GOLDMAN SACHS RESEARCH

Goldman Sachs Bond Buyers Equity Basket ™ Index Methodology

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Overview

The following overview of the Goldman Sachs Bond Buyers Equity Basket™ Index is a summary and, as such, is necessarily incomplete. This overview should be read in conjunction with, and is qualified in its entirety by, the more detailed description of the [Goldman Sachs Bond Buyers Equity Basket™ Index] and its operation that follows in this document.

The Goldman Sachs Bond Buyers Equity Basket™ Index (the "Index") tracks the performance of a combination of common stocks and fully-collateralized put sales. The selection of common stocks (the "Stock Strategy"), the selection of strike prices of the fully-collateralized put sales (the "Option Income Strategy") and the allocation between these two parts of the Index are guided by fundamental and market variables.

The "Stock Strategy" is comprised of 100 common stocks of companies with high volatility-adjusted Free-Cash-Flow yield. The weighting of the "Stock Strategy" within the "Index" varies between 0% and 100%. Common stocks are eligible for inclusion in the "Stock Strategy" if they have listed options traded on a US Exchange. Eligible common stocks are screened using parameters that are proxies for their stock and option liquidity including (a) Market Capitalization, (b) Common Stock Trading Volume and (c) Listed Options Volume to identify liquid common stocks available for inclusion in the "Stock Strategy". The 100 common stocks are weighted by the inverse of their volatility such that there is equal implied "dollar-volatility risk" in each name.

The "Option Income Strategy" is comprised of put option sales on the same 100 common stocks and US Treasury bills equal to the full notional value of the puts such that the put sales are fully-collateralized. The put options are of the January term of between 6-months and 17-months on the rebalance date and the US Treasury bills are of the longest possible term that is less than the put option expiry date. The put strikes are chosen such that the annualized percentage premium collected for the put sale is as close as possible to the Free-Cash-Flow yield of the underlying equity. Similar to the stock strategy the put sales are weighted by the inverse of dollar-volatility in the context of the option's delta to target equal implied "dollar-volatility risk" across each option position.

The "Stock Strategy" and "Option Income Strategy" are combined into a single index to target an "Expected Yield" of 5% greater than the US Treasury yield on each rebalance day. The "Expected Yield" of the index is comprised of three sources: (1) the annualized dividends collected on the common stocks, (2) the annualized put premiums received and (3) the annualized yield on US Treasuries. The weighting of the "Stock Strategy" will be between 0% and 100% on each rebalance day with the weighting of the "Option Income Strategy" at 100% minus the "Stock Strategy". The allocation between the "Stock Strategy" and the "Option Income Strategy" is primarily driven by the Dividend yield and Free-Cash-Flow yield of the 100 underlying companies. When the Dividend yield or Free-Cash-Flow yield is high, the Index is more weighted towards the "Stock Strategy". When Dividend yield or Free-Cash-Flow is low, a larger allocation to the "Option Income Strategy" is required.

The Index rebalances quarterly in March, June, September and December on the Friday regular monthly options expiration day (generally the Friday before the third Saturday of the rebalance month). The 100 common stocks to be included in the "Stock Strategy" are made available 1 week prior to the rebalance date. The put strikes and weights of the Index will be made available prior to the end of the regular trading hours for common stocks on the rebalance day.

Index Construction

1. Identify the Investible Single Stock Universe by screening for size and liquidity.

a. Identify all common stocks with listed options traded across all US exchanges.

b. Identify the 800 largest stocks by market capitalization.

c. Calculate 1 year average daily value of common stock traded across all major US exchanges. Eliminate the 25% with the lowest daily dollar value traded from the universe of 800, leaving 600 names.

d. Calculate 1 year average notional value of options traded (notional volume) for each common stock across all major US exchanges. Eliminate the 25% with the lowest notional options volume, leaving 450 names.

2. Identify the 100 common stocks to be used in the "Stock Strategy".

a. For each name, identify the latest 5 year Credit Default Swap (CDS) spread. If the CDS spread for a name is available AND the cost of protection is above 150 basis points annually, remove it from the list of eligible common stocks.

b. For each common stock issuer, calculate the latest available trailing annual Free-Cash-Flow yield (i.e. "FY0 FCF yield") using the latest annual Operating Cash Flow minus Capital Expenditures net of fixed asset disposals and prior day's close market capitalization. In case of common stock issuers in the Financials/REIT sectors use changes in book-value over current equity market capitalization rather than Free-Cash-Flow. For each name calculate the Earnings Per Share Growth from the latest actual to the first unreported year using publically available analyst consensus. The growth in EPS is capped at -30% to +30%. This gives "FY1 FCF yield or FY1 BV growth yield" estimate for the stock.

c. Eliminate names where "FY0 FCF yield or FY1 BV growth yield" is less than or equal to zero.

d. For each name, calculate the at-the-money implied volatility of the 12-month term using options prices. Where 12-month term is not available, use the next longest term available, i.e. 6-month or 3-month or 1 month in that order. If the implied volatility is below 10%, remove it from the list of eligible common stocks.

e. Calculate the volatility adjusted free cash flow yield (or BV growth yield in the case of Financials/REIT Sectors) for FY0 and FY1 by dividing each term by the same implied volatility. Calculate the average of these 2 terms to identify the "average volatility adjusted free cash flow yield" or "average volatility adjusted Book Value Growth" in the case of the Financials/REIT Sector.

f. Select the 100 stocks where the "volatility adjusted free cash flow yield" is the highest, targeting a minimum of 2 names in each sector and a maximum of 25 names in each sector (Information Technology, Healthcare, Consumer Services, Consumer Products, Utilities, Materials, Energy, Financials/REITs, Industrials). If there are not 2 names from a given sector that pass criteria above, then include fewer names from that sector.

3. Weighting of the "Stock Strategy" (Goldman Sachs Bond Buyers Equity Basket™ Stock Only Index): Assemble an equity only sub-index of the 100 names where the weights are inversely proportional to the at-the-money implied volatility used in 2(d) above such that each common stock in the sub-index will have an equal dollar-volatility weight. The % of the "Stock Strategy" invested in the name is equal to 1/implied volatility of each name divided by the sum of 1/implied volatility for all of the names subject to the constraint that no issuer is greater than 10% of the "Stock Strategy".

4. Create and weight the "Options Income Strategy" (Goldman Sachs Bond Buyers Equity Basket™ Put Write Index):

a. Identify the put to be sold on each name by choosing the January listed put closest to 1 year from the rebalance date and where the annualized premium collected as a percent of the strike price is closest to the average free-cash-flow yield determined above. For the purpose of strike identification, the average annualized free-cash-flow is restricted to a maximum of 10% and a minimum of 2%.

b. Create a sub-index of short put positions such that there is an equal dollar delta volatility weight to each put.
   i. Equal Delta Notional Weight = [1/(min(delta * implied volatility)] / ∑ [1/(delta * implied volatility)], subject to the constraint that delta is no smaller than -1 and no larger than -0.1.
   ii. Shares Per Unit Invested = Equal Delta Notional Weight / Stock Price.
   iii. Collateral per unit invested = Shares per unit Invested * (Strike price – Put Price).
   iv. Collateral as a percent of total implied collateral = Collateral per unit invested / ∑ (Collateral per unit invested), subject to the constraint that no issuer is greater than 10% of the total collateral.
   v. # options per stock = Equal Delta Notional Weight * ∑ (Collateral as a percent of total implied collateral * Stock Price / (Strike Price- Put Price) * Starting Index level / Stock Price.
c. Calculate the "Options Income Strategy" yield by the total premium collected divided by the total collateral.
d. Collateral included in the "Option Income Strategy" will be US Treasury bills of the longest possible term that is less than the put option expiry date. We define the yield on these US Treasury bills as the "US Treasury yield" to be used in calculating the weight of the "Stock Strategy" and "Option Income Strategy" within the "Index".

5. Weighting the "Index" (Goldman Sachs Bond Buyers Equity Basket™ Index) to achieve target yield:
a. Calculate the % dividend yield on the "Stock Strategy" by multiplying the trailing 12-month dividend yield times the weight of the stock in the "Stock Strategy".
b. Calculate the "Options Income Strategy" yield as (Put premiums collected + deannualized treasury yield*total collateral held) / Index level * 365/(number of days to expiration).
c. Calculate the weight of "Option Income Strategy" as (Target yield – "Stock Strategy" yield) divided by ("Option Income Strategy" yield – "Stock Strategy" yield), varying between 0% and 100%. Establish the weight of the "Options Income Strategy".
d. The Target Yield is 5% plus the "US Treasury yield".
e. The "Stock Strategy" weight is one minus the weight of the "Option Income Strategy ".

6. Rebalancing Schedule and data:
a. The index will rebalance quarterly on the close of the same day as regular monthly stock option expiration in March, June, September, and December; the Friday before the third Saturday of the month.
b. The list of stocks to be included in the "Stock Strategy" will be made available 1 week before the rebalanced date. Data used to determine the names in the "Stock Strategy" will be as of the day prior to 1 week before the rebalance date. This includes free-cash-flow data, book value data, stock price, market capitalization, implied volatility, stock volume and options volume as described above.
c. Put strikes will be set using data as of the market close on the day prior to the rebalance date. Index weights will be set using the prior day's closing data for implied volatility, dividend yield and option delta, but option and stock price data from the close on the rebalance day. Put options are assumed to be sold at the mid-market-price on the close of rebalance day minus the simple average of the mid-bid spread observed as the latest available data point every 30 minutes from 10:00am to 3:30pm over the course of the rebalance day and are marked at mid-market thereafter.

Calculation and Administration

Goldman, Sachs & Co, the "Index Sponsor" has retained Solactive AG to serve as "Calculation Agent" for the Index. In the event the Index Sponsor appoints a replacement Calculation Agent a public announcement will be made via press release.

The Index Calculation Agent applies corporate action adjustments and calculates the Index as described in the Solactive Index Calculation Guideline, Version 1.2 dated June 15th, 2016
https://www.solactive.com/wp-content/uploads/2016/06/Index-Calculation-Guideline_V1.2.pdf

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

Additional Information about the Index, Including Risks

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

Publication of the Index

Solactive AG (the "Calculation Agent") calculates and publishes the value of the Index on each Index Business Day and publishes it on both Bloomberg and Reuters. The relevant tickers are specified in the Annex.

Neither Goldman, Sachs & Co. nor any of its affiliates (individually and collectively, "Goldman Sachs") makes any representation or warranty, express or implied, regarding the advisability of investing in products that may be linked to the Index or the investment strategy underlying the Index, particularly, the ability of the Goldman Sachs Bond Buyers Equity Basket™ Index to perform as intended, the merit (if any) of obtaining exposure to the Goldman Sachs Bond Buyers Equity Basket™ Index or the suitability of purchasing or holding interests in any product linked to the Index. Goldman Sachs does not have any obligation to take the needs of the holders of products linked to the Index into consideration in determining, composing or calculating the Goldman Sachs Bond Buyers Equity Basket™ Index. GOLDMAN SACHS DOES NOT GUARANTEE THE ACCURACY AND/OR COMPLETENESS OF GOLDMAN SACHS GOLD BUYERS EQUITY BASKETTM INDEX OR OF THE METHODOLOGY UNDERLYING THE INDEX, THE CALCULATION OF THE INDEX OR ANY DATA SUPPLIED BY IT FOR USE IN CONNECTION WITH ANY PRODUCT LINKED TO THE INDEX. GOLDMAN SACHS EXPRESSLY DISCLAIMS ALL LIABILITY FOR ANY SPECIAL, PUNITIVE, INDIRECT OR CONSEQUENTIAL DAMAGE EVEN IF NOTIFIED OF THE POSSIBILITY OF SUCH DAMAGES.

Publication of Changes to the Index and to the Methodology

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

Index Committee

An Index Committee is responsible for overseeing the Index and the Methodology, while the Calculation Agent is responsible for the day to day implementation of the Methodology, for the calculation of the Index, including responding to Market Disruption Events (as defined under "Market Disruption Events" below) and potential adjustment events, and for publication of the Index values and the Methodology.

The Index Committee is currently comprised of employees of Solactive or one or more of its affiliates. The Index Committee may exercise limited discretion with respect to the Index, as contemplated by the Methodology. Any such changes or actions (other than changes to the Methodology itself, which would be publicly announced at least 60 Index Business Days prior to their effectiveness, as described above) are publicly announced as promptly as is reasonably practicable and normally at least five Index Business Days prior to their effective date. The Calculation Agent may from time to time consult the Index Committee on matters of interpretation with respect to the Methodology.

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

This document is updated to reflect any changes approved by the Index Committee.

Historical Data

The "Launch Date" for the Index, which is the date the Calculation Agent began calculating the Index, is specified in the Annex. Therefore, historical information provided for the period from the Index Base Date until the Launch Date, is hypothetical and is provided as an illustration of how the Index would have performed during the period had the Calculation Agent begun calculating the Index on the Index Base Date using the Methodology. This data does not reflect actual performance, nor was a contemporaneous investment model run of the Index. Historical information for the period from and after the Launch Date is based on the actual performance of the Index. Data used to derive historical values prior to the Launch date indicative only, and are based on data currently available and exclude transaction costs, unless otherwise stated. Practical implementation of any trading strategy discussed herein may not be achievable and as a result, any projected results of any such trading strategy may not be replicable. Historical levels of the Index are calculated with reference to the Reference Level of each Underlying asset determined based on the latest available data.

Market Disruption Events

A **"Market Disruption Event"** will have occurred in any of the following situations: (i) The official closing price, level, rate or other measure of any Underlying Asset is unavailable on any relevant day on which such measure is scheduled to be published; (ii) a relevant Exchange is not open for trading during its regular trading session, or closes prior to its scheduled closing time, on any relevant day or there is a material Exchange Disruption (as determined by the Calculation Agent); (iii) upon the occurrence or existence of a Trading Disruption, for more than two hours of trading, or at any time during the one-hour period that ends at the scheduled closing time of the relevant Exchange; or (iv) upon the occurrence or existence of a Force Majeure Event.

A **"Force Majeure Event"** means the Calculation Agent determines that there has been the occurrence of a systems failure, natural or man-made disaster, act of God, armed conflict, act of terrorism, riot or labor disruption or any similar intervening circumstance that is beyond the reasonable control of the Index Sponsor, Calculation Agent or any of their respective affiliates that Calculation Agent determines is likely to have a material effect on an Underlying Asset, or on its ability to perform its role in respect of the Index.

On any Index Business Day on which a Market Disruption Event occurs or is continuing with respect to any non-zero weighted Underlying Assets included in the Index, the Calculation Agent shall postpone calculation of the Index Value to the next Index Business Day on which no Market Disruption Event occurs or is continuing with respect to any Underlying Assets, and an indicative level for the Index will be published. Such level will be identified as a "disrupted indicative level". The Calculation Agent shall resume calculating the Index Value on the first Index Business Day on which no Market Disruption Event is occurring or continuing with respect to any Underlying Asset by using (i) for the weight of each Underlying Asset that had not been affected by such Market Disruption Event, the weight that would have been used as if the Base Index Rebalancing Day (if applicable) and Total Return Index Rebalancing Day, respectively, occurred on the first Index Business Day on which such Market Disruption Event occurred and (ii) for the weight of each Underlying Asset that had been affected by such Market Disruption Event, the weight of the Index Business Day immediately preceding the first day of such Market Disruption Event.

On the sixth Index Business Day following the occurrence of a Market Disruption Event with respect to any Underlying Assets included in the Index, if such Market Disruption Event is continuing and such Underlying Assets have not been removed from the Index, the Index Committee may determine in its sole discretion to instruct the Calculation Agent to calculate the Index, using a price for such Underlying Assets as determined by the Index Committee in its sole discretion. In the event the Index Committee determines on such sixth Business Day, in its sole discretion, that no such instructions should be given to the Calculation Agent, the Index Committee may revisit such determination on any Index Business Day thereafter on which the Market Disruption Event is continuing.

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

Revision to Index Values in the Event of Data Error

If the Calculation Agent determines that the price made available for an Underlying common stock, option or index with a non-zero weighting in the Index reflects a manifest error, the calculation of the Index shall be delayed until such time as a corrected price or level is made available. In the event a corrected price or level is not made available on a timely basis, or in the event that the price made available for an Underlying stock, option or index is subsequently corrected and such correction is published, then the Calculation Agent may, if practicable and if the Calculation Agent determines acting in good faith that such error is material, adjust or correct the relevant calculation or determination, including the level of the underlying stock, option or index, as of any Index Business Day to take into account such correction.

Licensing Information

Goldman, Sachs & Co. is the sole licensing agent for the Index. Questions about licensing the Index can be directed to the individuals listed under "Contact Information" below.

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Calculation Agent Website

http://www.solactive.com/

Disclaimers

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Disclosures

This material is provided for informational purposes only. It is not an offer to buy or sell any securities.

Annex

Index Name	Goldman Sachs Bond Buyers Equity Basket™ Index
Total Return Index Base Date*	March 17, 2006
Launch Date	February 23, 2018
Index Ticker (Bloomberg)	BBEBX Index
Index Ticker (Reuters)	.BBEBX

Index Name	Goldman Sachs Bond Buyers Equity Basket™ Stock Only Index
Total Return Index Base Date*	March 17, 2006
Launch Date	February 23, 2018
Index Ticker (Bloomberg)	BBEBSOX Index
Index Ticker (Reuters)	.BBEBSOX

Index Name	Goldman Sachs Bond Buyers Equity Basket™ Put Write Index
Total Return Index Base Date*	March 17, 2006
Launch Date	February 23, 2018
Index Ticker (Bloomberg)	BBEBPWX Index
Index Ticker (Reuters)	.BBEBPWX

*The Index launched on the Launch Date. Performance indicated before the relevant launch date is hypothetical and has been calculated back to the relevant base date using the methodology and assumptions about certain of the components and decisions the Calculation Agent of the Index or the Underlying Indices may have made. Index values calculated for periods in which the Index or any Underlying Index did not yet exist may not reflect the actual Index Value or Underlying Index level that would have been calculated on that date if, in fact, such index had existed at that point in time.