In addition, a futures exchange may replace or delist a futures contract included in the Index Component. There can be no assurance that a disruption, replacement or delisting of a futures contract, or any other event, will not have an adverse or distortive effect on the value of an Index Component or the manner in which it is calculated.

The performance of futures contracts may not correspond to the performance of their underlying assets, and are subject to certain risks that are not associated with their underlying assets. Certain Index Components are composed of futures contracts rather than underlying securities or physical

commodities. Futures contracts normally specify a certain date for settlement of a financial future (such as a futures contract on a securities index) or delivery of the underlying physical commodity. As the exchange-traded futures contracts that comprise an Index Component approach expiration, they are replaced by similar contracts that have a later expiration. Thus, for example, a futures contract purchased and held in August may specify a September expiration. As time passes, the contract expiring in September may be replaced by a contract for delivery in December. This process is referred to as "rolling." Because of the potential effects of negative roll yields, it is possible for the value of an Index Component composed of futures contracts to decrease significantly over time even when the relevant securities indices or near-term or spot prices of underlying commodities are stable or increasing. It is also possible, when the relevant securities indices or the near-term or spot prices of the underlying assets are decreasing, for the value of such Index Component to decrease significantly over time.

The Index Sponsor and certain of its affiliates are members in Credit Derivatives Determinations Committees and such membership may be adverse to interests of investors in products or instruments linked to the performance of the Index ("Linked Products"). Goldman Sachs International and certain of its affiliates may be members of one or more Credit Derivatives Determinations Committees in relation to a relevant credit index, and none of them will have any obligation to take into account the interests of investors in Linked Products. Any resolution or determination by a member of the Credit Derivatives Determinations Committees could be adverse to the interests of such investors.

The Goldman Sachs Group has an ownership interest in Markit Group Limited ("Markit"), the owner and manager of various indices including, but not limited to, the Markit iTraxx® indices and the Markit CDX® indices, and as such may be able to influence the methodology and other features of such indices. In addition, members of the Goldman Sachs Group may provide pricing or other data that is directly used in the calculation of the level, coupon and/or components of the indices. The activities of the Goldman Sachs Group members as contributor to any index may be adverse to the interests of investors in, and/or counterparties to, products linked to such index and may have an impact on the performance of such index. iTraxx® and CDX® are registered trademarks of Markit (formerly known as International Index Company Limited).

Certain Underlying Assets reflect, and certain Index deductions are tied to, the performance of credit default swaps or Credit Spread Indices reflecting the creditworthiness of their components. If one or more of such component entities experiences certain credit events, including a payment default or insolvency, credit spread of the relevant Credit Spread Index will increase and Index costs will increase.

A number of factors will influence the credit spreads reflected in the Credit Spread Indices, including:

- the perceived creditworthiness of its underlying components;
- technical factors affecting pricing in the credit default swap market;
- economic, financial, political, regulatory or judicial events that affect any underlying entity and the markets for the debt securities of each such entity; and
- interest rates and yields in the market.

Technical factors, including the interpretation of the market standard terms used when documenting credit derivative transactions, the method of determining payment and delivery obligations following credit events and the operation of certain determination committees may have a material and unpredictable effect on the performance of the Credit Spread Indices and, as a result, certain costs associated with the Index.

The Index includes an internal simulated currency hedge feature in respect of Underlying Assets denominated in a currency other than U.S. dollars. Through a series of synthetic transactions, the internal simulated currency hedge feature seeks to offset a portion of the positive or negative effects of currency exchange rate fluctuations in such other currency on the values of the affected Underlying Assets. However, the internal simulated currency hedge feature will prove ineffective if, and to the extent that, the "excess return" performance of such Underlying Asset is not zero. As a result of such movements, investors in the Index will still be subject to the risk of currency fluctuations affecting the value of the affected Underlying Assets. In addition, as the currency hedged levels of such Underlying Assets are based on the performance of synthetic cash deposits, the internal simulated currency hedge feature, if applicable, is unlikely to replicate a return exactly equal or similar to the return of such Underlying Asset that would be available to an investor whose investment currency is the same as that of the affected Underlying Asset.

Goldman Sachs may create and publish other indices, the concepts of which are similar, or identical, to those of the Underlying Assets. The levels being calculated by the relevant index calculation agent of the Underlying Assets are the only levels that will be used for the calculation of such positions used by the Index, subject to limited exceptions where the level is disrupted. Accordingly, no other published indices (if any) on the relevant securities indices or futures contracts underlying the Underlying Assets should be treated as the levels of the Underlying Assets, even where the concepts of such indices are similar, or identical, to those of the Underlying Assets.

The Underlying Assets provide no rights with respect to the underlying financial instruments. The investment exposure provided by the Index and Underlying Assets is synthetic. An investment linked to the Index and Underlying Assets will therefore not make an investor in any product linked to the Index a holder of, or give such investor a direct investment position in, any financial instruments underlying the Underlying Assets.

The Underlying Assets are not actively managed. The Underlying Assets operate in accordance with a set of pre-determined rolling methodology and formulae and the Calculation Agent does not exercise any discretion with respect to the Underlying Assets. The Underlying Assets are, therefore, not managed. Goldman Sachs International as the Index Sponsor is not acting as an investment adviser or performing a discretionary management role with respect to the Underlying Assets and, as a result, has no fiduciary duty to any person in respect of the Underlying Assets. While Goldman Sachs members may have access to information relating to the Index or its Underlying Assets, none of the Calculation Agent, the Index Sponsor or any member of Goldman Sachs will use such information in the administration or calculation of the Index.

The Index Sponsor will only restate the Index Value upon the discovery of certain errors, and the Index Sponsor is not required to correct the Index Value as of any day more than a certain number of days prior to the discovery of such error by the Index Sponsor. Pursuant to the Index Methodology and the current policies and procedures of the Index Sponsor (which may be

amended from time to time by the Index Sponsor), the Index Sponsor is not required to restate the Index Value for any discrepancy between the Index Methodology and the calculation of the Index Value, errors in calculation, publication errors, errors by third party data sources or providers, or the restatement of any Underlying Assets, for any day more than three days prior to the first business day in London on or after which the Index Sponsor becomes aware of or identifies such error (such number of days being amended and specified from time to time under such policies and procedures of the Index Sponsor). A failure to restate the Index Value to account for such errors may decrease, potentially materially so, the return on any product that may be linked to the Index or the investment strategy underlying the Index relative to a corrected and restated Index Value. In its role as Index Sponsor, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in applying, revising or updating the restatement policy. Furthermore, in its role as Calculation Agent, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in applying, revising or updating the restatement policy.

Selected Additional Risks Relating to the Satellite Intraday Equity Component

The Satellite Intraday Equity Component may be subject to unique risks associated with its intraday long-short strategy. The Satellite Intraday Equity Component is linked to an intraday momentum strategy that attempts to benefit from intraday momentum in the S&P 500 E-Mini Futures and Nasdaq 100 E-Mini Futures markets without taking overnight exposures. Computation of transaction signals and the transaction price in respect of any transaction notionally generated periodically by the algorithm governing the intraday momentum strategy is determined by reference to the time-weighted average price of the relevant futures contract. If the price of the relevant futures contract is volatile and subject to large fluctuations in value during (or between) any such windows, this may have an impact on the direction of signal (or no signal) generated by the algorithm and the notional size and transaction price in respect of any relevant notional transaction referenced in the intraday momentum strategy. As a result, the intraday momentum strategy may not outperform other indices similar to the intraday momentum strategy that references an alternative methodology or using a different length of execution window.

The Satellite Intraday Equity Component may perform poorly if U.S. equity markets do not exhibit intraday momentum. In the event that the Satellite Intraday Equity Component reflects a long or short position, as applicable, the Satellite Intraday Equity Component will perform poorly if the relevant equity market is showing intraday mean-reversion patterns (meaning there is either sharp equity appreciation followed by a decline in the same day, or a sharp equity sell-off followed by a recovery in the same day) or no clear trend.

Goldman Sachs International may have considerable discretion in the event of certain disruptions associated with the Satellite Intraday Equity Component, and is under no obligation to exercise such discretion in the interests of licensees of the Index, investors in products linked to the Index or any other party. The Satellite Intraday Equity Component is subject to the disruption events as described in its strategy documents and Goldman Sachs International, as sponsor of the Satellite Intraday Equity Component, may make determinations or adjustments to its methodology. As a result of certain disruption events, the sponsor of the Satellite Intraday Equity Component, who is a Goldman Sachs affiliate, may make, in good faith, determinations or adjustments to the component methodology without prior notice. The Satellite Intraday Equity Component is

structured by Goldman Sachs International as sponsor without regard to any products or other indices linked to it. Goldman Sachs International also acts as the calculation agent of the Satellite Intraday Equity Component and, in that capacity, is responsible for the day-to-day implementation of its methodology and for its calculation, including responding to market disruption events and potential adjustment events, in each case as published in the relevant strategy documents, and for publication of Satellite Intraday Equity Component values. The decisions of the calculation agent could have an impact, positive or negative, on the closing level of the Satellite Intraday Equity Component. In its role as sponsor of the Satellite Intraday Equity Component, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in structuring the Satellite Intraday Equity Component or revising its methodology. In its role as calculation agent of the Satellite Intraday Equity Component, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in determining and calculating the Satellite Intraday Equity Component. A methodology summary of the Satellite Intraday Equity Component is available in Annex B.

Back-tested performance reflects a number of assumptions, which may not be accurate. Certain presentations and historical analysis ("back-testing") or other statistical analysis materials in respect of the operation and/or potential returns of the Satellite Intraday Equity Component, and constituents of the Satellite Intraday Equity Component, which may be provided or available to you are based on a number of assumptions, historical estimates, simulated analyses and hypothetical circumstances to estimate how the Satellite Intraday Equity Component may have performed prior to its actual existence. The relevant strategy sponsor may use historical data that is available to calculate the hypothetical level of such strategy prior to its inception. If a strategy sponsor determines that such historical data is not available or is incomplete, the strategy sponsor may use alternate sources of data in place of such historical data as well as make certain modifications to the strategy methodology as it deems necessary to calculate the hypothetical level of the strategy prior to its inception. Any such strategy sponsor provides no assurance or guarantee that its strategy will operate or would have operated in the past in a manner consistent with those materials. As such, any historical returns projected in such materials or any hypothetical simulations based on these analyses, which may be provided or available to you in relation to a strategy may not reflect the performance of, and are no guarantee or assurance in respect of the performance or returns of, the strategy over any time period. Furthermore, any back-testing of a strategy is based on information and data provided to the relevant strategy sponsor by third parties. A strategy sponsor will not have independently verified or guaranteed the accuracy and/or the completeness of such information or data provided and is not responsible for any inaccuracy, omission, mistake or error in such information, data and/or back-testing.

The Satellite Intraday Equity Component and its constituents have very limited performance histories. The Satellite Intraday Equity Component, and constituents of the Satellite Intraday Equity Component, will only have been calculated since their respective strategy inception dates, being the dates determined by the relevant strategy sponsor as the date on which the value of a strategy would have been equal to its "Strategy Initial Value" based on back-testing (using simulated analyses and hypothetical circumstances, as described in more detail above). As such, any historical returns or any hypothetical simulations based on such back-tested data or analyses with respect to the period from any such strategy inception date to the date on which investment products linked to a strategy are first implemented (which may be materially later than the strategy

inception date), may not reflect the performance of, and are no guarantee or assurance in respect of the performance or returns of, a strategy over any time period.

Selected Additional Risks Relating to the Satellite Commodity Component

The Satellite Commodity Component and the Underlying Core Commodity Assets are subject to unique legal and regulatory risks. Commodities are subject to legal and regulatory regimes in the United States and, in some cases, in other countries that may change in ways that could negatively affect the values of the Satellite Commodity Component and the Underlying Core Commodity Assets and are expected to increase the cost of transacting derivatives. This could have an adverse impact on the levels of the Satellite Commodity Component and the Underlying Core Commodity Assets.

The Commodity Curve Constituent is based on certain assumptions about the relative expected performance of positions at different points on the commodity curve, and such assumptions may be incorrect. The Commodity Curve Constituent may have negative performance if shorter dated futures positions perform better than longer dated futures positions, which could have a material adverse impact on the performance of the Index.

The Commodity Commitment of Traders Constituent will have negative performance if deviations in net positions of speculators are sustained and do not revert to historical levels, which could have a material adverse impact on the performance of the Index.

The Commodity Congestion Constituent will have negative performance if other market participants recognize and seek to extract roll premiums by changing the timing of their rolling periods, which could have a material adverse impact on the performance of the Index.

The Satellite Commodity Component may be volatile. The Commodity Constituents may provide both long and short exposure to their underlying commodity futures. The use of long and short positions simultaneously in the underlying commodity futures may result in a lower volatility of returns than would otherwise be the case for a "naked" long or short position - however there can be no guarantee that the Commodity Constituents (alone or in combination) will be successful in achieving lower volatility.

Members of Goldman Sachs are under no obligation to confirm third-party data that may be relied on by the methodology governing the Satellite Commodity Component or its constituents. The Satellite Commodity Component and its constituents are linked to underlying instruments, and therefore calculated based on price data that may be subject to potential errors in data sources or other errors that may affect the closing levels and/or prices published by the relevant sponsor (and therefore the level of the Satellite Commodity Component or its constituents). Such errors could adversely affect the level of the Satellite Commodity Component or its constituents. Neither the sponsor of the Satellite Commodity Component or any of its constituents, nor any of its affiliates is under any obligation or currently intends to independently verify such third party information or data from any third party data source or to advise the investor of any financial instrument linked to the Satellite Commodity Component or its constituents of any inaccuracy, omission, mistake or error of which it or any such affiliate becomes aware. Consequently, neither the sponsor of the Satellite Commodity Component or any of its constituents nor any of its affiliates shall be liable

(whether in contract or otherwise) to any person for any inaccuracy, omission, mistake or error in the calculation or dissemination of the level of the Satellite Commodity Component or its constituents. There can be no assurance that any error or discrepancy on the part of any data source or sponsor will be corrected or revised. Even if any error or discrepancy on the part of any third party data source or sponsor is corrected or revised, neither the sponsor of the Satellite Commodity Component or any of its constituents nor any of its affiliates is under any obligation or currently intends to incorporate any such correction or revision into the calculation of the level of the Satellite Commodity Component or its constituents or the level of any component. Neither the sponsor of the Satellite Commodity Component or any of its constituents, nor any of its affiliates, makes any representation or warranty, express or implied, as to the correctness or completeness of that information and takes no responsibility for the accuracy of such data or the impact of any inaccuracy of such data on the level of the Satellite Commodity Component or its constituents, the level of any component or on the performance of the futures contracts that may be included therein. Any of the foregoing errors or discrepancies could also adversely affect the level of the Satellite Commodity Component, its constituents or their components.

Each of the commodity futures contracts included in the Satellite Commodity Component tracks the performance of one or more commodities in the commodity markets. Such commodities may be represented by commodity futures which (i) trade outside the United States on international exchanges, and/or (ii) are denominated in currencies other than United States dollars. The investors of a financial instrument linked to a Commodity Constituent, the Satellite Commodity Component and the Index should be aware that investments linked to the value of foreign commodity futures contracts involve particular risks.

Commodity futures contracts are subject to unique legal, regulatory and other risks. Certain commodity futures contracts included in the Satellite Commodity Component may be linked to commodity futures contracts on physical commodities on trading facilities located outside the United States. The regulations of the Commodity Futures Trading Commission (the "CFTC") do not apply to trading on foreign trading facilities, and trading on foreign trading facilities may involve different and greater risks than trading on United States trading facilities. Certain foreign markets may be more susceptible to disruption than United States trading facilities due to the lack of a government-regulated clearinghouse system. Trading on foreign trading facilities also involves certain other risks that are not applicable to trading on United States trading facilities. Those risks may include: exchange rate risk relative to the U.S. dollar, exchange controls, expropriation, burdensome or confiscatory taxation, and moratoriums, and political or diplomatic events. It will also likely be more costly and difficult for the sponsor of a Commodity Constituent to enforce the laws or regulations of a foreign country or trading facility, and it is possible that the foreign country or trading facility may not have laws or regulations which adequately protect the rights and interests of investors in the commodity futures contracts included in such Commodity Constituent. In addition, because foreign trading facilities may be open on days when the value of a Commodity Constituent is not published, the value of the commodity futures contracts included in such Commodity Constituent may change on days when the level of such Commodity Constituent is unavailable.

Commodity markets are subject to a number of unique market distortions that may not affect other markets to the same degree. The commodity markets are subject to temporary distortions or other market disruptions due to various factors, including the lack of liquidity in the markets, the

participation of speculators and government regulation and intervention. In addition, U.S. futures exchanges and some foreign exchanges have regulations that limit the amount of fluctuation in futures contract prices that may occur during a single business day. These limits are generally referred to as "daily price fluctuation limits" and the maximum or minimum price of a contract on any given day as a result of these limits is referred to as a "limit price". Once the limit price has been reached in a particular contract, no trades may be made at a different price. Limit prices have the effect of precluding trading in a particular contract or forcing the liquidation of contracts at disadvantageous times or prices. These circumstances could adversely affect the level of the commodity futures contracts in the Commodity Constituents, the Satellite Commodity Component and the Index, and, therefore, the value of the Commodity Constituents, the Satellite Commodity Component and the Index, and the value of any financial instruments linked to the Commodity Constituents, the Satellite Commodity Component and the Index.

The performance of commodity futures contracts may not correspond to the performance of their underlying assets, and are subject to certain risks and market factors that are not associated with underlying commodities. There are risks relating to exposure to the Commodity Constituents' exposure to commodity futures contracts compared to "spot" prices:

- Rolling - It is typical in commodity markets to take the price of the first-nearby commodity futures contract with respect to a commodity (that is, as of a given date, the commodity futures contract first to expire following such date) as a reference for the "spot" price of such commodity. Over time such "spot" price will vary for two reasons. Firstly, the price of the first-nearby commodity futures contract will vary over time due to market fluctuations. Secondly, when the commodity futures contract which is considered to be the first-nearby contract changes from contract expiration "X" to contract expiration "Y" (as contract expiration "X" is approaching expiry), there is a discrete change in the price of the "prevailing" first-nearby commodity futures contract. If contract expiration "Y" is trading at a premium to contract expiration "X" (referred to as a "contango" market, as described in further detail below), the discrete change will represent a "jump" in the "spot" price. If contract expiration "Y" is trading at a discount to contract expiration "X" (referred to as a "backwardated" market, as described in further detail below) the discrete change will represent a "drop" in price.
- Effect of "jump" or "drop" - Since a "jump" or "drop" does not correspond to a change in price of any given commodity futures contract, these economics cannot be captured by a futures-linked investment such as the Commodity Constituents. Therefore, all other things being equal (in particular, assuming no change in the relative price of the various contract expirations with respect to the relevant commodity futures contract), in a "contango" market a long-only futures-linked investment may be expected to underperform the "spot" price (due to not capturing the "jump" in spot price) and in a "backwardated" market a long-only futures-linked investment may be expected to outperform the "spot" price (due to not capturing the "drop" in spot price).
- "Backwardation" occurs when the price of a near-dated commodity futures contract is greater than the price of a longer-dated commodity futures contract, the market for such contracts is referred to as in "backwardation". "Contango" occurs when the price of the near-dated commodity futures contract is lower than the price of the longer-dated commodity futures contract, the market for such contracts is referred to as in "contango".

- Accordingly, an investor of a financial product linked to the Commodity Constituents that references commodity indices or strategies as components may receive a lower payment upon redemption of such financial instrument than such investor would have received if he or she had invested directly in commodities underlying such commodity indices or strategies or a financial instrument whose redemption or settlement amount was based upon the spot price of physical commodities or commodity futures contracts that were scheduled to expire on the maturity date of the financial instrument.

Commodities are a unique asset class with unique risks. Commodity prices, and, consequently, the prices of corresponding commodity futures contracts, are affected by various factors, including, but not limited to, supply and demand, liquidity, weather conditions and natural disasters, government programs and policies, political, military, terrorist and economic events as set out in more detail below.

- Supply and demand - The planning and management of commodities supplies is very time-consuming. This means that the scope for action on the supply side is limited and it is not always possible to adjust production swiftly to take account of demand. Demand can also vary on a regional basis. Transport costs for commodities in regions where these are needed also affect their prices. The fact that some commodities take a cyclical pattern, such as agricultural products which are only produced at certain times of the year, can also result in major price fluctuations.
- Liquidity - Not all commodities markets are liquid and able to quickly and adequately react to changes in supply and demand. The fact that there are only a few market participants in the commodities markets means that speculative investments can have negative consequences and may distort prices.
- Weather conditions and natural disasters - Unfavorable weather conditions can influence the supply of certain commodities for the entire year. This kind of supply crisis can lead to severe and unpredictable price fluctuations. Diseases and epidemics can also influence the prices of agricultural commodities.
- Governmental programs and policies, national and international political, military and economic events and trading activities in commodities and related contracts - Commodities are often produced in emerging market countries, with demand coming principally from industrialized nations. The political and economic situation is however far less stable in many emerging market countries than in the developed world. They are generally much more susceptible to the risks of rapid political change and economic setbacks. Political crises can affect purchaser confidence, which can as a consequence affect commodity prices. Armed conflicts can also impact on the supply and demand for certain commodities. It is also possible for industrialized nations to impose embargos on imports and exports of goods and services. This can directly and indirectly impact commodity prices. Furthermore, numerous commodity producers have joined forces to establish organizations or cartels in order to regulate supply and influence prices.

These factors may adversely affect the value of the Commodity Constituents and the Index and the value of any financial instrument linked thereto in varying ways, and different factors may cause the value and volatility of different commodities to move in inconsistent directions and at inconsistent rates.

The Commodity Constituents and the Underlying Core Commodity Assets will perform differently than the S&P GSCI Commodity Indices and/or BCOM Family Indices they reference. While the Commodity Constituents and the Underlying Core Commodity Assets reference certain S&P GSCI Commodity Indices and/or BCOM Family Indices (each, as described in more detail below) (whether directly or indirectly via its underlying commodity futures), an investment in a financial instrument linked to the value of a Commodity Constituent or the Underlying Core Commodity Asset is not comparable to and should not be benchmarked against an investment in a financial instrument linked to the value of the S&P GSCI Commodity Indices and/or BCOM Family Indices. This is because the differences between the Commodity Constituents and the Underlying Core Commodity Assets and the S&P GSCI Commodity Indices and/or BCOM Family Indices (as the case may be) are likely to produce different values for the Commodity Constituents and the Underlying Core Commodity Assets and the S&P GSCI Commodity Indices and/or BCOM Family Indices (as the case may be) at any given time and, therefore, may produce differing returns.

The Commodity Constituents and the Underlying Core Commodity Assets may reference certain S&P GSCI Commodity Indices, BCOM Family Indices and Goldman Sachs proprietary strategies. The S&P GSCI Commodity Indices are calculated and maintained by S&P Dow Jones Indices LLC, a subsidiary of The McGraw-Hill Companies, Inc. as sponsor. The BCOM Family Indices are calculated by UBS Securities LLC (collectively with its affiliates, "UBS") together with Bloomberg Finance L.P. (collectively with its affiliates, "Bloomberg") as sponsor. The Goldman Sachs proprietary strategies are calculated by Goldman Sachs International as sponsor. The relevant sponsor is also responsible for the composition of such S&P GSCI Commodity Indices, BCOM Family Indices, or Goldman Sachs proprietary strategies. The relevant sponsor may take any actions in respect of such S&P GSCI Commodity Indices, BCOM Family Indices, or Goldman Sachs proprietary strategies (as the case may be) without regard to the interests of the sponsor of the Commodity Constituents, the Underlying Core Commodity Assets or the investor of any financial instruments linked to thereto, and any of these actions could adversely affect the levels of the Commodity Constituents, the Underlying Core Commodity Assets or the Index together with the market value of any financial instruments linked to the Commodity Constituents, the Underlying Core Commodity Assets or the Index.

The relevant sponsor can substitute the commodity futures contracts underlying such S&P GSCI Commodity Indices, BCOM Family Indices, or Goldman Sachs proprietary strategies (for example, if a commodity futures contract referenced were to be delisted, terminated or replaced by the relevant exchange on which such underlying commodity futures contract is traded) or make other changes to the methodology for calculating such S&P GSCI Commodity Indices, BCOM Family Indices, or Goldman Sachs proprietary strategies. The composition of an S&P GSCI Commodity Index, BCOM Family Index, or Goldman Sachs proprietary strategy may also change over time as additional commodity contracts satisfy the eligibility criteria or commodity contracts currently included in such S&P GSCI Commodity Index, BCOM Family Index, or Goldman Sachs proprietary strategies (as the case may be) fail to satisfy such criteria. Such changes to the composition of any S&P GSCI Commodity Index, BCOM Family Index or Goldman Sachs proprietary strategy referenced by a Commodity Constituent or the Underlying Core Commodity Asset may affect the level of such S&P GSCI Commodity Index, BCOM Family Index, or Goldman Sachs proprietary strategies as any newly added commodity futures contract may perform significantly worse or better than the commodity futures contract it replaces, which in turn, may affect the level of a Commodity Constituent or the Underlying Core Commodity Asset.

The relevant sponsor may also alter, discontinue or suspend calculation or dissemination of such S&P GSCI Commodity Index, BCOM Family Index, or Goldman Sachs proprietary strategy. In such circumstances, the sponsor of the Commodity Constituent or the Underlying Core Commodity Asset would have the discretion to make determinations with respect to the level of the Commodity Constituent or the Underlying Core Commodity Asset for the purposes of calculating the amount payable on any financial instrument linked to the Commodity Constituent or the Underlying Core Commodity Asset, or the Index.

The S&P GSCI Commodity Indices, BCOM Family Indices, or Goldman Sachs proprietary strategies referenced by the Commodity Constituents and the Underlying Core Commodity Assets are based solely on commodity futures contracts traded on regulated futures exchanges (referred to in the United States as "designated contract markets"). At present, these S&P GSCI Commodity Indices, BCOM Family Indices, or Goldman Sachs proprietary strategies continue to be comprised exclusively of regulated commodity futures contracts. However, the S&P GSCI Commodity Indices, BCOM Family Indices, or Goldman Sachs proprietary strategies referenced by the Commodity Constituents and the Underlying Core Commodity Assets may in the future include over-the-counter contracts (such as swaps and forward contracts) traded on trading facilities that are subject to lesser degrees of regulation or, in some cases, no substantive regulation. As a result, trading in such commodity futures contracts, and the manner in which prices and volumes are reported by the relevant trading facilities, may not be subject to the same provisions of, and the protections afforded by, the U.S. Commodity Exchange Act 1936, as amended, or other applicable statues and related regulations, that govern trading on regulated futures exchanges. In addition, many electronic trading facilities have only recently initiated trading and do not have significant trading histories. As a result, the trading of commodity futures contracts on such facilities and the inclusion of such commodity futures contracts in any S&P GSCI Commodity Index, BCOM Family Index, or Goldman Sachs proprietary strategies referenced by the Commodity Constituents or the Underlying Core Commodity Assets may be subject to certain risks not presented by most exchange-traded futures contracts, including risks related to the liquidity and price histories of the relevant commodity futures contracts.

The need to periodically "roll" commodities futures contracts makes them subject to unique risks associated with illiquidity and volatility. As a general matter, the risk of low liquidity or volatile pricing around the maturity date of a commodity futures contract is greater than in the case of other futures contracts because (among other factors) a number of market participants take physical delivery of the underlying commodities. Many commodities, like those in the energy and industrial metals sectors, have liquid futures contracts that expire every month. Therefore, these futures contracts are rolled forward every month. Futures contracts based on certain other commodities, most notably agricultural and livestock products, tend to have only a few contract months each year that trade with substantial liquidity. Thus, these commodities, with related futures contracts that expire infrequently, roll forward less frequently than every month, and can have further pronounced pricing volatility during extended periods of low liquidity. It should be noted that due to the significant level of continuous consumption, limited reserves, and oil cartel controls, energy commodities are subject to rapid price increases in the event of perceived or actual shortages. These factors (when combined or in isolation) may affect the price of commodity futures contracts and, as a consequence, the performance of the Commodity Constituents or the Underlying Core Commodity Assets.

Goldman Sachs International may have considerable discretion in the event of certain disruptions associated with the Satellite Commodity Component, and is under no obligation to exercise such discretion in the interests of licensees of the Index, investors in products linked to the Index or any other party. The Satellite Commodity Component is subject to the disruption events as described in its strategy documents and Goldman Sachs International, as sponsor of the Satellite Commodity Component, may make determinations or adjustments to its methodology. As a result of certain disruption events, the sponsor of the Satellite Commodity Component, who is a Goldman Sachs affiliate, may make, in good faith, determinations or adjustments to the component methodology without prior notice. The Satellite Commodity Component is structured by Goldman Sachs International as sponsor without regard to any products or other indices linked to it. Goldman Sachs International also acts as the calculation agent of the Satellite Commodity Component and, in that capacity, is responsible for the day-to-day implementation of its methodology and for its calculation, including responding to market disruption events and potential adjustment events, in each case as published in the relevant strategy documents, and for publication of Satellite Commodity Component values. The decisions of its calculation agent could have an impact, positive or negative, on the closing level of the Satellite Commodity Component. In its role as sponsor of the Satellite Commodity Component, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in structuring the Satellite Commodity Component or revising its methodology. In its role as calculation agent of the Satellite Commodity Component, Goldman Sachs International does not have any obligation to take the needs of any person into consideration in determining and calculating the Satellite Commodity Component.

Commodities are subject to legal and regulatory regimes in the United States and, in some cases, in other countries that may change in ways that could negatively affect the value of the Commodity Constituents, the Satellite Commodity Component or the Underlying Core Commodity Assets and are expected to increase the cost of transacting derivatives. This could have an adverse impact on the level of a Commodity Constituent, the Satellite Commodity Component or an Underlying Core Commodity Assets.