

**S&P Global Bond Futures  
Index Series  
*Methodology***

November 2019

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# Introduction

## Index Objective and Highlights

The S&P Global Bond Futures Index Series measures the performance of the nearest maturing bond futures contract. The indices are denominated in the currency of the underlying futures contract.

## 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.

# Index Construction

## S&P Global Bond Futures Index Series

The S&P Global Bond Futures Indices are constructed from the front month futures contract traded on global futures exchanges. The table below lists the contracts, corresponding exchanges, index base dates and index first value dates.

Index	Underlying Futures Contract	Symbol	Exchange	Base Date	First Value Date
S&P U.S. Treasury Bond Futures	U.S. Treasury Bond Futures	US	CME	09/09/1997	01/07/1980
S&P 2-Year U.S. Treasury Note Futures	2-Year U.S. Treasury Note Futures	TU	CME	12/01/1999	12/01/1999
S&P 5-Year U.S. Treasury Note Futures	5-Year U.S. Treasury Note Futures	FV	CME	06/30/1988	06/30/1988
S&P 10-Year U.S. Treasury Note Futures	10-Year U.S. Treasury Note Futures	TY	CME	12/01/1999	06/02/1982
S&P Ultra 10-Year U.S. Treasury Note Futures	Ultra 10-Year U.S. Treasury Note Futures	TN	CME	01/08/2016	01/08/2016
S&P Ultra T-Bond Futures	Ultra T-Bond Futures	UL	CME	02/26/2010	02/26/2010
S&P Euro-Schatz Futures	Euro-Schatz Futures	FGBS	EUREX	12/01/1999	12/01/1999
S&P Euro-Bobl Futures	Euro-Bobl Futures	FGBM	EUREX	12/01/1999	12/01/1999
S&P Euro-Bund Futures	Euro-Bund Futures	FGBL	EUREX	12/01/1999	12/01/1999
S&P Euro-Buxl Futures	Euro-Buxl Futures	FGBX	EUREX	12/01/1999	12/01/1999
S&P Euro-OAT Futures	Euro-OAT Futures	FOAT	EUREX	04/30/2012	04/30/2012
S&P Euro-BTP Futures	Euro-BTP Futures	FBTP	EUREX	09/30/2009	09/30/2009
S&P Swiss-CONF Futures	Swiss-CONF Futures	CONF	EUREX	12/01/1999	12/01/1999
S&P Long Gilt Futures Index	Long Gilt Futures	FLG	ICE	12/01/1999	12/01/1999
S&P 10-Year Canada Government Bond Futures Index	10-Year CGB Futures	CGB	MX	12/01/1999	12/01/1999
S&P 10-Year JGB Futures	10-Year JGB Futures	JGB	JPX	12/30/1998	12/30/1998
S&P/ASX Australian 3-Year Treasury Bond Futures	3-Year Australian Treasury Bond Futures	YT	ASX	12/01/1999	12/01/1999
S&P/ASX Australian 10-Year Treasury Bond Futures	10-Year Australian Treasury Bond Futures	XT	ASX	12/01/1999	12/01/1999
S&P/ASX Australian 20-Year Treasury Bond Futures	20-Year Australian Treasury Bond Futures	XX	ASX	10/15/2015	10/15/2015
S&P/ASX Australian 3-Year Treasury Bond (Dollar Value) Futures	3-Year Australian Treasury Bond Futures	YT	ASX	12/01/1999	12/01/1999
S&P/ASX Australian 10-Year Treasury Bond (Dollar Value) Futures	10-Year Australian Treasury Bond Futures	XT	ASX	12/01/1999	12/01/1999
S&P/ASX Australian 20-Year Treasury Bond (Dollar Value) Futures	20-Year Australian Treasury Bond Futures	XX	ASX	10/15/2015	10/15/2015

## Futures Roll

Constructed from futures contracts, each index includes provisions for the replacement of the Index Futures Contracts as it approaches maturity (also referred to as “rolling”).

- (1) For all the U.S. Treasury Futures and Ultra T-Bond contracts, this replacement occurs over a one-day rolling period every quarter, starting one day prior to the First Position Date as published by the CME Group. For more information pertaining to the product calendar, please refer to the CME Group web site at [http://www.cmegroup.com/trading/interest-rates/us-treasury/30-year-us-treasury-bond\\_product\\_calendar\\_futures.html](http://www.cmegroup.com/trading/interest-rates/us-treasury/30-year-us-treasury-bond_product_calendar_futures.html).
- (2) For the Euro and Swiss Futures, the contract switch will occur over a one-day roll occurring three business days prior to the contract expiration. For more information pertaining to the product

calendar, please refer to the EUREX Web site at <http://www.eurexchange.com/exchange-en/trading/trading-calendar>.

- (3) For the Long Gilt Futures, the contract switch will occur over a one-day roll occurring three business days prior to the First Notice Day. For more information pertaining to the product calendar, please refer to the ICE web site at <https://www.theice.com/holiday-hours>.
- (4) For the 10-Year Canada Government Bond Futures, the contract switch will occur over a one-day roll occurring three business days prior to the First Notice Day. For more information pertaining to the product calendar, please refer to the Montreal Exchange web site at [https://www.m-x.ca/qui\\_jours\\_en.php](https://www.m-x.ca/qui_jours_en.php).
- (5) For the JGB Futures, the roll date is two business days prior to the last trading day of the futures contract. The last trading day for JGB futures is seven business days prior to the contract settlement day. Please refer to the JPX web site for their product calendar. <http://www.jpj.co.jp/english/derivatives/products/jgb/jgb-futures/index.html>.
- (6) For the Australian Bond Futures, the roll date is two business days prior to the last trading day of the futures contract. Please refer to the ASX web site for product and holiday calendar, <http://www.asx.com.au/products/asx-interest-rate-futures-and-options-trading-information.htm>.

For more information on the S&P Global Bond Futures Indices, please refer to our Web site at [www.spdji.com](http://www.spdji.com).

### Market Disruptions during the Roll Period

Market disruptions are situations where an exchange has failed to open so that no trading is possible due to unforeseen events, such as computer or electric power failures, weather conditions or other events. If any such event happens on the roll date, the roll will take place on the next Business Day on which no market disruptions exist.

### Excess Return Index Calculation

The excess return of each of the indices is calculated from the price change of the underlying future's contract. On any trading date,  $t$ , the level of each of the indices is calculated as follows:

$$\text{ExcessReturnIndex}_t = \text{ExcessReturnIndex}_{t-1} * (1 + \text{CDR}_t) \quad (1)$$

where:

$\text{ExcessReturnIndex}_{t-1}$  = The Excess Return Index level on the preceding business day.

### Calculation of the Contract Daily Return

On any 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:

$$\text{CDR}_t = \frac{\text{TDWO}_t}{\text{TDWI}_{t-1}} - 1$$

where:

$$\text{TDWO}_t = \text{CRW}_{1,t-1} * \text{DCRP}_{1,t} + \text{CRW}_{2,t-1} * \text{DCRP}_{2,t}$$

$$\text{TDWI}_{t-1} = \text{CRW}_{1,t-1} * \text{DCRP}_{1,t-1} + \text{CRW}_{2,t-1} * \text{DCRP}_{2,t-1}$$

$t$  = the 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.

For S&P/ASX Australian 3-Year, 10-Year and 20-Year Treasury Bond (Dollar Value) Futures Indices, the excess return is calculated using the dollar value change rather than the price change. The dollar value is calculated using the price of the underlying future's contract, following the local Australian market convention in which performance is measured using the dollar value including interest.

### Dollar Value Calculation

$$DV = FV \times \left[ \frac{c(1-v^n)}{i} + 100v^n \right] \quad (2)$$

where:

$DV$  = Dollar Value

$FV$  = Face Value = 1000 for both 3-Year and 10-Year Treasury bond futures, and 500 for 20-Year Treasury bond futures

$$i = \frac{100 - price}{200}$$

$Price$  = Price of the underlying future's contract

$$v = \frac{1}{1 + i}$$

$$c = \frac{coupon\ rate}{2}$$

$Coupon\ Rate$  = 6% for both 3-Year and 10-Year Treasury bond futures, and 4% for 20-Year Treasury bond futures

$n$  = Coupon frequency, or years  $\times$  2 for payments on a semi-annual basis. For example, for 3-Year bond futures,  $n = 3 \times 2 = 6$ .

$v$ ,  $v^n$  and  $\frac{c(1-v^n)}{i}$  are rounded to eight decimal places and the dollar value is rounded to two decimal places.

### 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:

$$IndexTotalReturn_t = (CDR_t + RiskFreeRate_t) * (1 + RiskFreeRate_t)^{Delta_t} \quad (3)$$

where:

$Delta_t$  = number of non-business days since the preceding business day

For the indices denominated in different currencies, a different risk-free rate is used for the total return calculation above.

- (i) If the index is denominated in US Dollars (US\$) the risk free rate in equation (3) above is the Treasury Bill Rate,

$$\text{Risk Free Rate}_t = TBR_t,$$

where  $TBR$  is the daily-compounding Treasury Bill rate, as determined by the following formula:

$$TBR_t = \left[ \frac{1}{1 - \frac{91}{360} * TBAR_{t-1}} \right]^{\frac{1}{91}} - 1 \quad (4)$$

where:

$TBAR_{t-1}$  = the most recent weekly high discount rate for 91-day US Treasury bills effective on the preceding business day. Generally the rates are announced by the US Treasury on each Monday. On Mondays that are bank holidays, Friday's rates will apply.

- (ii) If the index is denominated in Euros (€) the risk free rate in equation (3) above is the German Bubill rate.

$$\text{Risk Free Rate}_t = GBR_t,$$

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

$$GBR_t = \left[ \frac{1}{1 - \frac{91}{360} * SGBR_{t-1}} \right]^{\frac{1}{91}} - 1 \quad (5)$$

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.

- (iii) If the index is denominated in Swiss Franc (CHF) the risk free rate in equation (3) above is the Swiss 3 Month Benchmark rate.

$$\text{Risk Free Rate}_t = SBR_t,$$

where  $SBR$  is the daily-compounding Swiss 3 Month Benchmark rate, as determined by the following formula:

$$SBR_t = \left[ \frac{1}{1 - \frac{91}{360} * SSBR_{t-1}} \right]^{\frac{1}{91}} - 1 \quad (5)$$

where:

$SSBR_{t-1}$  = the simple discount rate for the generic Swiss 3 Month Benchmark rate effective on the preceding business day, with the day-count convention ACT/360.

- (iv) If the index is denominated in British Pound (GBP) the risk free rate in equation (3) above is the United Kingdom 3 Month Benchmark rate.

$$\text{Risk Free Rate}_t = PBR_t,$$

where  $PBR$  is the daily-compounding United Kingdom 3 Month Benchmark rate, as determined by the following formula:

$$PBR_t = \left[ \frac{1}{1 - \frac{91}{365} * SPBR_{t-1}} \right]^{\frac{1}{91}} - 1 \quad (5)$$

where:

$SPBR_{t-1}$  = the simple discount rate for the generic United Kingdom 3 Month Benchmark rate effective on the preceding business day, with the day-count convention ACT/360.

- (v) If the index is denominated in Canadian Dollar (CAD) the risk free rate in equation (3) above is the Canadian Dollar 3 Month Interest Rate Fixing.

$$\text{Risk Free Rate}_t = CBR_t,$$

where  $CBR$  is the daily-compounding Canadian Dollar 3 Month Interest Rate Fixing, as determined by the following formula:

$$CBR_t = \left[ \frac{1}{1 - \frac{91}{365} * SCBR_{t-1}} \right]^{\frac{1}{91}} - 1 \quad (5)$$

where:

$SCBR_{t-1}$  = the simple discount rate for the generic Canadian Dollar 3 Month Interest Rate Fixing effective on the preceding business day, with the day-count convention ACT/360.

- (vi) If the index is denominated in Japanese Yen (¥) the risk free rate in equation (3) above is the Japanese Government Discount Bill rate.

$$\text{Risk Free Rate}_t = JBR_t,$$

where  $JBR$  is the daily-compounding Japanese Government Bill rate, as determined by the following formula:

$$JBR_t = \left[ \frac{1}{1 - \frac{91}{365} * SJBR_{t-1}} \right]^{\frac{1}{91}} - 1 \quad (6)$$

where:

$SJBR_{t-1}$  = the simple discount rate for the generic 3-month Japanese Government Bill rate, effective on the preceding business day, with the day-count convention ACT/365.

- (vii) If the index is denominated in Australian Dollars, the risk free rate in equation (3) above is the Australian 3-month Bank Bill rate.

$$\text{Risk Free Rate}_t = ABBR_t,$$

where  $ABBR$  is the daily-compounding Australian Bank Bill rate, as determined by the following formula:

$$ABBR_t = \left[ \frac{1}{1 - \frac{91}{365} * SABBR_{t-1}} \right]^{\frac{1}{91}} - 1 \quad (7)$$

where:



$SABBR_{t-1}$  = the simple discount rate for the generic 3-month Australian Bank Bill rate, effective on the preceding business day, with the day-count convention ACT/365.

### Total Return Index Calculations

$$TotalReturnIndex_t = TotalReturnIndex_{t-1} * (1 + IndexTotalReturn_t) \quad (8)$$

where:

$TotalReturnIndex_{t-1}$  = The Total Return Index level on the preceding business day.

$IndexTotalReturn_t$  = The excess return from holding the underlying futures contract.

# Index Maintenance

## **Rebalancing**

Explicit in the calculation of futures based indices is the rolling of futures contract. Therefore, no separate announcements are made.

## **Currency of Calculation and Additional Index Return Series**

Additional currency and currency hedged versions of the indices, as well as maturity, sector, and rating-based sub-indices, may be available. For a list of available sub-indices and tickers, please refer to S&P Dow Jones Indices' Fixed Income Index Directory available at [www.spdji.com](http://www.spdji.com).

*For more information on currency and currency hedged indices, please refer to S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology.*

# Index Governance

## **Index Committee**

The Commodities Index Committee maintains the S&P Global Bond Futures Index Series. All members of the Committee are full-time professionals at S&P Dow Jones Indices. The Committee meets regularly. The Committee may revise index policy covering rules for including currencies, the timing of rebalancing 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. The Index Committee is separate from and independent of other analytical groups at S&P Global. In particular, the Index Committee has no access to or influence on decisions by S&P Global Ratings analysts.

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 and Internal Reviews of Methodology, please refer to S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology.*

# Index Policy

## **Announcements**

The indices are calculated daily when the relevant futures markets are open for official trading, excluding holidays and weekends.

## **Holiday Schedule**

The indices are calculated daily, throughout the calendar year. For indices based on futures contracts traded on the CME, they follow the CME holiday schedule. The S&P Euro & Swiss-denominated Futures Indices follow the EUREX Exchange holiday schedule and the S&P 10-year JGB Futures index follows the JPX holiday schedule. The S&P/ASX Australian Bond Futures follow the SFE (Sydney Futures Exchange) holiday schedule.

## **Rebalancing**

The Index Committee may change the date of a given rebalancing for reasons including market holidays occurring on or around the scheduled rebalancing date. Any such change will be announced with proper advance notice where possible.

## **Unexpected Exchange Closures**

For information on Unexpected Exchange Closures, please refer to S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology.

*For information on Calculations and Pricing Disruptions, Expert Judgment, Data Hierarchy and Error Corrections, please refer to S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology.*

## **Contact Information**

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

# 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 (see codes below), numerous investment-oriented Web sites, and various print and electronic media.

## Tickers

The table below lists headline indices covered by this document. All versions of the below indices that may exist are also covered by this document. Please refer to [S&P DJI's All Indices by Methodology Report](#) for a complete list of indices covered by this document.

Index	Index Code
S&P U.S. Treasury Bond Futures Excess Return Index	SPUSTBP
S&P U.S. Treasury Bond Futures Total Return Index	SPUSTBTR
S&P U.S. Treasury Bond Futures Inverse Index ER	SPUSTBIP
S&P U.S. Treasury Bond Futures 2X Leverage Index ER	SPUST2LP
S&P U.S. Treasury Bond Futures 2X Inverse Index ER	SPUST2IP
S&P 2-Year U.S. Treasury Note Futures Excess Return Index	SPUST2P
S&P 2-Year U.S. Treasury Note Futures Total Return Index	SPUST2TR
S&P 5-Year U.S. Treasury Note Futures Excess Return Index	SPUST5P
S&P 5-Year U.S. Treasury Note Futures Total Return Index	SPUST5TR
S&P 10-Year U.S. Treasury Note Futures Excess Return Index	SPUSTTP
S&P 10-Year U.S. Treasury Note Futures Total Return Index	SPUSTTTR
S&P Ultra 10-Year U.S. Treasury Note Futures Excess Return Index	SPUSTNP
S&P Ultra 10-Year U.S. Treasury Note Futures Total Return Index	SPUSTNTR
S&P Ultra T-Bond Futures Excess Return Index	SPUSTUP
S&P Ultra T-Bond Futures Total Return Index	SPUSTUTR
S&P Euro-Schatz Futures Excess Return Index	SPEUSCP
S&P Euro-Schatz Futures Total Return Index	SPEUSCTR
S&P Euro-Bobl Futures Excess Return Index	SPEUBLP
S&P Euro-Bobl Futures Total Return Index	SPEUBLTR
S&P Euro-Bund Futures Excess Return Index	SPEUBDP
S&P Euro-Bund Futures Total Return Index	SPEUBDTR
S&P Euro-Buxl Futures Excess Return Index	SPEUBXP
S&P Euro-Buxl Futures Total Return Index	SPEUBXTR
S&P Euro-OAT Futures Excess Return Index	SPEUOAP
S&P Euro-OAT Futures Total Return Index	SPEUOATR
S&P Euro-BTP Futures Excess Return Index	SPEUBPP
S&P Euro-BTP Futures Total Return Index	SPEUBPTR
S&P Swiss-CONF Futures Excess Return Index	SPCHCFP
S&P Swiss-CONF Futures Total Return Index	SPCHCFTR
S&P Long Gilt Futures Excess Return Index	SPUKGTTP
S&P Long Gilt Futures Total Return Index	SPUKGTTR
S&P 10-Year Canada Government Bond Futures Excess Return Index	SPCACGP
S&P 10-Year Canada Government Bond Futures Total Return Index	SPCACGTR
S&P 10-Year JGB Futures Excess Return Index	SPJGBER
S&P 10-Year JGB Futures Total Return Index	SPJGBTR

Index	Index Code
S&P/ASX Australian 3-Year Treasury Bond Futures Excess Return Index	SPAUD3P
S&P/ASX Australian 3-Year Treasury Bond Futures Total Return Index	SPAUD3TR
S&P/ASX Australian 10-Year Treasury Bond Futures Excess Return Index	SPAUD10P
S&P/ASX Australian 10-Year Treasury Bond Futures Total Return Index	SPAUD10T
S&P/ASX Australian 20-Year Treasury Bond Futures Excess Return Index	SPAUD20P
S&P/ASX Australian 20-Year Treasury Bond Futures Total Return Index	SPAUD20T
S&P/ASX Australian 3-Year Treasury Bond (Dollar Value) Futures Excess Return Index	SPAU3DP
S&P/ASX Australian 3-Year Treasury Bond (Dollar Value) Futures Total Return Index	SPAU3DT
S&P/ASX Australian 10-Year Treasury Bond (Dollar Value) Futures Excess Return Index	SPAU10DP
S&P/ASX Australian 10-Year Treasury Bond (Dollar Value) Futures Total Return Index	SPAU10DT
S&P/ASX Australian 20-Year Treasury Bond (Dollar Value) Futures Excess Return Index	SPAU20DP
S&P/ASX Australian 20-Year Treasury Bond (Dollar Value) Futures Total Return Index	SPAU20DT

### Index Data

Daily index level data is available via 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

## Methodology Changes

Change	Effective Date (After Close)	Previous	Methodology Updated
Roll Period for Euro and Swiss Futures	11/25/2019	One-day roll occurring on the third to last business day of the prior month before contract expiration.	One-day roll occurring three business days prior to the contract expiration.
Roll Period for Long Gilt and 10-Year Canada Government Bond Futures	11/25/2019	One-day roll occurring on the third to last business day of the prior month before contract expiration.	One-day roll occurring three business days prior to the First Notice Day.
Index Names	06/28/2018	The index names are: <ul style="list-style-type: none"> <li>• S&amp;P Canada-CGB Futures Index</li> <li>• S&amp;P Canada-CGB Futures Excess Return Index</li> <li>• S&amp;P Canada-CGB Futures Total Return Index</li> </ul>	The index names are: <ul style="list-style-type: none"> <li>• S&amp;P 10-Year Canada Government Bond Futures Index</li> <li>• S&amp;P 10-Year Canada Government Bond Futures Excess Return Index</li> <li>• S&amp;P 10-Year Canada Government Bond Futures Total Return Index</li> </ul>

# Disclaimer

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