

S&P GSCI[®]

Highlights and Definitions

1. Economic Weightings

The S&P GSCI is world-production weighted; the quantity of each commodity in the index is determined by the average quantity of production in the last five years of available data. Such weighting provides the S&P GSCI with significant advantages, both as an economic indicator and as a measure of investment performance.

For use as an economic indicator, the appropriate weight to assign each commodity is in proportion to the amount of that commodity flowing through the economy (i.e., the actual production or consumption of that commodity). For instance, the impact that doubling the price of corn has on inflation and on economic growth depends directly on how much corn is used (or produced) in the economy.

From the standpoint of measuring investment performance, production weighting is not only appropriate but also vital. The key to measuring investment performance in a representative fashion is to weight each asset by the amount of capital dedicated to holding that asset. In equity markets, this representative measurement of investment performance is accomplished through weighting indices by market capitalization.

For commodities, there is no direct counterpart to market capitalization. The problem is that commodities, and the related price risks, are held in a variety of ways – long futures positions, over-the-counter investments, long-term fixed-price purchasing contracts, physical inventory at the producer, etc. - making a complete accounting of capital dedicated to holding commodities from the time they are produced to the time they are consumed infeasible. A simple way to achieve a close analogue to true market capitalization, abstracting from differences in inventory patterns, is to note that the net long position of the economy is proportional to the quantity produced - hence, production weighting.

2. A Broad Spectrum of Commodities

The S&P GSCI contains as many commodities as possible, with the rules for excluding commodities in place only to retain liquidity and investability in the underlying futures markets. Currently, the S&P GSCI contains 24 commodities from all commodity sectors: six energy products, five industrial metals, eight agricultural products, three livestock products and two precious metals. This broad range of constituent commodities provides the S&P GSCI with a high level of diversification both across subsectors and within each subsector. This diversity minimizes the effects of highly idiosyncratic events, which have large implications for the individual commodity markets, but are muted when aggregated to the level of the S&P GSCI.

Together, the diversity of its constituent commodities and their economic weighting allow the S&P GSCI to respond to world economic growth, even as the composition of global growth changes through time. When world growth is dominated by industrialized economies, the metals sector of the S&P GSCI generally responds more than the agricultural components. Similarly, when emerging markets dominate world growth, agricultural and petroleum-based commodities generally respond the most. Thus, for example, an index that significantly underweights agriculture would significantly underperform in a global economy with weak OECD and strong emerging markets growth, much like a stock index that only contained manufacturing companies would provide a misleading picture of a service-led economy.

3. Liquidity Constraints and Return Calculations

Individual commodities are screened by liquidity for inclusion in the S&P GSCI. The eligibility requirements are designed to promote cost-effective implementation and true investability. Underlying liquidity eases hedging of derivative products and investing in subsector or individual commodity overlays. Furthermore, liquidity in the underlying futures markets facilitates the discovery of true market prices for the components of the S&P GSCI.

S&P GSCI returns are calculated based on the arithmetic average of stable long positions in futures contracts. This methodology, along with the liquidity in the underlying markets, allows easy implementation of the portfolio of futures contracts that the S&P GSCI represents. These characteristics of the S&P GSCI are designed to allow for efficient and relatively inexpensive arbitrage of

publicly traded S&P GSCI-related instruments such as the Chicago Mercantile Exchange (CME) futures contract.

4. Construction of the S&P GSCI

Three S&P GSCI indices are published: excess return, total return and spot. The S&P GSCI Excess Return Index measures the returns accrued from investing in uncollateralized nearby commodity futures; the S&P GSCI Total Return Index measures the returns accrued from investing in fully-collateralized nearby commodity futures; and the S&P GSCI Spot Index measures the level of nearby commodity prices. Thus, the S&P GSCI Excess Return Index and the S&P GSCI Total Return Index provide useful representations of returns available to investors from investing in the S&P GSCI. In fact, the total return (i.e., the return on the S&P GSCI Total Return Index) is the measure of commodity returns that is completely comparable to returns from a regular investment in the S&P 500 (with dividend reinvestment) collateralized with a government t-bill, while the return on the S&P GSCI Excess Return Index is comparable to the return on the pure portfolio of the S&P 500, without the t-bill investment.

5. The S&P GSCI Total Return, Excess Returns, and Spot Indices

The S&P GSCI Total Return Index measures a fully collateralized commodity futures investment that is rolled forward from the 5th to the 9th business day of each month. Currently the S&P GSCI includes 24 commodity nearby futures contracts. The S&P GSCI Total Return Index is significantly different than the return from buying physical commodities.

The S&P GSCI Spot Index tracks the price of the nearby futures contracts, not returns available to investors. At the end of every business day, the S&P GSCI Spot Index is composed of the same proportions by weight of the underlying commodities and expirations as the portfolio represented by the S&P GSCI Total Return Index and the S&P GSCI Excess Return Index.

Most importantly, the S&P GSCI Spot Index cannot be compared directly to the S&P GSCI Total Return Index, either conceptually or with a single mathematical operation.

On the first point, you cannot add t-bills to the spot return in order to draw a comparison with the S&P GSCI Total Return Index. In fact there is nothing you

can do to make a direct comparison between the spot and total return indices. This is because they are measuring two very different kinds of investments.

Meanwhile, the S&P GSCI Excess Return Index measures the return from investing in nearby S&P GSCI futures and rolling them forward each month (on the 5th - 9th business days of each month) always keeping your investment in nearby futures. This is a leveraged futures investment. The S&P GSCI Excess Return Index (unlike the excess return S&P calculates on equity indices) is not the return above cash. The S&P GSCI Excess Return Index cannot be compared directly to the S&P GSCI Total Return Index either. The S&P GSCI Excess Return Index plus t-bills does not equal the S&P GSCI Total Return Index because it ignores the impact of the re-investment of t-bill collateral yield gains back into commodity futures and gains (losses) from commodity futures back into (out of) t-bills.

6. Passive Portfolios

By design, the S&P GSCI reflects a passive portfolio of long positions in futures. However, unlike a passive equity portfolio, a passive futures portfolio requires regular transactions, for the simple reason that futures expire. Thus, the futures portfolio represented by the S&P GSCI is, in this way, comparable to a bond portfolio of a specific duration.

In the S&P GSCI's case, the maturity of choice is the nearby futures contract (i.e., the contract nearest to expiration). Futures contracts nearest to expiration are rolled forward (i.e., exchanged for futures contracts with the next applicable expiration date) at the beginning of their expiration months.

Many commodities, like those in the energy and industrial metals sectors, have liquid futures contracts that expire every month. Therefore, these commodities are rolled forward every month. Other commodities, most notably agricultural and livestock products, only have a few contract months each year that trade with sufficient liquidity. Thus, these commodities, with futures that expire less frequently, roll forward less frequently than every month.

7. The Roll Period

The rolling forward of the underlying futures contracts in the S&P GSCI Excess Return Index portfolio occurs once each month on the 5th through 9th business

days (the roll period). Some of the underlying commodity contracts expire in the following month and thus need to be rolled forward. The simplest way to think of the process is as rolling from one basket of nearby futures (the first nearby basket) to a basket of futures contracts that are further from expiration (the second nearby basket). The S&P GSCI is calculated as though these rolls occur at the end of each day during the roll period at the daily settlement prices.

The portfolio is shifted from the first to the second nearby baskets at a rate of 20% per day for the five days of the roll period. Until just before the end of the 5th business day, the entire S&P GSCI portfolio consists of the first nearby basket of commodity futures. At the end of the 5th business day, the portfolio is adjusted so that 20% of the contracts held are in the second nearby basket (i.e., a basket of future contracts that are farther from maturity), with 80% remaining the first nearby basket.

The roll process continues on the 6th, 7th, and 8th business days, with relative weights of first to second nearby baskets of 60%/40%, 40%/60%, and 20%/80%, respectively. At the end of the 9th business day, the last of the old first nearby basket is exchanged, completing the roll and leaving the entire portfolio in what we have been calling the second nearby basket. At this time, this former second nearby basket becomes the new first nearby basket, and a new second nearby basket is formed (with futures maturities further in the future) for use in next month's roll.

The last key point to be made about the roll process is to specify exactly what the 80%/20% or other relative splits between nearby baskets mean. The roll percentages refer to contracts or quantities, not value. Taking the first day of the roll as an example, just before the roll takes place at the end of the day, the S&P GSCI consists of the first nearby basket. That portfolio, constructed the night before and held throughout the 5th business day, has a dollar value. For the roll, that dollar value is distributed across the first and second nearby baskets such that the number of contracts or the quantity of the first nearby basket is 80% of the total and the quantity held of the second nearby basket is 20% of the total.

The dollar value held of each nearby basket can then be calculated from those quantity weights by multiplying them by the prices of the futures contracts contained in each basket. As the baskets contain futures with different maturities for some of the commodities, the prices are generally close but not

exactly the same. Hence, the percentage of the portfolio value (i.e., dollar weight) held in each basket is generally close to, but not exactly equal to, the 80%/20% split specified for the quantities.

The world-production weighting of the S&P GSCI is accomplished by keeping the quantity weights of the individual commodities within each basket proportional to world production weights, which are averages of historical production levels and are generally updated every year.

8. Investing in the S&P GSCI

The S&P GSCI has a futures contract listed on the CME making it a truly public and transparent index that has been traded by numerous market makers for over 12 years. An investment in the S&P GSCI provides access to the liquidity of the underlying commodity markets and offers excellent price transparency.

There are numerous ways to invest in the S&P GSCI. Over-the-Counter (OTC) swaps on either the S&P GSCI Excess Return Index or S&P GSCI Total Return Index allow investors to have direct participation in the indices with an unlimited downside risk (in the instance that an investor enters into an OTC swap on the short side).

Structured notes can be used to gain exposure while limiting the downside risk from investing. S&P GSCI futures listed on the Chicago Mercantile Exchange can be rolled monthly to replicate the S&P GSCI. Third-party asset managers offer products providing commodity exposure that are benchmarked to the S&P GSCI. Certificates and warrants on the S&P GSCI are available, but U.S. Residents are unable to invest via this method.

Investors, asset managers and financial institutions may use the S&P GSCI to track performance, or as a benchmark for actively managed portfolios. If an institution is simply comparing its investment performance to the S&P GSCI, no license is required. However, a license from Standard & Poor's must be obtained if the investment replicates the S&P GSCI and a financial product based on or linked to the S&P GSCI is created.