

# **S&P GSCI** *Methodology*

March 2020

# Table of Contents

Introduction	3
Index Objective and Overview of the S&P GSCI	3
Currency of Calculation and Additional Index Return Series	3
Supporting Documents	3
Eligibility Criteria	4
Non-Financial Commodities	4
Certain Contract Characteristics	4
Denomination and Geographical Requirements	4
Availability of Daily Contract Reference Prices	4
Availability of Volume Data	4
Total Dollar Value Trading Requirement	4
The following criteria must be satisfied:	4
Reference Percentage Dollar Weight Requirement	5
The following criteria must be satisfied:	5
Determination of the Number of Contracts	5
Intra-Year Changes in the Composition of the S&P GSCI	6
Sources of Information	6
Calculation of the Contract Production Weights	8
Overview of the Contract Production Weights	8
World Production Quantities	8
World Production Averages	8
Contract Production Weights	8
CPW Adjustment Procedure	9
Quarterly Review of Index Composition	9
Sources of Information	10
Designated Contract Expirations	11
Use of Designated Contract Expirations in Calculating the S&P GSCI	11
Identification of Designated Contract Expirations	11
Failure to Trade Designated Contract Expirations	11
Replacement of Contracts	12

The Normalizing Constant	13
<b>Purpose of the Normalizing Constant</b>	<b>13</b>
<b>Calculation of the Total Dollar Weight of the S&amp;P GSCI on Non-Roll Days</b>	<b>13</b>
<b>Calculation of the Normalizing Constant</b>	<b>14</b>
Calculation of the S&P GSCI and Related Indices	15
<b>Overview of the Calculation Process</b>	<b>15</b>
<b>Calculation of the S&amp;P GSCI</b>	<b>15</b>
<b>Calculation of the S&amp;P GSCI ER</b>	<b>18</b>
<b>Calculation of the S&amp;P GSCI TR</b>	<b>20</b>
<b>Calculation of the S&amp;P GSCI FPI Index</b>	<b>20</b>
<b>CPWs for the S&amp;P GSCI Reduced Energy Index, S&amp;P GSCI Light Energy Index, and S&amp;P GSCI Ultra-Light Energy Index</b>	<b>21</b>
Index Governance	22
<b>Index Committee</b>	<b>22</b>
<b>Commodity Index Advisory Panel</b>	<b>22</b>
Index Dissemination	23
<b>Tickers</b>	<b>23</b>
<b>Index Data</b>	<b>24</b>
<b>Web site</b>	<b>24</b>
Appendix A: Contracts Included in the S&P GSCI for 2020	25
<b>Contracts included in the 2020 S&amp;P GSCI</b>	<b>25</b>
<b>Composition of S&amp;P GSCI Sub-Indices</b>	<b>27</b>
<b>WPAs and Conversion Factors</b>	<b>28</b>
<b>Contract Units and Conversion Factors for 2020 S&amp;P GSCI Contracts</b>	<b>29</b>
<b>Sources for World Production Data</b>	<b>30</b>
Appendix B: Calculation of S&P GSCI Forwards	31
Appendix C: Calculation of S&P GSCI, Non-US Dollar Denominations	32
Appendix D: S&P GSCI Single Commodity Indices Contract Schedule	33
Appendix F: Calculation of the S&P GSCI Settlement Index Family	34
Appendix G: S&P GSCI Grains Select	35
Appendix H: S&P GSCI Fixed Weight Daily Rebalanced Index (Custom)	36
Appendix I: S&P GSCI Carbon Emission Allowances EUA (EUR) Index	37
Glossary	38
S&P Dow Jones Indices' Contact Information	44
<b>Contact Information</b>	<b>44</b>
Disclaimer	45

# Introduction

## Index Objective and Overview of the S&P GSCI

The S&P GSCI index measures commodity market performance.

The S&P GSCI is a benchmark for investment in the commodity markets and is designed to be a tradable index accessible to market participants. The S&P GSCI is calculated primarily on a world production-weighted basis and comprises the principal physical commodities that are the subject of active, liquid futures markets. There is no limit on the number of contracts that may be included in the S&P GSCI; any contract that satisfies the eligibility criteria and the other conditions specified in this methodology are included. This feature enhances the suitability of the S&P GSCI as a benchmark for commodity market performance and to reflect general levels of price movements and inflation in the world economy. The S&P GSCI is calculated and maintained by S&P Dow Jones Indices.

## Currency of Calculation and Additional Index Return Series

In addition to the indices detailed in this methodology, additional return series versions of the indices may be available, including, but not limited to: currency, currency hedged, decrement, fair value, inverse, leveraged, and risk control versions. For a list of available indices, please refer to [S&P DJI's All Indices by Methodology Report](#).

*For information on index calculation, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.*

## Supporting Documents

This methodology is meant to be read in conjunction with supporting documents providing greater detail with respect to the policies, procedures and calculations described herein. References throughout the methodology direct the reader to the relevant supporting document for further information on a specific topic. The list of the main supplemental documents for this methodology and the hyperlinks to those documents is as follows:

Supporting Document	URL
S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology	<a href="#">Commodities Indices Policies &amp; Practices</a>
S&P Dow Jones Indices' Index Mathematics Methodology	<a href="#">Index Mathematics Methodology</a>

This methodology was created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of each index governed by this methodology document. Any changes to or deviations from this methodology are made in the sole judgment and discretion of S&P Dow Jones Indices so that the index continues to achieve its objective.

# Eligibility Criteria

## Non-Financial Commodities

A Contract must be on a physical commodity and may not be on a financial commodity (e.g., securities, currencies, interest rates, etc.). The Contracts on a particular commodity need not require physical delivery by their terms in order for the commodity to be considered a physical commodity.

## Certain Contract Characteristics

The following criteria must be satisfied:

1. The Contract must have a specified expiration or term or provide in some other manner for delivery or settlement at a specified time, or within a specified time period, in the future.
2. The Contract must, at any given point in time, be available for trading at least five months prior to its expiration or such other date or time period specified for delivery or settlement.
3. The Trading Facility on which the Contract is traded must allow market participants to execute spread transactions, through a single order entry, between the pairs of Contract Expirations included in the S&P GSCI that, at any given point in time, will be involved in the rolls to be affected in the next three Roll Periods.

## Denomination and Geographical Requirements

Contract must be denominated in U.S. dollars and traded on or through a Trading Facility that has its principal place of business or operations in a country that is a member of the Organization for Economic Cooperation and Development (OECD) during the relevant Annual Calculation Period or Interim Calculation Period.

## Availability of Daily Contract Reference Prices

Daily Contract Reference Prices for such Contract generally must have been available on a continuous basis for at least two years prior to the proposed date of inclusion. In appropriate circumstances, S&P Dow Jones Indices may determine that a shorter time period is sufficient or that historical Daily Contract Reference Prices for such Contract may be derived from Daily Contract Reference Prices for a similar or related Contract.

## Availability of Volume Data

Volume data with respect to such Contract must be available, from sources satisfying the criteria specified in *Contract Volume and Liquidity Requirements*, for at least the three months immediately preceding the date on which the determination is made.

## Total Dollar Value Trading Requirement

The following criteria must be satisfied:

1. In order to be added to the S&P GSCI, a Contract that is not included in the S&P GSCI at the time of determination (which may be either a Monthly Observation Date or the time of the annual determination of the composition of the S&P GSCI), and is based on a commodity that is not represented in the S&P GSCI at such time, must have an annualized Total Dollar Value Traded, over the relevant Annual Calculation Period or Interim Calculation Period, of at least US\$ 15 billion.

2. In order to continue to be included in the S&P GSCI, a Contract already in the S&P GSCI at the time of determination, and that is the only Designated Contract on the relevant S&P GSCI Commodity, must have an annualized Total Dollar Value Traded of at least US\$ 5 billion over the relevant Annual Calculation Period or Interim Calculation Period, and of at least US\$ 10 billion during at least one of the three Annual Observation Periods.
3. In order to be added to the S&P GSCI, a Contract that is not in the S&P GSCI at the time of determination, and is based on a S&P GSCI Commodity on which there are one or more Designated Contracts already in the S&P GSCI at such time, must have an annualized Total Dollar Value Traded, over the relevant Annual Calculation Period or Interim Calculation Period, of at least US\$ 30 billion.
4. In order to continue to be included in the S&P GSCI, a Contract that is already in the S&P GSCI at the time of determination, and is based on a S&P GSCI Commodity on which there are one or more Designated Contracts already in the S&P GSCI at such time, must have an annualized Total Dollar Value Traded of at least US\$ 10 billion over the relevant Annual Calculation Period or Interim Calculation Period, and of at least US\$ 20 billion during at least one of the three Annual Observation Periods.

Notwithstanding any provisions to this methodology, the Total Dollar Value Traded (TDVT) and Total Quantity Traded (TQT) of any Contract are calculated based on the relevant volume of such Contract together with the volume of any Related Contract. Any other modifications to the definitions included in this methodology that are necessary are deemed to have been made for purposes of calculating the relevant TDVT's and TQT's.

The Total Dollar Value Traded measures the extent to which a commodity is the subject of Contract trading. Analyzing this feature through the use of dollar values is free from contract-dependent characteristics such as contract size and, thus, makes it possible to compare the results for all Contracts. The minimum TDVT requirement, therefore, further enhances the tradability of the S&P GSCI by excluding those Contracts that do not represent sufficient trading activity in the relevant commodity.

### **Reference Percentage Dollar Weight Requirement**

The following criteria must be satisfied:

1. In order to continue to be included in the S&P GSCI, at the time of determination, a Contract must have a Reference Percentage Dollar Weight of at least 0.10%.
2. In order to be added to the S&P GSCI, a Contract must have a Reference Percentage Dollar Weight of at least 1.00% at the time of determination.

The Reference Percentage Dollar Weight is calculated based on the proposed composition of the S&P GSCI determined according to the procedures set forth above. Any Contract that does not satisfy the applicable Reference Percentage Dollar Weight requirement is excluded from such proposed composition, and the CPWs of the remaining Contracts are recalculated according to the procedure set forth in *Contract Production Weights*, until the proposed S&P GSCI contains only Contracts that satisfy the applicable Reference Percentage Dollar Weight requirements.

### **Determination of the Number of Contracts**

#### **Selection of Contracts on the same S&P GSCI Commodity and among several S&P GSCI Commodities.**

In the event that two or more Contracts on the same S&P GSCI Commodity satisfy the eligibility criteria set forth above, such Contracts are included in the S&P GSCI in the order of their respective TQT's, with the Contract having the highest TQT being included first. No further Contracts are included if such inclusion results in the TVM for such Commodity exceeding the TVM Upper Level.

If under the procedure set forth in the preceding paragraph, additional Contracts could be included with respect to several S&P GSCI Commodities at the same time, the procedure is first applied to the S&P GSCI Commodity that has the lowest TVM at the time of determination. Subject to the other eligibility

criteria, the Contract with the highest TQT on such Commodity is included. Before any additional Contract on any S&P GSCI Commodity is included, the TVM's for all S&P GSCI Commodities are recalculated. The selection procedure described above is, then, repeated with respect to the Contracts on the S&P GSCI Commodity that then has the lowest TVM.

The TVM of any Contract and all other measures related to the TVM are calculated based on the relevant volume of such Contract together with the volume of any Related Contract. Any other modifications to the definitions included in this methodology that are necessary in order to implement such calculations are hereby deemed to have been made for purposes of calculating the relevant TVM's.

Between the First and a Related Contract, only the Contract with the greater TQT over the relevant Calculation Period is included in the S&P GSCI.

As described above, within each commodity group, the order in which additional Contracts are added is based on the TQT's of the relevant Contracts. If the Contracts on a particular S&P GSCI Commodity have sufficient liquidity to support the portion of the S&P GSCI that is attributable to such Commodity (as measured by the TVM), then no further Designated Contracts on such Commodity are necessary. If, however, the TVM of such Commodity is relatively low, it may be necessary or appropriate to include additional Contracts as Designated Contracts. This serves to spread the liquidity attributable to the relevant S&P GSCI Commodity across a broader range of Contracts, thereby enhancing the tradability of the S&P GSCI. However, no additional Contracts are added if their addition would cause the TVM of the relevant S&P GSCI Commodity to exceed the TVM Upper Level. In those circumstances, no further liquidity in the relevant S&P GSCI Commodity is necessary.

### **Intra-Year Changes in the Composition of the S&P GSCI**

The composition of the GSCI is reviewed on a quarterly basis during any given S&P GSCI Year. If on any Monthly Observation Date, the TVM of any Designated Contract is below the TVM Threshold for the relevant S&P GSCI Year, the composition of the S&P GSCI with respect to the S&P GSCI Commodity underlying such Contract will be re-determined.

### **Sources of Information**

The following are the sources of the information used to determine the eligibility of Contracts for inclusion in the S&P GSCI pursuant to the requirements set forth in *Eligibility Criteria*. If any of the sources identified below is unavailable with respect to the determination of the S&P GSCI for a particular S&P GSCI Year, S&P Dow Jones Indices will identify appropriate alternative sources and the composition of the S&P GSCI for such S&P GSCI Year will be based on such alternative sources. In addition, if S&P Dow Jones Indices believes that one or more of the sources identified below contains a manifest error, it may use an alternative source to obtain the necessary information. Any such alternative sources used by S&P Dow Jones Indices will be publicly disclosed at the time that the composition of the S&P GSCI for the next S&P GSCI Year is announced.

**General Eligibility Requirements.** The identification of those commodities that satisfy the general eligibility requirements is based on the FIA Reports that are published with respect to the relevant Annual Calculation Period or Interim Calculation Period, and directly from the particular Trading Facilities. The determination as to whether a particular Trading Facility has its principal place of business or operations in an OECD country is based on the most recent data published by the OECD available on the date of determination.

**Contract Volume and Liquidity Requirements.** In order to determine whether a particular Contract satisfies the volume and liquidity requirements described above, S&P Dow Jones Indices may use any available sources that it believes to be reasonably reliable including, but not limited to, data contained in the FIA Reports. In the event of manifest error, S&P Dow Jones Indices may supplement, and make corrections to, any such data.

Volume data used to determine whether a particular Contract is eligible to be included in the S&P GSCI are the data for the relevant Annual Calculation Period or Interim Calculation Period, provided that in the case of a Contract that has been trading for fewer than 12 months, the determination is made based on data for the period of time during which the Contract has been trading, with such data being annualized.

Volume data with respect to a given Contract are calculated based on the volumes of all Contract Expirations of such Contract that have been traded within the relevant Annual Calculation Period or Interim Calculation Period.

**Adjustments in Special Circumstances.** In applying volume data for purposes of calculating the S&P GSCI, S&P Dow Jones Indices may make any such adjustments as it believes to be reasonably necessary in order to take into account any unique or unusual factors with respect to the relevant S&P GSCI Commodity.



# Calculation of the Contract Production Weights

## Overview of the Contract Production Weights

The S&P GSCI is a production-weighted index, designed to reflect the relative significance of each of the constituent commodities to the world economy, while preserving the tradability of the index by limiting eligible Contracts to those with adequate liquidity. In addition to determining the list of Designated Contracts S&P Dow Jones Indices ascertains the quantity of each such Designated Contract to be included in the S&P GSCI, i.e. the Contract Production Weights (CPWs). The calculation of the CPWs of the Designated Contracts involves a four-step process: (1) determination of the World Production Quantity (WPQ) of each S&P GSCI Commodity (2) determination of the World Production Average (WPA) of each S&P GSCI Commodity over the WPQ Period (3) calculation of the CPW based on the Contract's percentage of the relevant TQT and (4) certain adjustments to the CPWs.

## World Production Quantities

**Determination of WPQ's.** The WPQ of each S&P GSCI Commodity is equal to the total world production of the S&P GSCI Commodity (except as otherwise set forth in this section) over the WPQ Period.

The WPQ Period is defined as the five-year period for which complete world production data is available for all S&P GSCI Commodities from sources determined by S&P Dow Jones Indices to be reasonably accurate and reliable. The data is reported on a two year lag.

**Livestock Production Quantities.** The annual production quantity for cattle, which is stated in terms of carcass weight, is converted into an equivalent quantity of live cattle by multiplying the production quantity of cattle for a given year by the ratio of live weight of cattle to the dressed weight of cattle (ALW/ADW) for that year.

In addition, cattle and hog production quantities are based on world industrial production data, rather than total world production data.

**Regional Production Data.** If an S&P GSCI Commodity is primarily a regional commodity, based on its production, use, pricing, transportation or other factors, S&P Dow Jones Indices may determine the WPQ of such S&P GSCI Commodity based on regional, rather than world, production. At present, natural gas is the only S&P GSCI Commodity where the WPQ is determined based on regional (North American) production.

## World Production Averages

The WPA of each S&P GSCI Commodity is equal to its WPQ over the WPQ Period, divided by five. The WPA is simply the average annual production amount of the S&P GSCI Commodity based on the WPQ over a five-year period.

## Contract Production Weights

In calculating the CPW of each Designated Contract on a particular S&P GSCI Commodity, the WPA of such Commodity is allocated to those Designated Contracts that can best support liquidity.

With respect to each Designated Contract, the CPW is equal to (i) the Percentage TQT for such Contract multiplied by (ii) the WPA of the underlying S&P GSCI Commodity (after any necessary conversion made for purposes of the calculation) and divided by (iii) 1,000,000. However, if the calculation of the CPWs for

the Designated Contracts on a particular S&P GSCI Commodity results in the TVM of such Contracts being below the TVM Reweighting Level, then the CPWs for all such Contracts are reduced until the TVM of such Contracts is equal to the TVM Reweighting Level. This is achieved by setting the TVM for each such Contract at the TVM Reweighting Level, and reducing the CPW for such Contract accordingly. The adjustment procedure is designed to ensure that the CPW of each Designated Contract is at a level sufficient to support trading activity in the S&P GSCI, but not disproportionately high. The final CPWs are rounded to seven digits of precision. The new CPWs are implemented during the designated January roll period.

### CPW Adjustment Procedure

The following procedure is used to adjust the CPWs of Designated Contracts, under the circumstances described above:

1. Determine the set "A" of all Designated Contracts to be re-weighted. If the set A is empty, then no adjustment is necessary.
2. Compute the CPWs for all Designated Contracts in A according to the following formula:

$$CPW_i = \frac{\text{Percentage } TQT_i * WPA_i}{1,000,000}$$

3. Re-compute the TVM's for all Contracts in A and partition A into the following subsets:  
 AL = {Contracts with TVM below the TVM Reweighting Level}  
 AE = {Contracts with TVM at the TVM Reweighting Level}  
 AH = {Contracts with TVM above the TVM Reweighting Level}
4. If AL is empty, then no further adjustment is necessary.
5. For each of the Contracts in AH, leave the CPW as specified in step (2).
6. Solve the set of linear equations for the CPWs of all Contracts in AL and AE

$$TQT_i * \sum_{k \in C} (CPW_k * ACRP_k) = ISL * CPW_i * TVMRL$$

(where C is the set of all Contracts in the prospective index composition).

7. Repeat steps (3) through (6) until no further adjustment is necessary.

### Quarterly Review of Index Composition

On each Quarterly Observation Date, S&P Dow Jones Indices calculates the TVM of each Designated Contract, based on volume data for the relevant Interim Calculation Period. If on any such Date, the TVM of any Designated Contract is below the TVM Threshold, S&P Dow Jones Indices adjusts the composition of the S&P GSCI, with respect to the S&P GSCI Commodity underlying such Contract (but not with respect to any other S&P GSCI Commodities), according to the following principles:

- a. All eligible Contracts, whether previously included in the S&P GSCI or not, on such Commodity as of such Date are identified, based on the eligibility criteria.
- b. The CPWs of all Contracts so identified are determined, provided that the Percentage TQT for each such Contract is determined based on volume data for the relevant Interim Calculation Period for which such data are available for all Contracts on the relevant S&P GSCI Commodity.
- c. At the beginning of the new S&P GSCI Period following the foregoing adjustments, the S&P GSCI is re-normalized.

In order to maintain the liquidity and tradability of the S&P GSCI throughout each S&P GSCI Year, this section provides a mechanism to review and reallocate the distribution of CPWs among the Designated Contracts on a particular S&P GSCI Commodity in the course of such Year, if there has been a significant decline in the liquidity of any such Contract. Any such reallocation may result in new Contracts on the

same S&P GSCI Commodity being included in the S&P GSCI, or Designated Contracts that have been previously included in the S&P GSCI being excluded. For this purpose, the liquidity of each Designated Contract is measured by its Trading Volume Multiple, which is calculated and reviewed on each Monthly Observation Date.

If any changes are made to the composition of the S&P GSCI (including changes regarding the relative weight of any Designated Contract) according to the procedure described above, the manner in which such changes are effected are determined by S&P Dow Jones Indices, based on market conditions and other relevant factors, and publicly announced as soon as reasonably practicable, which is expected to be at least three weeks prior to the implementation of such changes.

## **Sources of Information**

**Sources of Information for the Determination of CPWs.** S&P Dow Jones Indices decides the sources of information used in determining the CPWs for a given S&P GSCI Period. S&P Dow Jones Indices will generally use the same sources of information used to determine the CPWs for or during the immediately preceding S&P GSCI Year. If such sources are not reasonably available or do not contain the necessary information, or if S&P Dow Jones Indices determines the information included in any such sources is inaccurate, unreliable or contains manifest error, S&P Dow Jones Indices will identify alternative sources of information. To the extent practicable, S&P Dow Jones Indices will publicly announce the sources used to determine the CPWs for or during a given S&P GSCI Period at the time that the composition of the S&P GSCI and the calculation of the CPWs for such Period are announced.

**Sources of Conversion Factors.** The factors used to effect the conversions, which are necessary in order to convert the units of measurement used in the WPQs into the units of measurement used with respect to the applicable Contracts are derived from publicly available sources selected by S&P Dow Jones Indices.

**Sources for Cattle Adjustment Factors.** The factor used to make the adjustment, with respect to the conversion of dressed weight for cattle into live cattle weight, is derived from publicly available sources selected by S&P Dow Jones Indices, such as the U.S. Department of Agriculture, Agricultural Statistics.

# Designated Contract Expirations

## Use of Designated Contract Expirations in Calculating the S&P GSCI

As indicated above, the Total Dollar Weight of the S&P GSCI can only be determined based on the prices of actual Contracts. Because Designated Contracts by definition call for delivery or settlement on specified dates or during specified terms, it is necessary to determine the Designated Contract Expirations that will be included in the S&P GSCI in order to identify the appropriate prices of such Contracts to be used in calculating the value of the S&P GSCI. The identification of the Designated Contract Expirations during a given S&P GSCI Year is made by S&P Dow Jones Indices at the time that the composition of the S&P GSCI for such Year is determined or when contracts are added. This section of the methodology sets forth the procedures for determining the Designated Contract Expirations for each Designated Contract.

## Identification of Designated Contract Expirations

S&P Dow Jones Indices determines the Designated Contract Expirations for each Designated Contract during a given S&P GSCI Year, provided that each such Designated Contract Expiration must be an Active Contract.

With respect to certain Contracts, a number of Contract Expirations have historically exhibited low trading volumes and are generally regarded as inactive. This may be due to seasonal cycles of supply and demand in the underlying commodity or other production, distribution, or economic factors. Inactive Contracts, although available for trading, might not generate accurate and reliable market prices because of the low level of trading activity. For this reason, the S&P GSCI is calculated only based on the prices of Active Contracts.

Once a Contract Expiration is identified as a Designated Contract Expiration, the S&P GSCI is calculated based on such Contract Expiration for the given S&P GSCI Year. However, if S&P Dow Jones Indices determines during the course of an S&P GSCI Year that a Contract Expiration that has been included as a Designated Contract Expiration is no longer an Active Contract, such Designated Contract Expiration will be deleted from the S&P GSCI for the remainder of that S&P GSCI Year. Conversely, if a new Contract is added to the S&P GSCI on an intra-year basis, S&P Dow Jones Indices will identify the Designated Contract Expirations with respect to such Contract for the remainder of the relevant S&P GSCI Year.

## Failure to Trade Designated Contract Expirations

**Deletion of Designated Contract Expirations.** If a Trading Facility deletes a Contract Expiration that is a Designated Contract Expiration, such Contract Expiration will no longer constitute a Designated Contract Expiration for the remainder of the S&P GSCI Year in which the deletion occurs. The S&P GSCI will be calculated based on the remaining Designated Contract Expirations for the rest of the relevant S&P GSCI Year.

**Delay in Trading of Designated Contract Expirations.** If two consecutive Designated Contract Expirations for a particular Designated Contract have not been made available for trading on or through the relevant Trading Facility at least six months prior to the date on which the Roll Period is scheduled to begin, with respect to the first of these two Designated Contract Expirations, S&P Dow Jones Indices will determine what action should be taken. Such action may include a decision to delete the Designated Contract Expirations or the Designated Contract from the S&P GSCI for the remainder of the S&P GSCI Year, or a to include such Contract Expirations or Designated Contract if the Designated Contract Expiration is made available by a specified date.

Any action taken will be publicly announced prior to the effective date of the change in the composition of the S&P GSCI.

### **Replacement of Contracts**

If trading in all Contract Expirations with respect to a particular Designated Contract is terminated, or the relevant Trading Facility announces that no additional Contract Expirations will be made available with respect to a Designated Contract, an eligible replacement Contract on the relevant S&P GSCI Commodity may be included in the S&P GSCI. To the extent practicable, any such replacement will be in effect on the next Monthly Observation Date.

If another Contract replaces a Designated Contract and the timing or procedure contemplated above is not practicable, a determination will be made as to the date from which the S&P GSCI will be calculated using the replacement Contract. In making this determination, S&P Dow Jones Indices expects to take into account a number of factors, including any differences between the existing Contract and the replacement Contract specifications, Contract Expirations, and other matters. These factors may make it necessary or advisable to effect the transfer from the existing Contract to the replacement Contract over a series of days. It is anticipated that such a transfer will be implemented in a manner similar to the rolling of the S&P GSCI that takes place during each Roll Period.

If a replacement contract is to be included in the S&P GSCI, S&P Dow Jones Indices will publicly announce the manner in which the transfer from the existing Contract to the replacement Contract will be implemented, and whether the CPWs of the other Designated Contracts on the relevant S&P GSCI Commodity and/or the Normalizing Constant will be recalculated.

# The Normalizing Constant

## Purpose of the Normalizing Constant

In order to assure continuity of the S&P GSCI and to allow comparisons of the value of the S&P GSCI to be made over time, it is necessary to make an adjustment to the calculation of the S&P GSCI each time the CPWs are changed. The factor used to make this adjustment is the Normalizing Constant (NC) and is used in the same manner as similar factors applied to the calculation of other published financial market indices. The NC is determined each time the composition of the S&P GSCI is changed pursuant to the procedures set forth in this methodology.

## Calculation of the Total Dollar Weight of the S&P GSCI on Non-Roll Days

The formula for calculating the Total Dollar Weight of the S&P GSCI on any S&P GSCI Business Day that does not occur during a Roll Period is the following:

$$TDW_d = \sum_c (CPW_d^c * DCRP_d^c)$$

where:

$c$  = the Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$DCRP$  = the Daily Contract Reference Price

The Total Dollar Weight, which forms the basis for the calculation of the Normalizing Constant, is equal to the sum of the Dollar Weights of all Designated Contracts. The Dollar Weight of each Designated Contract is in turn calculated by multiplying the appropriate CPW by the applicable Daily Contract Reference Price (DCRP) on the day on which the calculation is made. Accordingly, the formula above can generally be used to calculate the Total Dollar Weight. However, during a Roll Period, as described in *Calculation of the S&P GSCI*, the S&P GSCI is calculated based on the DCRP of the First Nearby Contract Expiration and the Roll Contract Expiration of each Designated Contract, reflecting the fact that the S&P GSCI is being rolled from one Contract Expiration to the next.

As a result, the calculation of the Total Dollar Weight of the S&P GSCI during a Roll Period is adjusted to reflect the fact that different DCRP's are used for each Designated Contract (e.g., the respective DCRP of the First Nearby Contract Expiration and the Roll Contract Expiration). Further, because the roll implemented in January (and in any other Roll Period in which a re-weighting is implemented) involves changes not only in the Contract Roll Weights but also the CPWs, a special formula is needed for calculation of the Total Dollar Weight during such Roll Periods.

## Calculation of the Normalizing Constant

**The Total Dollar Weight Ratio.** The Total Dollar Weight Ratio is calculated according to the following:

$$TDWR = \frac{\sum_c (CPW_{new}^c * DCRP_d^c)}{\sum_c (CPW_{old}^c * DCRP_d^c)}$$

where:

$c$  = the Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$CPW_{new}$  = CPWs that take effect on the first day of the new S&P GSCI Period

$CPW_{old}$  = the CPWs for the prior S&P GSCI Period

$DCRP$  = the Daily Contract Reference Price

**The Normalizing Constant.** With respect to a given S&P GSCI Period, the Normalizing Constant ( $NC_{new}$ ) is calculated on the last S&P GSCI Business Day of the previous S&P GSCI Period and is equal to the product of (i) the Normalizing Constant for the S&P GSCI Period ending on such day ( $NC_{old}$ ) and (ii) the Total Dollar Weight Ratio on such day, based on the Daily Contract Reference Price of the First Nearby Contract Expiration for each Designated Contract on such Day. The Normalizing Constant is rounded to seven digits of precision.

The formula for calculating the Normalizing Constant is the following:

$$NC_{new} = NC_{old} * TDWR$$

# Calculation of the S&P GSCI and Related Indices

## Overview of the Calculation Process

Because the S&P GSCI is designed as a tradable index that can be used to replicate actual commodity market performance, the calculation of the S&P GSCI takes into account the fact that a person holding positions in the First Nearby Contract Expiration of each Designated Contract would need to roll such positions forward as they approach settlement or delivery. For this reason, the methodology for calculating the S&P GSCI includes a rolling procedure designed to replicate the rolling of actual positions in the Designated Contracts. Moreover, because the rolling of actual positions in a Designated Contract on a single day could be difficult to implement or, if completed on a single day, could have an adverse impact on the market, such rolling would most likely take place over a period of several days. The rolling of the S&P GSCI into new Designated Contract Expirations (Roll Contract Expirations), therefore, similarly takes place over periods of several days, which constitute the Roll Periods. The calculation of the S&P GSCI, consequently, takes into account price levels of the First Nearby Contract Expiration on each S&P GSCI Commodity and, during the Roll Periods, price levels of the Roll Contract Expirations as well. Once the Roll Period has been completed, the Roll Contract Expiration becomes the First Nearby Contract Expiration.

In contrast, the S&P GSCI ER represents the return of a portfolio of commodity futures contracts, the composition of which reflects the CPWs of all Designated Contracts and the CRWs of all Designated Contract Expirations. The S&P GSCI ER is, therefore, calculated based on the Contract Daily Return.

The S&P GSCI TR reflects the performance of a total return investment in commodities — Contract Daily Return plus the daily interest on the funds hypothetically committed to the investment.

The S&P GSFPI is designed as a measure of the fair value of the S&P GSCI CME Futures Contracts and, therefore, does not reflect the rolling of the hypothetical positions in the S&P GSCI Commodities included in the S&P GSCI. In addition, the S&P GSFPI is calculated based on the CPWs and NC scheduled to be implemented on the first S&P GSCI Business Day of the month in which the first available S&P GSCI CME Futures Contract expires, which might not be the same as the CPWs and NC in effect on the day of calculation.

## Calculation of the S&P GSCI

**Daily Calculation of the S&P GSCI.** The value of the S&P GSCI on each S&P GSCI Business Day is equal to the Total Dollar Weight of the S&P GSCI divided by the Normalizing Constant. The value of the S&P GSCI is calculated on each S&P GSCI Business Day at such time as Daily Contract Reference Prices for the relevant Contract Expirations become available but, in any event, by no later than the S&P GSCI Settlement Time. The Daily Contract Reference Price for each First Nearby Contract Expiration or Roll Contract Expiration used in calculating the S&P GSCI is determined according to the procedure set forth below. The S&P GSCI is indexed to a value of 100 on January 2, 1970.

In formulaic terms, the calculation of the S&P GSCI is as follows, with the results of such calculation rounded to seven digits of precision:

$$S \& P GSCI_d = \frac{TDW_d}{NC}$$



The S&P GSCI, above, is the S&P GSCI Spot Index. The S&P GSCI Spot Index reflects only the prices of the First Nearby Contract Expirations, and during a Roll Period, the Roll Contract Expirations, on each S&P GSCI Business Day. The value of the S&P GSCI, therefore, is calculated solely based on the CPW of each Designated Contract, and of the Daily Contract Reference Prices of the First Nearby Contract Expiration and/or the Roll Contract Expiration of each Designated Contract. These components together constitute the Total Dollar Weight (TDW) of the S&P GSCI. The TDW of the S&P GSCI is, then, divided by the Normalizing Constant to assure index continuity.

**Determination of Daily Contract Reference Prices.** The Daily Contract Reference Prices used in performing the calculations described in any of the provisions of this methodology are the most recent Daily Contract Reference Prices of the First Nearby Contract Expirations or Roll Contract Expirations as made available by the relevant Trading Facility to its members or participants (and S&P Dow Jones Indices) as of the S&P GSCI Settlement Time on the S&P GSCI Business Day on which the calculation is made, subject to the following:

- i. If the relevant Trading Facility fails to make available a Daily Contract Reference Price on a day that is a Contract Business Day, or if S&P Dow Jones Indices determines the available Daily Contract Reference Price reflects a manifest error, the relevant calculation is delayed until such time as such Price is made available or corrected. If a Daily Contract Reference Price has not been made available or the error has not been corrected, by the relevant Trading Facility by 04:00 PM, Eastern Time, S&P Dow Jones Indices may determine the appropriate Daily Contract Reference Price for the relevant Designated Contract for purposes of calculating the S&P GSCI. In that event, S&P Dow Jones Indices will disclose the basis for its determination of such Daily Contract Reference Price
- ii. If any S&P GSCI Business Day is not a Contract Business Day with respect to any Designated Contract Expiration, then the calculations will be made based on the most recently available Daily Contract Reference Price for the First Nearby Contract Expiration or Roll Contract Expiration on the most recent Contract Business Day, regardless of whether such Contract Business Day is also a S&P GSCI Business Day.
- iii. Notwithstanding the foregoing provisions of this section, if the Daily Contract Reference Price for any Contract Expiration on any S&P GSCI Business Day is corrected or finally made available by the relevant Trading Facility sufficiently early on the next S&P GSCI Business Day to enable S&P Dow Jones Indices to recalculate the S&P GSCI, then the value of the S&P GSCI for such S&P GSCI Business Day will be recalculated based on such Daily Contract Reference Price.
- iv. A Daily Contract Reference Price determined according to the procedure set forth in this section will be used in calculating the S&P GSCI regardless of whether such Price is a Limit Price.

**Contract Roll Weights and Roll Contract Expirations.** In calculating the Total Dollar Weight of the S&P GSCI during a Roll Period, the Contract Roll Weights of the First Nearby Contract Expiration and the Roll Contract Expiration of each S&P GSCI Commodity are equal to: (i) on the first day of the Roll Period with respect to such Commodity, 0.8 and 0.2, respectively; (ii) on the second day of the Roll Period, 0.6 and 0.4, respectively; (iii) on the third day of the Roll Period, 0.4 and 0.6 respectively; (iv) on the fourth day of the Roll Period, 0.2 and 0.8, respectively; and (v) on the fifth day of the Roll Period, 0.0 and 1.0, respectively, subject to the provisions in *Adjustment of Roll Period*.

This section specifies the procedures for rolling the First Nearby Contract Expiration of each Designated Contract into the appropriate Roll Contract Expiration. The roll is essentially implemented by adjusting the Contract Roll Weights of each of the First Nearby Contract Expiration and the Roll Contract Expiration, on each day of the Roll Period, in a manner that shifts the calculation of the S&P GSCI by a *pro rata* amount per day from the First Nearby Contract Expiration to the Roll Contract Expiration for each Designated Contract. The roll is reflected in the modified procedures for determining the Total Dollar Weight of the S&P GSCI during a Roll Period.

**Adjustment of Roll Period.** On any S&P GSCI Business Day, the occurrence of any of the following circumstances will result in an adjustment of a Roll Period according to the procedure set forth in this section:

- i. if such S&P GSCI Business Day is not a Contract Business Day with respect to any First Nearby Contract Expiration or Roll Contract Expiration;
- ii. the applicable Daily Contract Reference Price of any such Contract Expiration on such S&P GSCI Business Day is a Limit Price;
- iii. S&P Dow Jones Indices determines the Daily Contract Reference Price published by a Trading Facility for a particular Designated Contract Expiration reflects manifest error and such error is not corrected by the S&P GSCI Settlement Time, or the Trading Facility for any reason fails to publish a Daily Contract Reference Price for such Contract Expiration by 04:00 PM, Eastern Time. If the day is otherwise a Contract Business Day and the circumstances described in clauses (ii) and (iv) of this section do not exist with respect to such Contract Expiration on the relevant day, S&P Dow Jones Indices may determine the appropriate Daily Contract Reference Price for the relevant Designated Contract and determine the rolling of the S&P GSCI based on such Daily Contract Reference Price. S&P Dow Jones Indices will disclose the basis for its determination of such Daily Contract Reference Price. If the Trading Facility makes available a Daily Contract Reference Price or corrected Daily Contract Reference Price for such Contract Expiration prior to the opening of trading in such Contract Expiration on the next Contract Business Day, then the rolling of the portion of the S&P GSCI implemented on the prior S&P GSCI Business Day will be revised based on such Daily Contract Reference Price; or
- iv. trading in the relevant Contract Expiration for such S&P GSCI Business Day is terminated prior to the time at which, as of the opening of trading on such Day (as defined under the rules or policies of the relevant Trading Facility), trading in such Contract Expiration was scheduled to close, and trading in such Contract Expiration does not resume at least 10 minutes prior to, and continue until, the scheduled closing time (or the rescheduled closing time if such closing time was rescheduled as a result of the termination).

In any such event, the portion of the roll that would otherwise have taken place on such S&P GSCI Business Day will take place on the next Contract Business Day (provided that such Day is also a S&P GSCI Business Day) on which none of the circumstances identified in this section exist.

If on any day during a Roll Period the Daily Contract Reference Price of any First Nearby Contract Expiration or Roll Contract Expiration is a Limit Price, no Daily Contract Reference Price is available, or trading in the relevant Designated Contract is terminated earlier than scheduled (and does not resume within the specified time period), the portion of the roll that would otherwise have taken place on that day will be deferred until the next day on which such circumstances do not exist. This limitation is based on the fact that, under the circumstances described in this section, it would be difficult or impossible to liquidate and/or establish actual positions in the market and to perform the roll. Delaying the rolling of the S&P GSCI, therefore, serves to replicate the steps that would need to be taken in rolling actual market positions.

Under this procedure, if any of the enumerated circumstances exists on the first day of the Roll Period with respect to a First Nearby Contract Expiration or a Roll Contract Expiration, then no portion of the roll will be performed and 40% of the roll will be implemented on the next S&P GSCI Business Day. If such circumstances also exist on the second S&P GSCI Business Day of the Roll Period, then 60% of the roll will be performed on the third day, and so forth. If such circumstances exist throughout the five S&P GSCI Business Days initially designated as the Roll Period, then the entire roll will be performed on the next succeeding S&P GSCI Business Day on which none of these circumstances exist. This roll procedure also applies to the rolling of the S&P GSCI into the new CPWs and Normalizing Constant during the January Roll Period, or during any other Roll Period in which a re-weighting of the S&P GSCI is effected.

The only exception to the foregoing is that if the relevant Trading Facility makes available a Daily Contract Reference Price that reflects manifest error, and such error is not corrected by the S&P GSCI Settlement Time, or if the Trading Facility fails to make available any Daily Contract Reference Price by 4:00 PM, Eastern Time, on a day on which trading otherwise occurred, S&P Dow Jones Indices may determine the Daily Contract Reference Price to be used in implementing that day's roll. In such instances, S&P Dow Jones Indices will disclose the basis for its determination. If the Trading Facility, then, makes available a

Daily Contract Reference Price or a corrected Daily Contract Reference Price prior to the opening of trading on the next Contract Business Day, S&P Dow Jones Indices will revise the calculation accordingly. This provision is intended to address the unlikely situation in which trading has taken place on or through a Trading Facility during the trading day, and market participants may therefore have rolled actual positions, but the Trading Facility, due to communications or equipment failures or other problems, publishes an erroneous Daily Contract Reference Price or fails to publish a Daily Contract Reference Price by 04:00 PM, Eastern Time.

## Calculation of the S&P GSCI ER

**Calculation of TDW During a Roll Period.** The formula for calculating the Total Dollar Weight of the S&P GSCI on any S&P GSCI Business Day that occurs during a Roll Period (other than a January Roll Period or any other Roll Period in which a re-weighting of the S&P GSCI is effected) is the following:

$$TDW_d = \sum_c CPW^c * (CRW1_d^c * DCRP1_d^c + CRW2_d^c * DCRP2_d^c)$$

where

$c$  = each Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$CRW1$  = the Contract Roll Weight of the First Nearby Contract Expiration

$CRW2$  = the Contract Roll Weight of the Roll Contract Expiration

$DCRP$  = the Daily Contract Reference Price of each respective Contract Expiration

On any S&P GSCI Business Day that does not occur during a Roll Period, the Total Dollar Weight of the S&P GSCI is calculated according to the procedure set forth above. During a Roll Period, however, the Total Dollar Weight reflects the fact that the S&P GSCI is being rolled from one Contract Expiration to the next. As a result, the formula for Total Dollar Weight during a Roll Period must be adjusted to reflect the fact that different Daily Contract Reference Prices are for each Designated Contract (i.e., the respective Daily Contract Reference Prices of the First Nearby Contract Expiration and the Roll Contract Expiration).

**Calculation of TDW in Connection with Changes in the Composition of the S&P GSCI.** The CPWs and NC for a given S&P GSCI Period are implemented during the Roll Period of the calendar month in which such S&P GSCI Period begins. In calculating the value of the S&P GSCI on each day of such Roll Period, (i) the Contract Roll Weight of the First Nearby Contract Expiration of each Designated Contract, as determined and adjusted in prior sections, is multiplied by the applicable Daily Contract Reference Price of such Contract Expiration and the CPW of the relevant Designated Contract for the prior S&P GSCI Period, and divided by the NC for the prior S&P GSCI Period, and (ii) the Contract Roll Weight of the Roll Contract Expiration of each Designated Contract, as determined and adjusted in prior sections, is multiplied by the applicable Daily Contract Reference Price of such Contract Expiration and the CPW of the relevant Designated Contract for the new S&P GSCI Period and divided by the NC for such new S&P GSCI Period.

The formula for calculating the Total Dollar Weight of the S&P GSCI on any S&P GSCI Business Day that occurs during the January Roll Period, or during any other Roll Period in which a re-weighting of the S&P GSCI is effected, is the following:

$$TDW_d = \frac{NC_{new}}{NC_{old}} \times \sum_c [CPW1^c \times CRW1_d^c \times DCRP1_d^c] + \sum_c [CPW2^c \times CRW2_d^c \times DCRP2_d^c]$$

where

$c$  = each Designated Contract

$d$  = the S&P GSCI Business Day on which the calculation is made

$CRW1$  = the Contract Roll Weight of the First Nearby Contract Expiration

$CRW2$  = the Contract Roll Weight of the Roll Contract Expiration

$CPW1$  = the CPW of the First Nearby Contract Expiration

$CPW2$  = the CPW of the Roll Contract Expiration

$DCRP$  = the Daily Contract Reference Price of each respective Contract Expiration

During the January Roll Period, and during any other Roll Period in which a re-weighting of the S&P GSCI is implemented, the S&P GSCI rolls into the new CPWs and NC during the regularly scheduled monthly Roll Period. For example, on the first day of the January Roll Period, which is the fifth (5<sup>th</sup>) S&P GSCI Business Day of the month, 80% of the S&P GSCI is calculated based on the CPWs and NC for the prior S&P GSCI Period and 20% of the S&P GSCI is calculated based on the CPWs and NC for the S&P GSCI Period beginning on such Day. On the sixth (6<sup>th</sup>) through ninth (9<sup>th</sup>) S&P GSCI Business Days, the percentages are 60/40, 40/60, 20/80 and 0/100, respectively. On the ninth (9<sup>th</sup>) S&P GSCI Business Day, the roll is completed, unless the Roll Period is extended as a result of the occurrence of one of the events specified above.

In order to reflect this roll into the new CPWs and Normalizing Constant, the formula for the Total Dollar Weight of the S&P GSCI requires the additional adjustments detailed above. Specifically, because the CPWs of the First Nearby Contract Expiration and the Roll Contract Expiration will be different,  $CPW1$  and  $CPW2$ , as set forth above, must enter the calculation. In addition, the result of this calculation must be multiplied by the Total Dollar Weight Ratio, which reflects the change in the Total Dollar Weight resulting from the shift to new CPWs and, therefore, when multiplied by  $CRW1$  and  $CRW2$ , rolls the S&P GSCI into the new CPWs and the new Normalizing Constant.

**Calculation of the Contract Daily Return.** On any S&P GSCI Business Day, the Contract Daily Return is equal to the ratio of the Total Dollar Weight Obtained (TDWO) on such Day and the Total Dollar Weight Invested (TDWI) on the preceding S&P GSCI Business Day, minus one.

In formulaic terms, the Contract Daily Return is calculated as follows:

$$CDR_d = \frac{TDWO_d}{TDWI_{d-1}} - 1$$

The principal component of the calculation of the S&P GSCI ER is the determination of the Contract Daily Return (CDR) for a given S&P GSCI Business Day. The CDR is calculated by reference to the Total Dollar Weight of the S&P GSCI. The Contract Daily Return is generally defined as the percentage change in the Total Dollar Weight of the S&P GSCI from one S&P GSCI Business Day to the next. The Contract Daily Return, therefore, reflects the returns that would be realized by holding positions in the Designated Contract Expirations, appropriately weighted to reflect the CPWs, from the closing of the Trading Facilities on the prior day to the closing of such Trading Facilities on the day on which the calculation is performed. This feature of replicating the performance of actual market positions makes the S&P GSCI a tradable index.

As set forth in prior sections, the formula for calculation of the Total Dollar Weight of the S&P GSCI on those days that occur during a Roll Period differs from the formula used on other days. In addition, during the January Roll Period, or any other Roll Period in which a re-weighting of the S&P GSCI is implemented, a further adjustment to this formula must be made.

Once the appropriate formula for calculating the Total Dollar Weight of the S&P GSCI is determined, the Total Dollar Weight Invested, which reflects a hypothetical investment in the S&P GSCI based on the CPWs, CRW's and Daily Contract Reference Prices on the preceding S&P GSCI Business Day, and the

Total Dollar Weight Obtained, which reflects the return on the hypothetical investment and is calculated based on the CPWs and CRWs in effect on the preceding day but on the Daily Contract Reference Prices used to calculate the S&P GSCI on the current day, can be determined. The Contract Daily Return can, then, be calculated by dividing the Total Dollar Weight Obtained on the day on which the calculation is made by the Total Dollar Weight Invested of the preceding day.

**Daily Calculation of the S&P GSCI ER.** On any S&P GSCI Business Day, the value of the S&P GSCI ER is equal to the product of (i) the value of the S&P GSCI ER on the preceding S&P GSCI Business Day and (ii) one plus the Contract Daily Return on the S&P GSCI Business Day on which the calculation is made. The value of the S&P GSCI ER is indexed to a base value of 100 on January 2, 1970. The result of the foregoing calculation is then rounded to seven digits of precision.

In formulaic terms, the S&P GSCI ER is:

$$S\&P\ GSCI\ ER_d = S\&P\ GSCI\ ER_{d-1} * (1 + CDR_d)$$

The S&P GSCI ER is calculated on a cumulative basis beginning with the first day for which the S&P GSCI ER was calculated, which was January 2, 1970. The value of the S&P GSCI ER on any S&P GSCI Business Day, therefore, can be determined by reference to the value on the preceding S&P GSCI Business Day and the Contract Daily Return on the day of calculation.

### Calculation of the S&P GSCI TR

**The Treasury Bill Return.** On any given calendar day, the Treasury Bill Return is equal to:

$$TBR_d = \left[ \frac{1}{1 - \frac{91}{360} \times TBAR_{d-1}} \right]^{\frac{1}{91}} - 1$$

The subscript  $d-1$  on  $TBAR$  indicates that the Treasury Bill Rate used in the calculation is the Rate available on the preceding S&P GSCI Business Day.

**Daily Calculation of the S&P GSCI TR.** On any S&P GSCI Business Day, the value of the S&P GSCI TR is equal to the product of (i) the value of the S&P GSCI TR on the preceding S&P GSCI Business Day and (ii) one plus the sum of the Contract Daily Return and the Treasury Bill Return on the S&P GSCI Business Day on which the calculation is made and (iii) one plus the Treasury Bill Return for each non S&P GSCI Business Day since the preceding S&P GSCI Business Day. The result of the foregoing calculation is, then, rounded to seven digits of precision.

In formulaic terms:

$$S\&P\ GSCI\ TR_d = S\&P\ GSCI\ TR_{d-1} * (1 + CDR_d + TBR_d) * (1 + TBR_d)^{days}$$

where  $days$  is the number of non S&P GSCI Business Days since the preceding S&P GSCI Business Day. The S&P GSCI TR is set equal to 100 on January 2, 1970.

### Calculation of the S&P GSCI FPI Index

The S&P GSCI FPI is an index designed to mimic the S&P GSCI, with the following exceptions:

1. The FPI Index does not incorporate the standard 5-day roll monthly period. There is no roll period.

2. The index always has a 100% weight in the current contract, and always uses the current Contract Production Weights (CPW) for the underlying contracts and current Normalizing Constant (NC) based on the S&P GSCI to calculate the index level through the 11<sup>th</sup> business day of the month. On the 12<sup>th</sup> business day of the month, the current contracts, CPWs and NCs are changed to reflect the current composition of the S&P GSCI.

The purpose of the S&P GSCI FPI Index is to serve as the underlying index for the S&P GSCI Futures Contracts available for trade at CME Group, which expire on the 11<sup>th</sup> business day of every month. The index also serves as a benchmark for the fair value of such futures contracts.

#### **CPWs for the S&P GSCI Reduced Energy Index, S&P GSCI Light Energy Index, and S&P GSCI Ultra-Light Energy Index**

The S&P GSCI Reduced Energy Index, S&P GSCI Light Energy Index and S&P GSCI Ultra-Light Energy Index are three indices that are comprised of the same Designated Contracts as the S&P GSCI but whose Contract Production Weights (CPW) of all Designated Contracts in the energy sector have been divided by two (S&P GSCI Reduced Energy Index), by four (S&P GSCI Light Energy Index), or by eight (S&P GSCI Ultra-Light Energy Index). Because the CPWs of energy-related S&P GSCI Commodities are reduced in these indices, the relative weights of other S&P GSCI Commodities are necessarily increased. As a result, although the S&P GSCI Reduced Energy Index, the S&P GSCI Light Energy Index and the S&P GSCI Ultra-Light Energy Index contain all of the S&P GSCI Commodities that are included in the S&P GSCI, they are not world-production weighted in the same manner as the S&P GSCI.

# Index Governance

## Index Committee

S&P Dow Jones Indices has established an Index Committee to oversee the daily management and operations of the S&P GSCI, and is responsible for all analytical methods and calculation in the indices. The Committee is comprised of full-time professional members of S&P Dow Jones Indices staff. At each meeting, the Committee reviews any issues that may affect index constituents, statistics comparing the composition of the indices to the market, commodities that are being considered as candidates for addition to an index, and any significant market events. In addition, the Index Committee may revise index policy covering rules for selecting commodities, or other matters.

S&P Dow Jones Indices considers information about changes to its indices and related matters to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

All references to methodology-related decisions made by S&P Dow Jones Indices in this document represent decisions made by the Index Committee.

S&P Dow Jones Indices' Index Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, S&P Dow Jones Indices may publish a consultation inviting comments from external parties.

*For information on:*

- *Quality Assurance*
- *Internal Reviews of Methodology*
- *Calculations and Pricing Disruptions*
- *Error Correction*
- *Expert Judgment*
- *Data Hierarchy*
- *Unexpected Exchange Closures*

*Please refer to S&P Dow Jones Indices' Commodities Indices Policies & Practices document.*

## Commodity Index Advisory Panel

S&P Dow Jones Indices has established a Commodity Index Advisory Panel to assist it in connection with the operation of the S&P GSCI. The Panel meets on an annual basis and at other times at the request of the Index Committee. The principal purpose of the Panel is to advise the Index Committee with respect to, among other things, the calculation of the S&P GSCI, the effectiveness of the S&P GSCI as a measure of commodity futures market performance and the need for changes in the composition or methodology of the S&P GSCI. The Panel acts solely in an advisory and consultative capacity; the Index Committee makes all decisions with respect to the composition, calculation and operation of the S&P GSCI. Certain members of the Panel may be affiliated with clients of S&P Dow Jones Indices. Also, certain members of the Panel may be affiliated with entities which, from time to time, may have investments linked to the S&P GSCI, either through transactions in the Contracts included in the S&P GSCI, futures contracts on the S&P GSCI or derivative products linked to the S&P GSCI.

# Index Dissemination

Index levels are available through S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com), major quote vendors, numerous investment-oriented Web sites, and various print and electronic media.

## Tickers

The table below lists headline indices covered by this document. All currency, currency hedged, risk control, and return type versions of the below indices that may exist are also covered by this document. Please contact [index\\_services@spglobal.com](mailto:index_services@spglobal.com) for a complete list of indices covered by this document.

Index Name	S&P DJI Index Code	Bloomberg Ticker, Real Time	Bloomberg Ticker	Reuters RIC
S&P GSCI	SPGSCI	SPGSCI	SPGCC	.SPGSCI
S&P GSCI Agriculture	SPGSAG	SPGSAG	SPGCAG	.SPGSAG
S&P GSCI Agriculture & Livestock	SPGSAL	SPGSAL	SPGCAL	.SPGSAL
S&P GSCI All Cattle	SPGSAC	SPGSAC	SPGCAC	.SPGSAC
S&P GSCI All Crude	SPGSCR	SPGSCR	SPGCCR	.SPGSCR
S&P GSCI All Metals	SPGSAM	SPGSAM	SPGCAM	.SPGSAM
S&P GSCI All Wheat	SPGSWT	SPGSWT	SPGCWT	.SPGSWT
S&P GSCI Covered Call Select	SPCLCI	--	SPCLCI	--
S&P GSCI Energy	SPGSEN	SPGSEN	SPGCEN	.SPGSEN
S&P GSCI Energy & Metals	SPGSEM	SPGSEM	SPGCEM	.SPGSEM
S&P GSCI Four Energy Commodities	SPGSFE	--	--	.SPGSFE
S&P GSCI Grains	SPGSGR	SPGSGR	SPGCGR	.SPGSGR
S&P GSCI Industrial Metals	SPGSIN	SPGSIN	SPGCIN	.SPGSIN
S&P GSCI Light Energy	SPGSLE	SPGSLE	SPGCLE	.SPGSLE
S&P GSCI Livestock	SPGSLV	SPGSLV	SPGCLV	.SPGSLV
S&P GSCI Multiple Contract	SPMCCI	--	SPMCCI	--
S&P GSCI Non Energy	SPGSNE	SPGSNE	SPGCNE	.SPGSNE
S&P GSCI Non Livestock	SPGSNL	SPGSNL	SPGCNL	.SPGSNL
S&P GSCI Non Natural Gas	SPGSXN	SPGSXN	SPGCXN	.SPGSXN
S&P GSCI Non Precious Metals	SPGSXP	SPGSXP	SPGCXP	.SPGSXP
S&P GSCI Petroleum	SPGSPT	SPGSPT	SPGCPT	.SPGSPT
S&P GSCI Precious Metals	SPGSPM	SPGSPM	SPGCPM	.SPGSPM
S&P GSCI Reduced Energy	SPGSRE	SPGSRE	SPGCRE	.SPGSRE
S&P GSCI Softs	SPGSSF	SPGSSF	SPGCSF	.SPGSSF
S&P GSCI Ultra Light Energy	SPGSUE	SPGSUE	SPGCUE	.SPGSUE
S&P GSCI Capped Commodity	SPGSUCE	SPGSCP	SPGCCP	.SPGSCP
S&P GSCI Capped Component	SPGSUC	SPGSUC	SPGCUC	.SPGSUC
S&P GSCI Enhanced Capped Commodity	SPGSCIESC	--	SGECCP	--
S&P GSCI Enhanced Capped Component	SPGSCIE27C	SGESCI	SGECCI	.SGESCI
S&P GSCI 1 Month Forward	SG1MCI	--	SG1MCI	.SG1MCI
S&P GSCI 2 Month Forward	SG2MCI	--	SG2MCI	.SG2MCI
S&P GSCI 3 Month Forward	SG3MCI	--	SG3MCI	.SG3MCI
S&P GSCI 4 Month Forward	SG4MCI	--	SG4MCI	.SG4MCI
S&P GSCI 5 Month Forward	SG5MCI	--	SG5MCI	.SG5MCI
S&P GSCI 6 Month Forward	SG6MCI	--	SG6MCI	--
S&P GSCI 12 Month Forward	SG12MCI	--	SG12MCI	--
S&P GSCI Dynamic Roll	SPDYCI	--	SPDYCI	--
S&P GSCI Enhanced Commodity	SPGSCIES	SPGSES	SPGCES	.SPGSES



**Index Data**

Daily index level data is available via on subscription.

*For product information, please contact S&P Dow Jones Indices, [www.spdji.com/contact-us](http://www.spdji.com/contact-us).*

**Web site**

*For further information, please refer to S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com).*

# Appendix A: Contracts Included in the S&P GSCI for 2020

S&P Dow Jones Indices has performed the annual calculation to determine the initial CPWs for the S&P GSCI 2020, as required by the S&P GSCI Methodology, based on trading volume from September 2018 to August 2019. The audited results of the calculations are presented in this Appendix. No new commodities will enter at this time and no existing commodities will be removed.

## **Contracts included in the 2020 S&P GSCI**

**Table 1 (on the next page)** identifies the Contracts included in the 2020 S&P GSCI as well as the Contract Production Weights and Designated Contract Expirations for each such Contract in 2020. The Reference Percentage Dollar Weights were calculated based on the Average Contract Reference Prices for the 2020 Annual Calculation Period; actual Percentage Dollar Weights on any given S&P GSCI Business Day will vary depending on actual 2019 Daily Contract Prices.

**Table 1: Contracts Included in the S&P GSCI for 2020**

Trading Facility	Commodity	Ticker <sup>(1)</sup>	2019 CPW	2020 CPW	2020 ACRP (\$)	Unit	2019 RPDW <sup>(2)</sup>	2020 RPDW	2020 TDVT (USD bn)	2020 TVM	Designated Contract											
											Expirations at Month Begin <sup>(3)</sup>											
											1	2	3	4	5	6	7	8	9	10	11	12
CBT	Chicago Wheat	W	18541.59	18073.64	4.8925	bu	2.77%	2.85%	772.7	117.8	H	H	K	K	N	N	U	U	Z	Z	Z	H
KBT	Kansas Wheat	KW	7560.385	8461.355	4.59625	bu	1.15%	1.25%	339.8	117.8	H	H	K	K	N	N	U	U	Z	Z	Z	H
CBT	Corn	C	37987.17	40020.53	3.800208333	bu	4.36%	4.90%	2011.7	178.4	H	H	K	K	N	N	U	U	Z	Z	Z	H
CBT	Soybeans	S	10359.80	10902.82	8.835	bu	3.14%	3.11%	2264	316.9	H	H	K	K	N	N	X	X	X	X	F	F
ICE - US	Coffee	KC	19303.73	19713.30	1.022583333	lbs	0.72%	0.65%	551.9	369.2	H	H	K	K	N	N	U	U	Z	Z	Z	H
ICE - US	Sugar	SB	381821.3	382988.4	0.123091667	lbs	1.54%	1.52%	512.6	146.6	H	H	K	K	N	N	V	V	V	H	H	H
ICE - US	Cocoa	CC	4.515547	4.651853	2279.666667	MT	0.32%	0.34%	264.7	336.6	H	H	K	K	N	N	U	U	Z	Z	Z	H
ICE - US	Cotton	CT	56367.84	54366.53	0.718983333	lbs	1.41%	1.26%	292.5	100.9	H	H	K	K	N	N	Z	Z	Z	Z	Z	H
CME	Lean Hogs	LH	90398.53	91607.36	0.6951875	lbs	1.91%	2.05%	422.9	89.5	G	J	J	M	M	N	Q	V	V	Z	Z	G
CME	Live Cattle	LC	97906.06	104808.8	1.152979167	lbs	3.48%	3.90%	783.5	87.4	G	J	J	M	M	Q	Q	V	V	Z	Z	G
CME	Feeder Cattle	FC	27486.73	27994.45	1.441666667	lbs	1.27%	1.30%	261.7	87.4	H	H	J	K	Q	Q	Q	U	V	X	F	F
NYM / ICE	WTI Crude Oil	CL	13354.41	13539.79	57.9675	bbl	26.42%	25.31%	20523.6	352.6	G	H	J	K	M	N	Q	U	V	X	Z	F
NYM	Heating Oil	HO	69816.19	67232.46	1.970875	gal	4.45%	4.27%	3464.9	352.6	G	H	J	K	M	N	Q	U	V	X	Z	F
NYM	RBOB Gasoline	RB	74548.34	81545.36	1.7234	gal	4.48%	4.53%	3674.9	352.6	G	H	J	K	M	N	Q	U	V	X	Z	F
ICE - UK	Brent Crude Oil	LCO	8616.139	8684.505	65.7375	bbl	18.61%	18.41%	14928.4	352.6	H	J	K	M	N	Q	U	V	X	Z	F	G
ICE - UK	Gasoil	LGO	289.0299	304.6870	605.7083333	MT	5.56%	5.95%	4825.9	352.6	G	H	J	K	M	N	Q	U	V	X	Z	F
NYM / ICE	Natural Gas	NG	34674.30	35495.32	2.830333333	MMBtu	3.11%	3.24%	3776.5	506.9	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Aluminum	MAL	58.17800	61.24800	1868.770833	MT	3.89%	3.69%	3009.3	354.5	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Copper	MCU	21.30000	22.07320	6120.479167	MT	4.45%	4.36%	5644	563.3	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Nickel	MNI	1.870000	1.944000	12801.25	MT	0.76%	0.80%	1808	979.7	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Lead	MPB	10.48000	10.54900	1992.791667	MT	0.78%	0.68%	606.4	388.9	G	H	J	K	M	N	Q	U	V	X	Z	F
LME	Zinc	MZN	13.22000	13.34000	2608.791667	MT	1.28%	1.12%	2007.3	777.7	G	H	J	K	M	N	Q	U	V	X	Z	F
CMX	Gold	GC	93.04427	95.93784	1319.666667	oz	3.72%	4.08%	10298.3	1096.8	G	J	J	M	M	Q	Q	Z	Z	Z	Z	G
CMX	Silver	SI	825.6313	842.9927	15.43383333	oz	0.42%	0.42%	1769	1833.3	H	H	K	K	N	N	U	U	Z	Z	Z	H

(1) Tickers are Reuters RIC Codes.

(2) Using the ACRP's for the 2019 Annual Calculation Period.

(3) Future Months included in the S&P GSCI at the beginning of each calendar month, starting with January 2020. Table 2 contains Month letter codes.

**Abbreviations:**

bbl	Barrels	lbs	Pounds	bu	Bushel	MMBtu	Million British Thermal Units
gal	U.S. Gallons	oz	Troy Ounces	MT	Metric Tons		

**Table 2: Month Letter Codes**

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

**Composition of S&P GSCI Sub-Indices**

**Table 3 (below)** demonstrates the effects of re-weighting on the principal S&P GSCI Sub-Indices. The Reference Percentage Dollar Weights were calculated based on Average Contract Reference Prices for the 2020 Annual Calculation Period; actual Daily Percentage Dollar Weights will vary, depending on actual 2020 Daily Contract Prices.

**Table 3: Composition of S&P GSCI Sub-Indices**

Sub-Index	2019 RPDW*	2020 RPDW	Included Commodities
Energy	62.63%	61.71%	Crude Oil (and supporting contracts) and Natural Gas
Petroleum	59.52%	58.47%	Crude Oil (and supporting contracts)
Non-Energy	37.37%	38.29%	All commodities not included in Energy Sub-Index
Agriculture	15.41%	15.89%	Wheat (Chi. & Kan.), Corn, Soybeans, Coffee, Sugar, Cocoa and Cotton
Grains	11.42%	12.12%	Wheat (Chi. & Kan.), Corn and Soybeans
Livestock	6.65%	7.25%	Lean Hogs, Live Cattle and Feeder Cattle
Industrial Metals	11.16%	10.65%	Aluminum, Copper, Lead, Nickel and Zinc
Precious Metals	4.14%	4.50%	Gold and Silver

\* Based on the Average Contract Reference Prices for the 2019 Annual Calculation Period.

## WPAs and Conversion Factors

The WPAs, relevant units and conversion factors used for the Designated Contracts becoming effective during the first Roll Period for the S&P GSCI year 2020 are shown below.

**Table 4: World Production Averages for 2020 S&P GSCI Commodities**

S&P GSCI Commodity	WPQ Units	2019 WPA	2020 WPA	Percentage Change
Wheat	1000 MT	710,379,591	722,164,585	1.7%
Corn	1000 MT	964,917,628	1,016,567,342	5.4%
Soybeans	1000 MT	281,947,576	296,726,183	5.2%
Coffee	1000 MT	8,756,024	8,941,803	2.1%
Sugar	1000 MT	173,191,200	173,720,600	0.3%
Cocoa	1000 MT	4,515,547	4,651,853	3.0%
Cotton	1000 MT	25,568,018	24,660,238	-3.6%
Lean Hogs	1000 MT	41,004,075	41,552,392	1.3%
Cattle	1000 MT	56,877,204	60,238,537	5.9%
Crude Oil	1000 MT	3,718,068,764	3,779,857,044	1.7%
Natural Gas	1000 Petajoules	36,612	37,478	2.4%
Aluminum	1000 MT	58,178,000	61,248,000	5.3%
Copper	1000 MT	21,300,000	22,073,200	3.6%
Nickel	1000 MT	1,870,000	1,944,000	4.0%
Lead	1000 MT	10,480,000	10,549,000	0.7%
Zinc	1000 MT	13,220,000	13,340,000	0.9%
Gold	1 kg	2,894,000	2,984,000	3.1%
Silver	1 MT	25,680	26,220	2.1%

Note: the contracts considered for inclusion in the S&P GSCI 2020 table are available on the S&P Dow Jones Indices' Web site.

### **Abbreviations:**

MT: Metric Tons

kg: Kilograms

## Contract Units and Conversion Factors for 2020 S&P GSCI Contracts

**Table 5: Contract Units and Conversion Factors for 2020 S&P GSCI Contracts**

Trading Facility	Contract	Contract Size	Units	Conversion Factor Between Contract Units and WPQ Units
CBT	Chicago Wheat	5,000	bu	1,000/36.7
KBT	Kansas City Wheat	5,000	bu	1,000/36.7
CBT	Corn	5,000	bu	1,000/39.4
CBT	Soybeans	5,000	bu	1,000/36.7
ICE - US	Coffee	37,500	lbs	2,204.62
ICE - US	Sugar	112,000	lbs	2,204.62
ICE - US	Cocoa	10	MT	1
ICE - US	Cotton	50,000	lbs	2,204.62
CME	Lean Hogs	40,000	lbs	2,204.62
CME	Live Cattle	40,000	lbs	2,204.62
CME	Feeder Cattle	50,000	lbs	2,204.62
NYM / ICE	Crude Oil	1,000	bbl	7.33
NYM	Heating Oil	42,000	gal	315
NYM	RBOB Gasoline	42,000	gal	355
ICE - UK	Brent Crude Oil	1,000	bbl	7.33
ICE - UK	Gasoil	100	MT	1
NYM / ICE	Natural Gas	10,000	MMBtu	947,086.29
LME	Aluminum	25	MT	1
LME	Copper	25	MT	1
LME	Nickel	6	MT	1
LME	Lead	25	MT	1
LME	Zinc	25	MT	1
CMX	Gold	100	oz	32.15075
CMX	Silver	5,000	oz	32,150.75

### **Sources and Notes:**

Contract Size / Units (Domestic Trading Facilities): *Futures Industry Association, Monthly Volume Report.*

Contract Size / Units (Foreign Trading Facilities): *Futures Industry Association, Futures and Options Fact Book.*

Bloomberg

### **Abbreviations:**

bbl: Barrels

gal: U.S. Gallons

lbs: Pounds

MMBtu: Million British Thermal Units

MT: Metric Tons

oz: Ounces

bu: Bushels

## Sources for World Production Data

According to the S&P GSCI Methodology, the WPQ Period for the 2020 S&P GSCI is 2012-2016. This is the most recent period for which data was available for all S&P GSCI Commodities.

Commodity	Primary Source for Production Data
Wheat	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Wheat", Year 2012-2016)
Corn	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Maize", Year 2012-2016)
Soybeans	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Soybeans", Year 2012-2016)
Coffee	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Coffee, green", Year 2012-2016)
Sugar	USDA <a href="https://apps.fas.usda.gov/PSDOnline/app/index.html#/app/advQuery">https://apps.fas.usda.gov/PSDOnline/app/index.html#/app/advQuery</a> (Commodity: "Sugar, Centrifugal", Year 2012-2016)
Cocoa	FAOSTAT <a href="http://faostat.fao.org/site/567/default.aspx#ancor">http://faostat.fao.org/site/567/default.aspx#ancor</a> (Commodity: "Cocoa beans", Year 2012-2016)
Cotton	*USDA <a href="https://apps.fas.usda.gov/PSDOnline/app/index.html#/app/advQuery">https://apps.fas.usda.gov/PSDOnline/app/index.html#/app/advQuery</a> (Commodity: "Cotton", Year 2012-2016)
Lean Hogs	UN Data <a href="http://data.un.org/Data.aspx?q=pork&amp;d=ICS&amp;f=cmlD%3a21110-2">http://data.un.org/Data.aspx?q=pork&amp;d=ICS&amp;f=cmlD%3a21110-2</a>
	FAOSTAT <a href="http://faostat.fao.org/site/569/DesktopDefault.aspx?PageID=569#ancor">http://faostat.fao.org/site/569/DesktopDefault.aspx?PageID=569#ancor</a> (Commodity: "Meat, pig", Year 2012-2016)
	UN Data <a href="http://data.un.org/Data.aspx?q=beef&amp;d=ICS&amp;f=cmlD%3a21110-1">http://data.un.org/Data.aspx?q=beef&amp;d=ICS&amp;f=cmlD%3a21110-1</a>
Cattle	USDA <a href="https://www.nass.usda.gov/Publications/Ag_Statistics/2018/Chapter07.pdf">https://www.nass.usda.gov/Publications/Ag_Statistics/2018/Chapter07.pdf</a> (Agriculture Statistics 2017, Table 7-9 and Table 7-65)
	FAOSTAT <a href="http://faostat.fao.org/site/569/DesktopDefault.aspx?PageID=569#ancor">http://faostat.fao.org/site/569/DesktopDefault.aspx?PageID=569#ancor</a> (Commodity: "Meat, cattle", Year 2012-2016)
Crude Oil	UN Data <a href="http://data.un.org/Data.aspx?q=crude+petroleum&amp;d=ICS&amp;f=cmlD%3a12010-0">http://data.un.org/Data.aspx?q=crude+petroleum&amp;d=ICS&amp;f=cmlD%3a12010-0</a>
Natural Gas	UN Data <a href="http://data.un.org/Data.aspx?q=natural+gas+&amp;d=ICS&amp;f=cmlD%3a12020-1">http://data.un.org/Data.aspx?q=natural+gas+&amp;d=ICS&amp;f=cmlD%3a12020-1</a>
Aluminum	USGS - MYB 2016 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/">http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/</a> (Table 13: Aluminum, Primary: World Production By Country)
Copper	ICSG - <a href="https://www.icsg.org/index.php/component/downloads/finish/165/871">https://www.icsg.org/index.php/component/downloads/finish/165/871</a> (Table 1)
Nickel	USGS - MYB 2016 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/nickel/">http://minerals.usgs.gov/minerals/pubs/commodity/nickel/</a> (Table 12: Nickel: World Plant Production By Country)
Lead	ILZSG - <a href="http://www.ilzsg.org/static/statistics.aspx?from=1">http://www.ilzsg.org/static/statistics.aspx?from=1</a>
Zinc	USGS - MYB 2016 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/zinc/">http://minerals.usgs.gov/minerals/pubs/commodity/zinc/</a> (Table 10: Zinc: World Smelter Production By Country)
Gold	USGS - MYB 2016 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/gold/">http://minerals.usgs.gov/minerals/pubs/commodity/gold/</a> (Table 8: Gold: World Mine Production By Country)
Silver	USGS - MYB 2016 <a href="http://minerals.usgs.gov/minerals/pubs/commodity/silver/">http://minerals.usgs.gov/minerals/pubs/commodity/silver/</a> (Table 8: Silver: World Mine Production By Country)

# Appendix B: Calculation of S&P GSCI Forwards

S&P Dow Jones Indices calculates forward month versions of the S&P GSCI indices. S&P GSCI forward indices measure the S&P GSCI Spot, Excess Return, and Total Return indices based on First Nearby Contract Expirations that would be in the index on the specified forward dates.

For example, on December 11, 2015 the Designated Contracts of the S&P GSCI three-month forward include those Designated Contract Expirations which would be in the S&P GSCI on March 11, 2016 -- i.e. the First Nearby Contract Expiration is moved forward three-months.

The forward indices follow the same rules, weights and calculation methodology as the S&P GSCI, with the exception that the Designated Contract Expirations are advanced (contract months specified in Table 1) by the number of months identified by the specific forward (1 through 6 and 12 month forward). There are seven forward month versions of the S&P GSCI: one-month forward, two-months forward, three-months forward, four-months forward, five-months forward, six-months forward, and twelve-months forward.

The 12 Month Forward Index uses slightly different Designated Contract Expirations for two specific commodities. Feeder Cattle (commodity code: FC) and Gas Oil (commodity code: LGO) use the same Designated Contract Expirations as the main S&P GSCI Index.

The 3-Year and 5-Year Forward indices follow the same rules, weights and calculation methodology as the S&P GSCI, with the exception that the Designated Contract Expirations are advanced 3 and 5 years forward (contract months specified in Table 1) for Crude Oil (commodity code: CL) and the Industrial Metals sector (commodity codes: MAL, MCU, MNI, MPB, MZN).

Index	Index Code
S&P GSCI Crude Oil 3Y Forward (USD)	SPG3YCL
S&P GSCI Crude Oil 3Y Forward (USD) ER	SPG3YCLP
S&P GSCI Crude Oil 3Y Forward (USD) TR	SPG3YCLT
S&P GSCI Crude Oil 5Y Forward (USD)	SPG5YCL
S&P GSCI Crude Oil 5Y Forward (USD) ER	SPG5YCLP
S&P GSCI Crude Oil 5Y Forward (USD) TR	SPG5YCLT
S&P GSCI Industrial Metals 3Y Forward (USD)	SPG3YIM
S&P GSCI Industrial Metals 3Y Forward (USD) ER	SPG3YIMP
S&P GSCI Industrial Metals 3Y Forward (USD) TR	SPG3YIMT
S&P GSCI Industrial Metals 5Y Forward (USD)	SPG5YIM
S&P GSCI Industrial Metals 5Y Forward (USD) ER	SPG5YIMP
S&P GSCI Industrial Metals 5Y Forward (USD) TR	SPG5YIMT



## Appendix C: Calculation of S&P GSCI, Non-US Dollar Denominations

S&P Dow Jones Indices calculates a number of non-US dollar denominated versions of the S&P GSCI. Currently, S&P GSCI versions for the five following currencies are calculated: the Australia Dollar (AUD), the Euro (EUR), the Japanese Yen (JPY), the Swiss Franc (CHF) and the United Kingdom Pound (GBP). Based on the specific currency involved, Hedged and Unhedged versions of the S&P GSCI Spot, S&P GSCI Excess Return, and S&P GSCI Total Return are calculated. The Euro and Yen Unhedged versions of the S&P GSCI represent the value of the S&P GSCI translated into the specific currency. They are calculated by multiplying the previous day's S&P GSCI currency index by the ratio of the current underlying index level to the previous session's underlying index level, multiplied by the ratio of the current FX rate to the previous session's FX rate. The FX rates are obtained from WM using the 11:00 am NY (ET) rate.

The currency Hedged versions of the S&P GSCI offer an investment in the S&P GSCI based on the specific currency, but with minimal exchange rate risk. The Hedged indices are calculated by hedging the beginning-of-period balances using rolling one-month forward contracts. This shields the hypothetical value of the index at the start of each month from exchange rate fluctuations.

*For further details on currency hedged calculations, please refer to S&P Dow Jones Indices' Index Mathematics Methodology available at [www.spdji.com](http://www.spdji.com).*

## Appendix D: S&P GSCI Single Commodity Indices Contract Schedule

Contracts for the S&P GSCI Single Commodity Indices 2020

Trading Facility	Commodity	Ticker <sup>(1)</sup>	2019 CPW	2020 CPW	2020 ACRP (\$)	Unit	2020 TDVT (USD bn)	Designated Contract Expirations at Month Begin <sup>(2)</sup>											
								1	2	3	4	5	6	7	8	9	10	11	12
CMX	Copper	HG	1	1	2.752167	lbs	1788.2	H	H	K	K	N	N	U	U	Z	Z	Z	H
IPE	Orange Juice	OJ	5643.639	5643.639	119.0792	lbs	7.6	H	H	K	K	N	N	U	U	X	X	F	F
NYM	Platinum	PL	4.636138	4.636138	846.45	oz	235.4	J	J	J	N	N	N	V	V	V	F	F	F
NYM	Palladium	PA	1	1	1328.475	oz	174	H	H	M	M	M	U	U	U	Z	Z	Z	H
CBOT	Soybean Oil	BO	1	1	28.58667	lbs	518.6	H	H	K	K	N	N	Z	Z	Z	Z	Z	F
LME	Tin	MSN	0.2226	0.2226	19253.58	MT	125.3	G	H	J	K	M	N	Q	U	V	X	Z	F
CBOT	Soybean Meal	SM	1	1	308.6083	Tons	879	H	H	K	K	N	N	Z	Z	Z	Z	Z	F
CME	Nonfat Dry Milk	NF	1	1	98.93542	lbs	2.5	G	H	J	K	M	N	Q	U	V	X	Z	F
CME	Class III Milk	DCS	1	1	15.95083	lbs	10.1	G	H	J	K	M	N	Q	U	V	X	Z	F
NZX	Skim Milk Powder	NSMP	1	1	2349.166667	MT	0.5	G	H	J	K	M	N	Q	U	V	X	Z	F
SGX	SGX TSI Iron Ore CFR China (62% Fe Fines) Index Futures	SZZF	1	1	84.03417	MT	2.5	G	H	J	K	M	N	Q	U	V	X	Z	F

(1) Tickers are Reuters RIC Codes.

(2) Future months included in the S&P GSCI at the beginning of each calendar month, starting with January 2019.

### Abbreviations:

lbs: Pounds

oz: Troy Ounces

MT: Metric Tons

## Appendix F: Calculation of the S&P GSCI Settlement Index Family

The daily calculation of any S&P GSCI Settlement Index on business day ( $t$ ) will use the settlement prices from business day ( $t$ ) for all commodity contracts that did not experience a market disruption on business day ( $t$ ). For each contract that experiences a market disruption on business day ( $t$ ), the disrupted settlement price from business day ( $t$ ) will be replaced by the settlement price on the first subsequent business day when that commodity contract does not experience a market disruption. Each commodity contract is evaluated independently. On any given business day ( $t$ ), if no commodity contract within an S&P GSCI Index experiences a market disruption, the S&P GSCI Settlement Index equals the corresponding standard S&P GSCI Index.

## Appendix G: S&P GSCI Grains Select

The S&P GSCI Grains Select is designed to reflect the performance of the largest commodity for each component included in the S&P GSCI Grains. It includes Corn, Soybeans and Chicago Wheat, but excludes Kansas Wheat.

The weights of Corn, Soybeans, and Chicago Wheat in the Select Index follow their respective weights in the underlying S&P GSCI Grains Index. The weight of Kansas Wheat is distributed proportionally to the other components of the Select Index. As a result, Wheat is underweighted in the Select Index relative to the underlying index.

## Appendix H: S&P GSCI Fixed Weight Daily Rebalanced Index (Custom)

The S&P GSCI Fixed Weight Daily Rebalanced Index (Custom) is a weighted return index designed to reflect the performance of select commodities included in the S&P GSCI. The commodities that comprise the index are: Aluminum, Brent Crude Oil, Copper, Corn, WTI Crude Oil, Gold, Natural Gas, Silver, Soybeans, and Chicago Wheat.

The weights of the commodities are fixed, and reset on a daily basis to the weights detailed in the table below. The index uses the S&P GSCI Excess Return versions of the commodities that comprise the membership.

The table provided below shows the composition of the index and the fixed weights:

### Underlying Index & Fixed Daily Weight:

Index	Index Code	Index Weights
S&P GSCI Aluminum ER	SPGSIAP	5%
S&P GSCI Brent Crude ER	SPGSBRP	18%
S&P GSCI Copper ER	SPGSICP	15%
S&P GSCI Corn ER	SPGSCNP	9%
S&P GSCI Crude Oil ER	SPGSCLP	12%
S&P GSCI Gold ER	SPGSGCP	18%
S&P GSCI Natural Gas ER	SPGSNGP	10%
S&P GSCI Silver ER	SPGSSIP	2%
S&P GSCI Soybeans ER	SPGSSOP	9%
S&P GSCI Wheat ER	SPGSWHP	2%

For further details on weighted return index calculations, please refer to S&P Dow Jones Indices' Index Mathematics Methodology available at [www.spdji.com](http://www.spdji.com).

# Appendix I: S&P GSCI Carbon Emission Allowances EUA (EUR) Index

The S&P GSCI Carbon Emission Allowances EUA (EUR) indices are designed to reflect the performance of European Union Allowance (EUA) Futures. The indices are calculated in Euro (EUR) daily.

Index Code	Index Name	Launch Date	Base Date	Base Value
SPGSCEE	S&P GSCI Carbon Emission Allowances (EUA) (EUR)	03/09/2020	11/30/2017	100
SPGSCEEP	S&P GSCI Carbon Emission Allowances (EUA) (EUR) ER	03/09/2020	11/30/2017	100
SPGSCEET	S&P GSCI Carbon Emission Allowances (EUA) (EUR) TR	03/09/2020	11/30/2017	100

## Contracts for European Union Allowance (EUA) Futures

Commodity	Commodity Code	1	2	3	4	5	6	7	8	9	10	11	12
European Union Allowance Futures	CFI2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z1

## Calculation of Index Total Return

For a funded investment, the total return between dates t-1 and t includes risk free return for the initial cash outlay:

$$IndexTotalReturn_t = (CDR_t + RiskFreeRate_t) * (1 + RiskFreeRate_t)^{Delta_t}$$

where:

$$Delta_t = \text{number of non-business days since the preceding business day}$$

The index is denominated in Euros (€), the risk free rate used in equation above is the German Bubill rate.

$$Risk\ Free\ Rate_t = GBR_t,$$

where  $GBR$  is the daily-compounding German Bubill rate, as determined by the following formula:

$$GBR_t = \left[ \frac{1}{1 - \frac{91}{360} * SGBR_{t-1}} \right]^{\frac{1}{91}} - 1$$

where:

$SGBR_{t-1}$  = the simple discount rate for the generic 3-month German Bubill rate effective on the preceding business day, with the day-count convention ACT/360.

# Glossary

**Active Contract.** A liquid, actively traded Contract with respect to a Designated Contract and Contract Expiration, as defined or identified by the relevant Trading Facility or, if no such definition or identification is provided by the Trading Facility, as defined by standard custom and practice in the industry.

**Annual Calculation Period.** The 12-month period ending on August 31<sup>st</sup> of the calendar year immediately preceding the S&P GSCI Year for which the composition of the S&P GSCI is being determined. If not all of the necessary data are reasonably available at the time of the annual determination of the composition and weighting of the S&P GSCI, the Annual Calculation Period is be the most recent 12-month period for which such data are available, as determined by S&P Dow Jones Indices.

**Annual Observation Period.** With respect to each Annual Calculation Period, the three 12-month periods, consisting of the Annual Calculation Period and the two 12-month periods immediately preceding.

**Average Contract Reference Price (ACRP).** For any Annual Observation Period and with respect to a particular Contract, the average of the Daily Contract Reference Prices for the First Nearby Contract Expiration on the last day of each month during that Annual Observation Period on which such price is available.

**Contract.** Any contract that is traded on or through a Trading Facility and that provides for physical delivery of, or is based on the price of, a deliverable commodity. For this purpose, the term “Contract” does not include any contract based on the spread, differential or other relationship between different delivery months, locations, or other terms or features of the underlying commodity or contracts on such commodity.

**Contract Business Day.** A day on which (i) the Trading Facility on or through which a Designated Contract Expiration is traded is scheduled to be open for trading for at least three hours, (ii) such Contract Expiration is available for trading during the hours referred to in clause (i) (as defined by the rules or policies of the Trading Facility, or if not so defined, as defined by S&P Dow Jones Indices) and (iii) a Daily Contract Reference Price for such Contract Expiration is published by the Trading Facility. An early closing of the Trading Facility or an early closing of trading in such Contract Expiration will not affect the characterization of a day as a Contract Business Day, provided that the circumstances set forth in (i) through (iii) exist.

**Contract Daily Return (CDR).** On any given S&P GSCI Business Day, the amount determined by dividing the Total Dollar Weight Obtained on such Day by the Total Dollar Weight Invested on the preceding S&P GSCI Business Day. This value is represented as the percentage change in the Total Dollar Weight of the S&P GSCI.

**Contract Expiration.** A date or term specified by the Trading Facility on or through which a Contract is traded, during or after which such Contract will expire, or delivery or settlement will occur. The contract expiration may, but is not required to, be a particular contract month.

**Contract Production Weight (CPW).** With respect to each Designated Contract, an amount calculated according to the rules in section III, based on world production and trading volume; provided that when calculating the composition of the S&P GSCI, the CPW of any Contract that is part of a prospective index composition shall be determined based on such prospective index composition. The final CPWs are rounded to seven digits of precision.

**Contract Roll Weight (CRW).** With respect to the calculation of the S&P GSCI on any given S&P GSCI Business Day other than during a Roll Period, and for each Designated Contract Expiration, a factor of 1.0 if such Designated Contract Expiration is the First Nearby Contract Expiration and zero for all other Designated Contract Expirations. During a Roll Period, the Contract Roll Weight for the First Nearby Contract Expiration or the Roll Contract Expiration will be either 1.0, 0.8, 0.6, 0.4, 0.2, or zero, determined according to the procedure set forth in section VI.2(c) of this methodology, depending on the portion of the First Nearby Contract Expiration that has been rolled into the Roll Contract Expiration, and will be zero for all other Designated Contract Expirations.

**Daily Contract Reference Price (DCRP).** With respect to each Contract Expiration and Contract Business Day, the price of the relevant Contract, expressed in U.S. dollars, that is generally used by participants in the related cash or over-the-counter market as a benchmark for transactions related to such Contract. The Daily Contract Reference Price may, but is not required to, be the price (i) used by such Trading Facility or related clearing facility to determine the margin obligations (if any) of its members or participants or (ii) referred to generally as the reference, closing or settlement price of the relevant Contract. If a Trading Facility publishes a daily settlement price for a particular Contract Expiration, such settlement price will generally serve as the Daily Contract Reference Price for such Contract Expiration unless S&P Dow Jones Indices determines such settlement price does not satisfy the criteria set forth in this definition. The Daily Contract Reference Price of a Contract may be determined and published either by the relevant Trading Facility or by one or more third parties.

**Designated Contract.** A particular Contract included in the S&P GSCI for a given S&P GSCI Period, based on the eligibility criteria set forth in section II of this methodology. All references to the term "Designated Contract" in this methodology shall be deemed to include all Designated Contract Expirations with respect to the Contract in question.

**Designated Contract Expiration.** A Contract Expiration with respect to a Designated Contract that has been designated by S&P Dow Jones Indices for inclusion in the S&P GSCI.

**Dollar Weight.** On any given S&P GSCI Business Day and with respect to any Designated Contract and its First Nearby Contract Expiration and Roll Contract Expiration, the product of (i) the CPW of such Contract, (ii) the Daily Contract Reference Price for the appropriate Contract Expiration or Expirations on such day, and (iii) the Contract Roll Weight of the appropriate Contract Expiration.

**FIA Reports.** The *Monthly Volume Report* and the *International Report* published by the Futures Industry Association.

**First Nearby Contract Expiration.** In connection with the calculation of the S&P GSCI on any given S&P GSCI Business Day, the first available Designated Contract Expiration (after the date or term on or during which the calculation is made), provided that the Roll Period with respect to such Designated Contract Expiration has not yet been completed. After the completion of the Roll Period, the Designated Contract Expiration that was the Roll Contract Expiration becomes the First Nearby Contract Expiration. Notwithstanding the foregoing, with respect to any Designated Contract whose last trading day occurs on or before the eleventh (11<sup>th</sup>) S&P GSCI Business Day of the month, the First Nearby Contract Expiration is the second available Designated Contract Expiration (after the date or term on or during which the calculation is made).

**Interim Calculation Period.** With respect to any Monthly Observation Date, the three-month period ending on the last day of the month immediately preceding the date on which such Monthly Observation Date is scheduled to occur.



**Investment Support Level (ISL).** The targeted amount of investment in the S&P GSCI and related indices, expressed in U.S. dollars, that S&P Dow Jones Indices, in consultation with the Index Advisory Panel, reasonably believes may need to be supported by liquidity in the relevant Designated Contracts, based on the estimated aggregate outstanding level of investment in S&P GSCI-related investments. The Investment Support Level generally will not reflect the actual levels of such investment and will generally include amounts estimated to have been invested in similar indices, as well as any amount that is reasonably expected to be invested in the S&P GSCI or related or similar indices within the next 12-month period. For this purpose, “similar indices” means indices of physical commodities (or futures contracts or other derivatives on such commodities) that S&P Dow Jones Indices, in consultation with the Index Advisory Panel, determines can reasonably be used by market participants to achieve trading and investment objectives that are substantially similar to those for which the S&P GSCI is used. The ISL is currently set at US\$ 250 billion.

**Limit Price.** On any Contract Business Day, a Daily Contract Reference Price for the First Nearby Contract Expiration or the Roll Contract Expiration that represents the minimum or maximum price for such Contract Expiration on such Day, as determined by the rules or policies of the relevant Trading Facility (if any).

**Monthly Observation Date.** As determined by S&P Dow Jones Indices, the earliest day in each calendar month (except for the month in which the composition of the S&P GSCI for the next S&P GSCI Year is determined) on which the data necessary to perform the calculations and make the determinations required as per the S&P GSCI methodology. If such day is not an S&P GSCI Business Day, it is the next S&P GSCI Business Day. If S&P Dow Jones Indices determines such data are not available on or before the last day of such month, the Monthly Observation Date may change.

**Normalizing Constant (NC).** The divisor determined in the manner set forth in section V of this methodology that is used in calculating the value of the S&P GSCI on any given S&P GSCI Business Day in order to assure the continuity of the Index over time and to enable comparisons to be made between the values of the Index at various times.

**Overall Trading Window (OTW).** With respect to any Contract, the period of time during which such Contract is available for trading.

**Percentage Dollar Weight.** With respect to any Designated Contract, the Dollar Weight of such Contract divided by the Total Dollar Weight (TDW) of the relevant index.

**Percentage TQT.** With respect to each Designated Contract, an amount equal to the Total Quantity Traded (TQT) of such Contract divided by the aggregate of the TQT's of all the Designated Contracts on the same S&P GSCI Commodity. If there is only one Designated Contract on an S&P GSCI Commodity, its Percentage TQT is one (1).

**Reference Dollar Weight.** With respect to any Contract, the product of (i) the CPW of such Contract, multiplied by (ii) the applicable Average Contract Reference Price.

**Reference Percentage Dollar Weight.** With respect to any Contract, the quotient of (i) the Reference Dollar Weight of such Contract, and (ii) the sum of the Reference Dollar Weights of all Designated Contracts, provided that, when calculating the composition of the S&P GSCI, the Reference Percentage Dollar Weight of any Contract that is part of a prospective index composition is determined based on such composition.

**Related Contract.** With respect to any Contract (the First Contract), another Contract traded on the same or a different Trading Facility (the Second Contract) that provides for final settlement, at expiration or maturity of the Second Contract, based upon the final settlement price of the First Contract. A Second Contract will be considered a Related Contract only if (i) the TDVT of the Second Contract is greater than or equal to US\$ 30 billion; and (ii) the TQT of the Second Contract over the relevant Calculation Period is greater than or equal to 25% of the TQT of the First Contract over such Period.

**Roll Contract Expiration.** On any given S&P GSCI Business Day, with respect to each Designated Contract and the calculation of the S&P GSCI, it is the Contract Expiration that becomes the First Nearby Contract Expiration on the first S&P GSCI Business Day of the month following the month during which the calculation is made.

**Roll Period.** With respect to any Designated Contract, the period of five (5) S&P GSCI Business Days beginning on the fifth (5<sup>th</sup>) and ending on the ninth (9<sup>th</sup>) S&P GSCI Business Day of each calendar month. With respect to any Designated Contract, the Roll Period will be adjusted according to the procedure set forth in VI.2(d) if any of the circumstances identified in such section exists on any such S&P GSCI Business Day.

**S&P GSCI.** S&P Dow Jones Indices Commodity Index, known under the proprietary name *S&P GSCI*.

**S&P GSCI Business Day.** A day on which the indices are calculated, as determined by the NYSE Euronext Holiday & Hours schedule. Any deviation from this schedule will be announced to clients in advance.

**S&P GSCI CME Futures Contracts.** The futures contracts on the S&P GSFPI, which are listed for trading on the CME.

**S&P GSCI Commodity.** A commodity or group of commodities which, based on such factors as physical characteristics, trading, production, use or pricing, is determined by S&P Dow Jones Indices to be sufficiently related to constitute a single commodity and on which there are one or more Contracts.

**S&P GSCI ER.** The S&P GSCI Excess Return Index, which is the accretion of the Contract Daily Return, indexed to a base value of 100 on January 2, 1970.

**S&P GSCI Period.** The period beginning on the fifth (5<sup>th</sup>) S&P GSCI Business Day of the calendar month in which new CPWs first become effective, and ending on the S&P GSCI Business Day immediately preceding the first day of the next S&P GSCI Period.

**S&P GSCI Settlement Time.** On each S&P GSCI Business Day, the time at which that day's S&P GSCI calculation is made. The S&P GSCI Settlement Time is currently between 04:00 PM and 06:00 PM, Eastern Time.

**S&P GSCI Spot Index.** The index that reflects the price levels of the Designated Contracts and the CPW of each such Contract, and is calculated in the manner set forth in section VI of this methodology.

**S&P GSCI TR.** The S&P GSCI Total Return Index, which incorporates the returns of the S&P GSCI ER and the Treasury Bill Return.

**S&P GSCI Year.** The period beginning on the fifth (5<sup>th</sup>) S&P GSCI Business Day of each calendar year and ending on the fourth (4<sup>th</sup>) S&P GSCI Business Day of the following calendar year.

**S&P GSFPI.** The S&P GSCI Futures Price Index, which serves as a benchmark for the fair value of the S&P GSCI CME Futures Contracts.

**Total Dollar Value Traded (TDVT).** With respect to a given Contract, for any Annual Observation Period or Interim Calculation Period, the annualized TQT of such Contract over such period multiplied by the Average Contract Reference Price of such Contract for such period.

**Total Dollar Weight of the S&P GSCI (TDW).** On any given S&P GSCI Business Day, the sum of the Dollar Weights of all Designated Contracts.

**Total Dollar Weight Invested (TDWI).** On any given S&P GSCI Business Day, the Total Dollar Weight of the S&P GSCI on the preceding S&P GSCI Business Day.

**Total Dollar Weight Obtained (TDWO).** On any given S&P GSCI Business Day, the amount obtained from an investment in the S&P GSCI on the preceding S&P GSCI Business Day. For a given S&P GSCI Business Day, the TDWO is calculated as the Total Dollar Weight of the S&P GSCI for such Day, using the CPWs and Contract Roll Weights in effect on the preceding S&P GSCI Business Day and the Daily Contract Reference Prices used to calculate the S&P GSCI on the S&P GSCI Business Day on which the calculation is made.

**Total Dollar Weight Ratio (TDWR).** The ratio of (i) the Total Dollar Weight of the S&P GSCI on the fourth (4<sup>th</sup>) S&P GSCI Business Day of the relevant month, using the CPWs that will be in effect for the S&P GSCI Period beginning on the next S&P GSCI Business Day, and (ii) the Total Dollar Weight of the S&P GSCI on such day, using the CPWs in effect for the S&P GSCI Period ending on such day.

**Total Quantity Traded (TQT).** With respect to any Contract, the total annualized quantity traded in such Contract during the relevant Annual Calculation Period or Interim Calculation Period, expressed in physical units.

**Trading Facility.** The exchange, facility or platform on or through which a particular contract is traded. A Trading Facility may, but is not required to, be a contract market, exempt electronic trading facility, derivatives transaction execution facility, exempt board of trade or foreign board of trade, as such terms are defined in the U.S. Commodity Exchange Act and the rules and regulations promulgated thereunder.

**Trading Volume Multiple (TVM).** With respect to any Contract, the quotient of (i) the product of (a) the TQT of such Contract and (b) the sum of the products of (x) the CPW of each Contract that is included in the S&P GSCI or of a prospective index and (y) the corresponding Average Contract Reference Price, and (ii) the product of (a) the Investment Support Level for the relevant S&P GSCI Year and (b) the CPW of such Contract. In formulaic terms

$$TVM_c = \frac{TQT_c * \sum_k (CPW_k * ACRP_k)}{ISL * CPW_c}$$

Algebraically, this is equal to:

$$TVM_c = \frac{TDVT_c}{RPDW_c * ISL}$$

**Treasury Bill Rate (TBAR<sub>d-1</sub>).** On any S&P GSCI Business Day, *d*, the 91-day discount rate for U.S. Treasury Bills, as reported by the U.S. Department of the Treasury's Treasury Direct service at <http://www.treasurydirect.gov/instit/instit.htm?upcoming> on the most recent of the weekly auction dates prior to such S&P GSCI Business Day, *d*.

**Treasury Bill Return.** A daily rate of return calculated according to the procedure set forth in VI.4(a) of this methodology and based on (i) the Treasury Bill Rate, (ii) a 360 day year and (iii) a period of 91 days.

**TVM Reweighting Level (TVMRL).** The minimum TVM that must be achieved as a result of a calculation of the CPW for each Designated Contract on the relevant S&P GSCI Commodity, according to the procedure set forth in sections III.4 and III.5 of this methodology. The TVM Reweighting Level is the same for all Designated Contracts and is currently set at 50.

**TVM Threshold (TVMT).** The TVM level, specified by S&P Dow Jones Indices, which triggers a recalculation of the CPWs for all Designated Contracts on a given S&P GSCI Commodity according to the procedure set forth in the methodology, if the TVM of any such Contract falls below such level. The TVM Threshold is currently set at 30.

**TVM Upper Level (TVMUL).** The TVM level, specified by S&P Dow Jones Indices, which triggers the exclusion of one or more Designated Contracts on a given S&P GSCI Commodity from the S&P GSCI according to the procedure set forth in the methodology, if the average of the TVM's of all the Designated Contracts on such Commodity exceeds such level. The TVM Upper Level is currently set at 200 for those Contracts that are not currently included in the S&P GSCI at the time of determination and at 400 for those Contracts that are currently included in the S&P GSCI at the time of determination. The time of determination may be either a Monthly Observation Date or the time of the annual determination of the composition of the S&P GSCI.

**World Production Average (WPA).** The average annual world production quantity of an S&P GSCI Commodity determined by dividing its World Production Quantity by five. (The number of years over which we measure world production quantities.)

**World Production Quantity (WPQ).** The total quantity of an S&P GSCI Commodity produced throughout the world during the WPQ Period, subject to adjustment as set forth in section III of this methodology.

**WPQ Period.** The period over which the WPQ of a S&P GSCI Commodity is determined, which is defined as the most recent five year period for which complete world production data for all S&P GSCI Commodities are available from sources determined by S&P Dow Jones Indices to be reasonably accurate and reliable at the time the composition of the S&P GSCI is determined. For the year 2019, the S&P GSCI WPQ Period is the five-year period from 2011 to 2015.

# S&P Dow Jones Indices' Contact Information

## Contact Information

For questions regarding an index, please contact: [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

# Disclaimer

Copyright © 2020 S&P Dow Jones Indices LLC. All rights reserved. STANDARD & POOR'S, S&P, S&P 500, S&P 500 LOW VOLATILITY INDEX, S&P 100, S&P COMPOSITE 1500, S&P MIDCAP 400, S&P SMALLCAP 600, S&P GIVI, GLOBAL TITANS, DIVIDEND ARISTOCRATS, S&P TARGET DATE INDICES, GICS, SPIVA, SPDR and INDEXOLOGY are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"). DOW JONES, DJ, DJIA and DOW JONES INDUSTRIAL AVERAGE are registered trademarks of Dow Jones Trademark Holdings LLC ("Dow Jones"). These trademarks together with others have been licensed to S&P Dow Jones Indices LLC. Redistribution or reproduction in whole or in part are prohibited without written permission of S&P Dow Jones Indices LLC. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, S&P, Dow Jones or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. Except for certain custom index calculation services, all information provided by S&P Dow Jones Indices is impersonal and not tailored to the needs of any person, entity or group of persons. S&P Dow Jones Indices receives compensation in connection with licensing its indices to third parties and providing custom calculation services. Past performance of an index is not an indication or guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index may be available through investable instruments based on that index. S&P Dow Jones Indices does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. S&P Dow Jones Indices makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor, and S&P Dow Jones Indices makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other investment product or vehicle. S&P Dow Jones Indices LLC is not a tax advisor. A tax advisor should be consulted to evaluate the impact of any tax-exempt securities on portfolios and the tax consequences of making any particular investment decision. Inclusion of a security within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, nor is it considered to be investment advice.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including index data, ratings, credit-related analyses and data, research, valuations, model, software or other application or output therefrom) or any part thereof ("Content") may be modified, reverse-engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of S&P Dow Jones Indices. The Content shall not be used for any unlawful or unauthorized purposes. S&P Dow Jones Indices and its third-party data providers and licensors (collectively "S&P Dow Jones Indices Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Dow Jones Indices Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P DOW JONES INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Dow Jones Indices Parties be

liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

S&P Global keeps certain activities of its various divisions and business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain divisions and business units of S&P Global may have information that is not available to other business units. S&P Global has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

In addition, S&P Dow Jones Indices provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.

GSCI is a registered trademark of The Goldman Sachs Group, Inc. ("Goldman") and has been licensed for use by S&P Dow Jones Indices. The S&P GSCI index is not created, owned, endorsed, sponsored, sold or promoted by Goldman or its affiliates and Goldman bears no liability with respect to such index or data related thereto. Goldman provides no guarantee as to the accuracy and/or the completeness of the S&P GSCI index or any data related thereto.