Index Methodology

Bloomberg Composite Gold Index & the underlying Bloomberg Gold Tracker Index

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Bloomberg Professional Services

Indices

Bloomberg

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Version Tracker

Date	Update	Updated By
1/15/2024	Update to share factor calculation for treatment of equity stock splits.	Ken Hoefling
4/22/2020	Section 7 of the Methodology included for ESG Disclosure.	Mia Motiee-compliance
11/30/2018	Section 3 of the Methodology updated to reflect Bloomberg Index Services Limited's Index Policy and Procedures.	Ken Hoefling
2/15/2018	The index methodology was updated to include additional language pertaining to index data and reviews, limitations of the index, and index administrator transparency.	Ken Hoefling

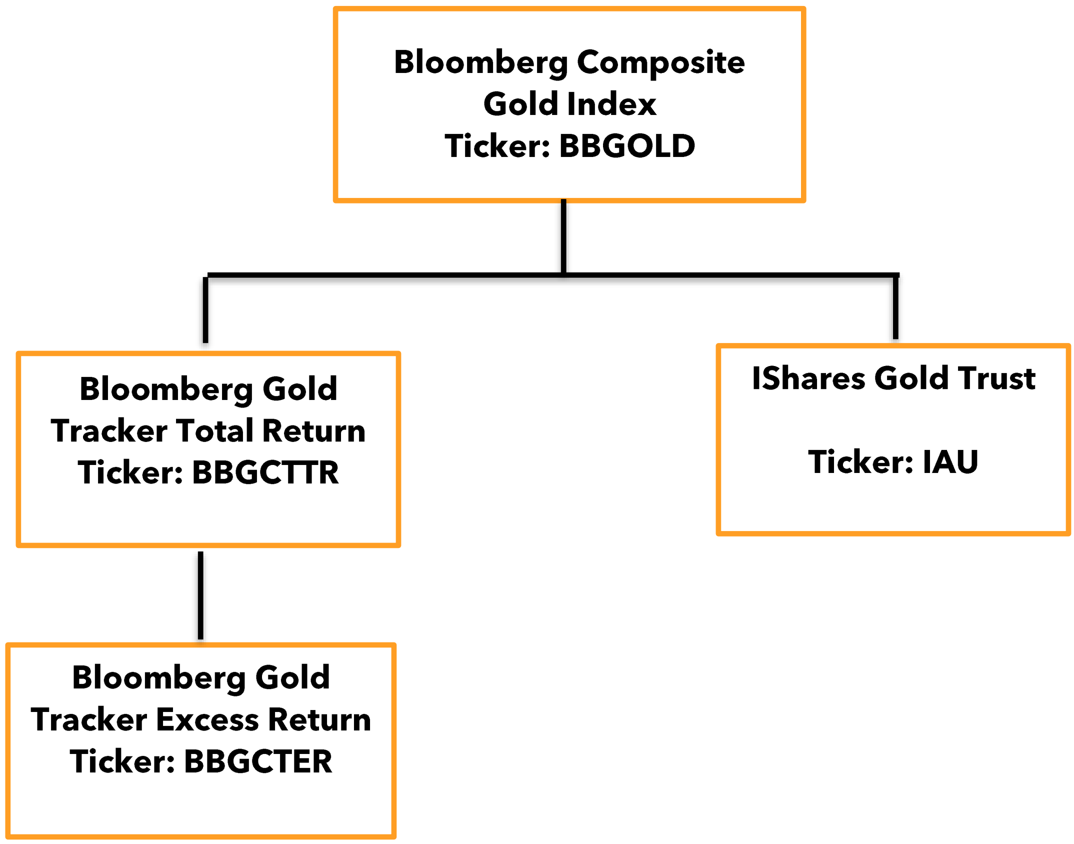
Section 1: Index Overview

The Bloomberg Composite Gold Index (ticker: BBGOLD) (the Index or Composite Index) aims to track the performance of gold using a Composite index comprised of: (i) an underlying Bloomberg Gold Tracker Total Return Index (BBGCTTR) (the Tracker Index and with the Composite Index, the Indices) and (ii) the iShares Gold Trust (ticker: IAU) (the ETF).

Bloomberg Index Services Limited (BISL and, collectively with its affiliates, Bloomberg) is the administrator of the Index and the underlying Tracker Index (the Index Administrator).

The Index is denominated in U.S. dollars, has a **"Index Base Date"** of April 26, 2005, and a base level of 100. The Business Days of the Index will follow the trading schedule of the New York Stock Exchange (NYSE).

The Tracker Index aims to track the spot price of gold while maintaining liquidity. The Tracker Index is composed of gold futures contracts that roll over a three-day period on the fourth to last Business Day of the month proceeding the lead contract's expiration month.



Section 2: Index Limitations

Though the Indices are designed to be representative of the markets they measure or otherwise align with their stated objective, they may not be representative in every case or achieve their stated objective in all instances. They are designed and calculated strictly to follow the rules of this Methodology, and any Index Level or other output is limited in its usefulness to such design and calculation.

Markets can be volatile, including those market interests which the Indices intend to measure or upon which the Indices are dependent in order to achieve their stated objective. For example, illiquidity can have an impact on the quality or amount of data available to the Index Administrator for calculation and may cause the Indices to produce unpredictable or unanticipated results.

In addition, market trends and changes to market structure may render the objective of the Index unachievable or to become impractical to replicate by investors.

The following is a summary of certain limitations associated with the Composite Index but is not meant to be an exhaustive list of all risks and limitations associated with using these indices. Though the indices are designed to be representative of the markets they measure, they may not be representative of every use case. They are designed and calculated strictly to follow the rules of this methodology, and any index level or other output is limited in its usefulness to such design and calculation.

There is inherent, though transparent, judgment in index construction, as outlined in this methodology. They are also designed for general applicability and not to address the individual needs of users. Bloomberg does not advise as to the usefulness of the Composite Index to a particular circumstance, and users are therefore encouraged to seek their own counsel for such matters. This methodology is subject to change, which may impact its usefulness to users. Though efforts will be made to alert users of this change, not every individual user may be aware of them. Such changes may also significantly impact the usefulness of the Composite Index. Bloomberg may also determine to cease publication of the Composite Index or a particular index provided by Bloomberg. Bloomberg maintains internal policies regarding user transitions, but there is no guarantee an adequate alternative is available generally or for a particular use case. Markets for currencies, as with all markets, can be volatile. As Composite Index is designed to measure those markets, its indices could be materially impacted by market movements, thus significantly impacting the use or usefulness of the fixings for some or all users. Also, certain currency markets are less liquid than others, and even the most liquid markets may suffer periods of illiquidity. Illiquidity can have an impact on the quality or amount of data available to Bloomberg Indices for calculation, and may cause the Composite Index to produce unpredictable results.

Historical Index levels published prior to the Index launch date are considered hypothetical. Historical Index levels should not be considered as an indication of future performance.

The Composite Index is comprised of the Tracker Index, composed of gold futures contracts, and an ETF. If any gold futures contract or the ETF is terminated or replaced in accordance with the rules of the Index methodology, a comparable futures contract or ETF may be selected by

BISL. The replacement of a gold futures contract or ETF may cause the level of the Composite Index to change or be adjusted.

Commodity prices can change unpredictably, affecting Index returns in unforeseeable ways. Trading in futures contracts on physical commodities, including trading in the index components, is speculative and can be volatile. Market prices of index components and the underlying physical commodities may fluctuate rapidly based on numerous factors, including, but not limited to, changes in supply and demand relationships (whether actual, perceived, anticipated, unanticipated or unrealized), weather, disease, trade, domestic and foreign political and economic events and policies, changes in interest rates, and monetary and other government policies.

BISL may discontinue or suspend calculation or publication of the Indices defined in this methodology. If this happens, BISL shall use reasonable efforts to provide advance notice through an Index announcement made available via bloombergindices.com and on the Bloomberg Terminal via INP <GO>.

Limitation on direct tracking of performance of gold and competing interests of having exposure to both the Tracker Index and ETF may skew performance away from a more direct measure of gold performance.

Section 3: Index Calculation

Bloomberg Gold Tracker Excess Return Index

The Tracker Index holds a long position on gold futures contracts (GC) traded on the Chicago Mercantile Exchange (CME) selecting the liquid future contracts. To maintain a long position, contracts are 'rolled' from the expiring futures contract to a new contract farther down the futures curve with a longer expiry date. To maximize liquidity and reflect the most active gold market, BISL excludes the October gold contract due to its historically low trading volume and open interest. The contract month codes are listed in Table 1. The calculation of the Tracker Index follows the roll schedule listed in Table 2. The table represents the contract's position in the Tracker Index on the first Business Day of each month. Future contracts expire on specified dates listed by the CME.

Table 1: Contract Month Codes

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

Table 2: Gold Contract Calendar

Commodity	Code	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gold	GC	G	J	J	M	M	Q	Q	Z	Z	Z	Z	G

The Tracker Index rolls five times over the course of a calendar year. The gold futures contract will roll on the fourth to last Business Day of the month, on the month prior of the lead gold futures contract expiration. The Tracker Index roll will take place over 3 Business Days at 33% (1/3) per Business Day, not affected by a Market Disruption Event (MDE), as defined in Section 4. On the second to last Business Day of the month, the gold futures contract will be 100% invested in the next gold futures contract.

In the example below, Table 3, the lead contract of the Tracker Index is a gold February 2017 contract, and the next contract is a gold April 2017 contract, as defined in Table 1. The first day of the roll period will begin on January 26th, 2017, 4 days prior to month end, based off the gold February 2017 expiration (February 24th 2017). The lead contract will roll into the next contract over the next three Business Days at 33% (1/3) each Business Day. In the case of a MDE, the roll period will be extended until the next Business Day in which a MDE does not occur.

Table 3: Rolling Example

Date	Commodity	Lead Contract	Lead Contract Expiration	Next Contract	Previous Day Lead Roll Weight	Previous Day Next Roll Weight	Today Lead Roll Weight	Today Next Roll Weight
1/24/2017	Gold	GCG7	2/24/2017	GCJ7	100%	0%	100%	0%
1/25/2017	Gold	GCG7	2/24/2017	GCJ7	100%	0%	100%	0%
1/26/2017	Gold	GCG7	2/24/2017	GCJ7	100%	0%	**67%**	**33%**
1/27/2017	Gold	GCG7	2/24/2017	GCJ7	67%	33%	33%	67%
1/30/2017	Gold	GCG7	2/24/2017	GCJ7	33%	67%	**0%**	**100%**
1/31/2017	**Gold**	**GCJ7**	**2/24/2017**	**GCJ7**	**100%**	**0%**	**100%**	**0%**

**Last Trade Date can be located on the Bloomberg Terminal; using the function EXS <GO> in conjunction with a commodity futures contract (i.e. GCA Comdty EXS <GO>). Contract specifications can also located on the CME website.*

On each Business Day, the following calculation is applied to the Bloomberg Gold Tracker Excess Return Index. The official precision of the index levels is rounded to 4 decimal places.

$$BBGCTER_t = BBGCTER_{t-1} * \frac{LCSP_t \, x \, LRW_{t-1} + NCSP_t \, x \, NRW_{t-1}}{LCSP_{t-1} \, x \, LRW_{t-1} + NCSP_{t-1} \, x \, NRW_{t-1}}$$

Where:
$BBGCTER_t$= Bloomberg Gold Tracker Excess Return Index
LCSP= Lead Contract Settlement Price
NCSP= Next Contract Settlement Price
LRW= Lead Contract Roll Weight
NRW= Next Contract Roll Weight

t denotes the current Business Day of the month, with t - 1 denoting the prior Business Day's levels. When t is the first Business Day of the month, t -1 is the last Business Day of the prior month.

Interpolated prices will not be used for any the Gold Tracker Index calculation.

On each Business Day, the following calculation applies to the Bloomberg Gold Tracker Total Return Index. The official precision of the index levels is rounded to 4 decimal places;

$$BBGCTTR_t = BBGCTTR_{t-1} * (GIR_t + IR_t)$$

Where:
GIR_t= Gold Tracker (ER) Index Return, calculation listed below;

$$GIR_t = BBGCTER_t / BBGCTER_{t-1}$$

IR_t= Interest Return, calculation listed below

$$IR_t = \left[\frac{1}{1 - \frac{91}{360} \times TBR_{t-1}} \right]^{\frac{D}{91}} - 1$$

TBR_{t-1}= T-Bill Rate, the rate used is the most recent weekly 13 Week (3 Month) High Discount Rate (ticker: USB3MTA Index).
D= Number of Calendar days between last index Business Day (i.e. weekend=3)

Bloomberg Composite Gold Index

On a quarterly basis, the Composite Index allocates a weight of 76% to the Bloomberg Gold Tracker Total Return Index and a weight of 24% to the iShares Gold Trust.
Each Business Day, the following calculation is applied to the Bloomberg Composite Gold Index, and the result rounded to 4 decimal places:

$$BBGOLD_t = BBGOLD_{t-1} * \frac{BBGCTTR_t * SFG_t + IAU_t \, x \, SFI_t}{BBGCTTR_{t-1} * SFG_{t-1} + IAU_{t-1} \, x \, SFI_{t-1}}$$

Where:
$BBGOLD_t$ = Bloomberg Composite Gold Index
$BBGCTTR_t$ = Bloomberg Gold Tracker Total Return Index
IAU_t = iShares Gold Trust Official Close Price
SFG_r = Share Factor for BBGCTTR Index
SFI_r = Share Factor for IAU US Equity

t denotes the current Business Day of the month, with t - 1 denoting the prior Business Day's levels. When t is the first Business Day of the month, t -1 is the last Business Day of the prior month.

On each Rebalance Day, the fourth to last Business Day of January, April, July, October, a Share Factor, as described below, is calculated for both the Gold Tracker Total Return Index and the iShares Gold Trust.

Gold Tracker Index Share Factor

$$SFG_r = SFG_{r-1} - \frac{RF}{BBGCTTR_r}$$

iShares Gold Trust Share Factor

$$SFI_r = SFI_{r-1} + \frac{RF}{IAU_r}$$

Where:
RF_r = Reweighting Factor
$BBGCTTR_t$ = Bloomberg Gold Futures Index
IAU_t = iShares Gold Trust Official Close Price
r denotes the current quarter's Rebalance Day, with r - 1 denoting the prior quarter's Rebalance Day.

If a stock split announced for IAU Equity, the share factors will be updated based on the proportion to the split ratio on the ex-date of the stock split. Index Shares factors will be increased (for split) or decreased (for reverse splits).

Adjustment Factor
On each Rebalance Day a Reweighting Factor is calculated to reset the weights to the allocated 76%/24% weights of the Composite Gold Index;

$$RF_r = (GFCW_r - 76\%) \, X \, (BBGCTTR_r \, x \, SFG_r + IAU_r \, x \, SFI_r)$$

Where:
$GFCW_r$ = Gold Futures Closing Weight

r denotes the current quarter's Rebalance Day, with r - 1 denoting the prior quarter's Rebalance Day.

Section 4: Market Disruption Events

Market Disruption Events ("MDE") can occur to commodity futures for several reasons:

a) The termination or suspension of, or material limitation or disruption in, the trading of any future contract used in the calculation of the Index on that day
b) The settlement price of any such contract reflects the maximum permitted price change from the previous day's settlement price, based on limits set by commodity exchanges
c) The failure of an exchange to publish settlement prices.

If a MDE persists for four consecutive Index Business Days immediately following the original Index Business Day on which a MDE occurs, then the Index Administrator shall determine what further actions it may reasonably take.

If, on any Index Business Day, a MDE occurs or is occurring that the Index Administrator determines, in its sole discretion, materially affects the Index, the Index Administrator may defer or suspend the calculation and publication of the Index Value and any other information relating to the Index until the next Index Business Day on which such disruption event is not continuing.

Section 5: Benchmark Governance and Review

Benchmark governance, audit and review structure

Please refer to the BISL Benchmark Procedures Handbook available here.

Index and methodology changes

Please refer to the BISL Benchmark Procedures Handbook available here.

Expert judgement and discretion

Please refer to the BISL Benchmark Procedures Handbook available here.

Conflicts of interest

Please refer to the BISL Benchmark Procedures Handbook available here.

Restatement policy

Please refer to the BISL Benchmark Procedures Handbook available here.

Cessation policy

Please refer to the BISL Benchmark Procedures Handbook available here.

Complaints policy

Please refer to the BISL Benchmark Procedures Handbook available here.

Exchange Settlement Price Delays

In the event an exchange delays the pricing of future settlements or the ETF pertaining to the Bloomberg Composite Gold Index, BISL will delay the publication of Index Levels to vendors and delivery of index data files.

Exchange Settlement Price Amendments

On the occasion when an exchange amends the Settlement Price of a contract used in the Bloomberg Composite Gold Index prior to 7 PM EST, BISL will send an index announcement following the discovery to inform all clients of the correction. BISL will then recalculate, republish, and redistribute end-of day files.

Reinvestment of Dividends and Coupons

Dividends and coupon payments play no direct role in this Index Methodology Handbook, and are therefore not accounted for by the Index.

Section 6: Index Terms

"BISL" means Bloomberg Index Services Limited.

"BOC" means the Benchmark Oversight Committee.

"Business Day" means any day on which NYSE is open for business.

"Index Base Date" means the first date of the Index history as described in Section 1.

"Index Level" means, in respect of the Index and a Business Day, the value of the Index on such Business Day, calculated in accordance with the methodology described in Section 3.

"PROC" means the Product, Risk and Operations Committee.

"Market Disruption Event (MDE)" has the meaning given to such term in Section 4.

"Rolling" means the commodity futures contracts are 'rolled' during the Roll Period from the expiring futures contract (Lead Contract) to a new contract farther down the futures curve with a longer expiry date (Next Contract). After the Roll Period, the former Next Contract becomes the new Lead Contract.

"Roll Period" means 4 business days prior to the expiration of the lead gold futures contract in the Bloomberg Gold Index. The roll will take place over 3 business days at 33% (1/3) per business day.

"Settlement Price" means the official settlement prices provided by an exchange.

"Treasury Bill Daily Return" means the return of cash collateral invested in the 3-Month T-Bill.

Section 7: ESG Disclosures

EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
1. Name of the benchmark administrator.	Bloomberg Index Services Limited ("BISL")
2. Type of benchmark	Other
3. Name of the benchmark or family benchmarks.	Bloomberg Composite Gold Index
4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No
5. Where the response to Item 4 is positive, please list below, for each family of benchmarks, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816. Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. The ESG factors shall be disclosed at an aggregated weighted average value at the level of the family of benchmarks.	
a) List of environmental factors considered:	N/A
b) List of social factors considered:	N/A
c) List of governance factors considered:	N/A
6. Where the response to Item 4 is positive, please list below, for each benchmark, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816, depending on the relevant underlying asset concerned. Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets. The ESG factors shall not be disclosed for each constituent of the benchmark, but shall be disclosed at an aggregated weighted average value of the benchmark. Alternatively, all of this information may be provided in the form of a hyperlink to a website of the benchmark administrator included in this explanation. The information on the website shall be easily available and accessible. Benchmark administrators shall ensure that information published on their website remains available for five years	
a) List of environmental factors considered:	N/A
b) List of social factors considered:	N/A
c) List of governance factors considered:	N/A
7. Data and standards used.	
a) Data input. (i) *Describe whether the data are reported, modelled or, sourced internally or externally.* (ii) *Where the data are reported, modelled or sourced externally, please name the third party data provider.*	N/A
b) Verification of data and guaranteeing the quality of those data. *Describe how data are verified and how the quality of those data is ensured.*	N/A
c) Reference standards *Describe the international standards used in the benchmark methodology.*	N/A
Date on which information has been last updated and reason for the update:	April 2020, initial publication of ESG annex .

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