

**S&P/BM&F Brazil Government
Bond Indices**
Methodology

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Table of Contents

Introduction	2
Index Objective, Highlights, and Index Family	2
Supporting Documents	2
Eligibility Criteria	3
Eligibility Factors	3
Index Construction	4
Index Calculations	4
Constituent Weightings	4
Index Maintenance	5
Rebalancing	5
Maintenance	5
Currency and Currency Hedged Indices	6
Base Dates and History Availability	6
Index Governance	7
Index Committee	7
Index Policy	8
Announcements	8
Holiday Schedule	8
Rebalancing	8
End-of-Day Calculation	8
Recalculation Policy	8
Contact Information	8
Index Dissemination	9
Tickers	9
FTP	9
Web site	9
Appendix	10
Methodology Changes	10
Disclaimer	11

Introduction

Index Objective, Highlights, and Index Family

The S&P/BM&F suite of indices tracks the performance of select local currency domestic government inflation-linked bonds.

S&P/BM&F Brazil Sovereign Inflation-Linked Bond Index. The index tracks the performance of inflation-linked series B and series C securities.¹

S&P/BM&F Brazil Sovereign Inflation-Linked Series B Bond Index. The index is a sub-index of the S&P/BM&F Brazil Sovereign Inflation-Linked Bond Index and contains only the Series B securities.

S&P/BM&F Inflation-Linked NTN-B Index.² The index is a sub-index of the S&P/BM&F Brazil Sovereign Inflation-Linked Series B Bond Index and contains only Series B securities that meet certain liquidity and trading volume criteria as detailed in Eligibility Criteria. Unlike the S&P/BM&F Brazil Sovereign Inflation-Linked Series B Bond Index, the weights of index constituents are determined by trading volume as well as market value.

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' Fixed Income Policies & Practices Methodology	Fixed Income Policies & Practices
S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology	Index Mathematics Methodology

This methodology was created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of the indices 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 indices continue to achieve their objective.

¹ Series B securities reference the variation of the IPCA (Extended National Consumer Price Index) since the reference date of the security. Series C securities reference the variation of the IGP-M (General Market Price Index) since the reference date of the security.

² NTN-B refers to the National Treasury Notes series B which are inflation-linked bonds that pay coupons semi-annually and are indexed to the IPCA price index.

Eligibility Criteria

Eligibility Factors

Country, Market and Currency. Securities must be issued by the Brazilian National Treasury in the domestic market and denominated in Brazilian reais.

Maturity. No bond matures in an index. At each rebalancing reference date, bonds must have a maturity date greater than the subsequent rebalancing reference date in order to qualify for index inclusion.

Coupon Type. Fixed, floating and zero coupon.

Size. A minimum par amount outstanding of BRL 1 billion as of the rebalancing reference date is required.

Optionality. Bullets, callable, puttable, and callable-perpetual (provided the first call date is beyond the subsequent rebalancing date) are included.

Settlement. Bonds that are issued but not settled prior to the rebalancing reference date are included in the indices.

Exclusions. STRIPS are specifically excluded from the indices.

S&P/BM&F Inflation-Linked NTN-B Index Additional Eligibility Factors. In addition to the factors detailed above, the index has additional criteria as follows:

- **Underlying Index.** A bond is eligible for index inclusion only if it is an existing constituent of the S&P/BM&F Brazil Sovereign Inflation-Linked Series B Bond Index.
- **Liquidity Ratio.** New index additions must have a liquidity ratio greater than 0.50%. Current index constituents must have a liquidity ratio greater than 0.35% to remain in the index. The liquidity ratio is determined, in part, based on a security's trading volume. Please refer to *Index Construction* for further details on the liquidity ratio.
- **Trading Volume Data.** A bond is eligible for index inclusion only if it has a trading volume history of at least three months. Trading volume data consists of group trades. Group trades are trades measured by the Brazilian Central Bank that occur between opposing counterparts and do not include internal crossing of trades or positions.

Data Sources. Bid price, terms and conditions must be available through Thomson Reuters. Trading volume data for the S&P/BM&F Inflation-Linked NTN-B Index must be available through Banco Central do Brasil (the Brazilian Central Bank).

Index Construction

Index Calculations

The total return is calculated by aggregating the interest return, reflecting the return due to paid and accrued interest, and price return, reflecting the gains or losses due to changes in the end-of-day price and principal repayments.

S&P/BM&F Inflation-Linked NTN-B Index Liquidity Ratio. The daily liquidity ratio is calculated for each of the prior 126 business days for current index constituents (60 business days for new additions to the index) by taking the trading volume on each day divided by the par amount. Total liquidity ratio for inclusion is the average of the daily liquidity ratios.

$$l_i = \frac{\sum_{t=1}^d \frac{q_{i_t}}{PAR_{i_t}}}{d}$$

where:

- l_i = Liquidity ratio of the security i .
- q_{i_t} = Trading volume of security i on day t .
- PAR_{i_t} = Par amount of the security i on day t .
- d = Number of days (126 business days for current index constituents; 60 business days for new additions to the index).

For further details regarding index calculations please refer to S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology.

Constituent Weightings

With the exception of S&P/BM&F Inflation-Linked NTN-B Index, the indices are market value-weighted.

S&P/BM&F Inflation-Linked NTN-B Index. The index employs a liquidity driven weighting scheme using a combination of market value and absolute trading volume.

The relative weight of a bond i is defined as two-thirds the market value of that bond, expressed as a percentage of the aggregate market value of all bonds in the index; and one-third of the trading volume of that bond, expressed as percentage of the aggregate market trading volume of all bonds in the index.

Modifications are made to account for the following constraints:

1. Maintain a minimum duration of 2.3 years. In cases where the index duration falls below this threshold, the lowest duration bond weights are added to the highest duration bond weights.
2. Ensure that individual security weights do not exceed 20% of the aggregate index weight. Any excess weight is redistributed proportionally to all other index constituents.
3. Maintain a minimum of six constituents in the index regardless of liquidity score.

Index Maintenance

Rebalancing

With the exception of the S&P/BM&F Inflation-Linked NTN-B Index, the indices are rebalanced monthly, effective after the close of the last business day of each month. The rebalancing reference date is four business days prior to the rebalancing effective date. The rebalancing announcement date is after the close of business, three days prior to the rebalancing effective date.

S&P/BM&F Inflation-Linked NTN-B Index. The index is rebalanced quarterly, effective after the close of business on the 15th of February, May, August and November.³ The rebalancing reference date is seven business days prior to the rebalancing effective date. The rebalancing announcement date is after the close of business, no earlier than seven business days prior to the rebalancing effective date.

The Index Committee, nevertheless, reserves the right to make adjustments to an index at any time that it believes appropriate.

Publicly available information, up to and including the close on the rebalancing reference date is considered in the rebalancing.

Additions, deletions and other changes to an index arising from the rebalancing are published on a best efforts basis, after the close of business, on the announcement date. Any market events after this date that affect the constituent membership are made on the next rebalancing date.

- Any index bond failing to meet any one of the eligibility factors detailed in Eligibility Criteria is removed from the index on the next rebalancing date.
- Par amounts of index bonds are adjusted on the rebalancing date to reflect any changes that have occurred since the previous rebalancing date due to issuance, partial calls, tenders, prepayments, etc.
- Ratings changes are reflected in the index at the next rebalancing date.

Changes to the indices that are published in the announcement are not normally subject to revision and are effective after the close on the rebalancing effective date.

Maintenance

- When an index bond is in default or misses an interest payment, the price reported by the pricing source is used. However, the Index Committee may determine that the bond be removed from the index at a different price and may specify a price of 0.00. The decision of the Index Committee is final.
- If an index bond is no longer priced by the pricing source, the last available price is used. However, the Index Committee may determine that a different price be used. The decision of the Index Committee is final. For clarity, index bonds that are no longer priced by the pricing source fail to meet the pricing eligibility factors and are removed at the next rebalancing date. If the bond is not priced five business days before the rebalancing reference date, then the bond is removed from the index at the next rebalancing date.

³ If the 15th of the rebalancing month is not a business day, the rebalancing effective date is the following business day.

Currency and Currency Hedged Indices

The indices are calculated in Brazilian Reals.

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.

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

Base Dates and History Availability

Index history availability, base date and base value are shown in the table below.

Index	Launch Date	First Value Date	Base Date	Base Value
S&P/BM&F Brazil Sovereign Inflation-Linked Bond Index	03/18/2015	11/30/2005	11/30/2005	100
S&P/BM&F Brazil Sovereign Inflation-Linked Series B Bond Index	09/17/2015	03/31/2006	03/31/2006	100
S&P/BM&F Inflation-Linked NTN-B Index	01/29/2016	08/15/2007	08/15/2007	100

Index Governance

Index Committee

The S&P/BM&F Index Committee maintains the indices. All members of the Committee are full-time professionals at S&P Dow Jones Indices and the BM&F. Meetings are held whenever deemed appropriate.

The Index Committee oversees the management of the indices, including determinations of intra-rebalancing changes, maintenance and inclusion policies, and other matters affecting the maintenance and calculation of the indices.

In fulfilling its responsibilities, the Index Committee has full and complete discretion to (i) amend, apply, or exempt the application of index rules and policies as circumstances may require and (ii) add, remove, or by-pass any bond in determining the composition of an index.

The Index Committee may rely on any information or documentation submitted to it or gathered by it that the Index Committee believes to be accurate. The Index Committee reserves the right to reinterpret publicly available information and to make changes to the indices based on a new interpretation of that information at its sole discretion. All Index Committee discussions are confidential.

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' Fixed Income Policies & Practices document.

Index Policy

Announcements

Announcements of any relevant information pertaining to the indices are made after market close. Press releases are posted on the S&P Dow Jones Indices Web site at www.spdji.com.

Holiday Schedule

The indices follow the BM&F Bovespa holiday schedule.

A complete holiday schedule for the year is available on S&P Dow Jones Indices' Web site at www.spdji.com.

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.

End-of-Day Calculation

Index levels are calculated and made available at the end of each business day.

Recalculation Policy

For information on the recalculation policy please refer to S&P Dow Jones Indices' Fixed Income Policies & Practices document.

For information on Calculations and Pricing Disruptions, Expert Judgment and Data Hierarchy, please refer to S&P Dow Jones Indices' Fixed Income Indices Policies & Practices document.

Contact Information

For any questions regarding an index, please contact: index_services@spglobal.com.

Index Dissemination

Index levels are available through S&P Dow Jones Indices' website at www.spdji.com, major quote vendors (see codes below), numerous investment-oriented websites, and various print and electronic media.

Tickers

The table below lists headline indices covered by this document. All currency, currency hedged, maturity, sector and rating-based sub-indices as well as return type versions of the below indices that may exist are also covered by this document. Please contact index_services@spglobal.com for a complete list of indices covered by this document.

Total Return Index	Ticker
S&P/BM&F Brazil Sovereign Inflation-Linked Bond Index	SPFIBRI
S&P/BM&F Brazil Sovereign Inflation-Linked Series B Bond Index	SPBMBRI
S&P/BM&F Inflation-Linked NTN-B Index	SPBMFBRT

FTP

Daily index level data is available via FTP subscription.

For product information, please contact S&P Dow Jones Indices, www.spdji.com/contact-us.

Web site

For further information, please refer to S&P Dow Jones Indices' Web site at www.spdji.com.

Appendix

Methodology Changes

Methodology changes since January 1, 2015 are as follows:

Change	Effective Date (After Close)	Previous	Methodology Updated
Constituent Weightings: S&P/BM&F Inflation-Linked NTN-B Index	09/30/2016	<p>The index employs a liquidity driven weighting scheme using a combination of market value and absolute trading volume.</p> <p>The relative weight of a bond <i>i</i> is defined as two-thirds the market value of that bond, expressed as a percentage of the aggregate market value of all bonds in the index; and one-third of the trading volume of that bond, expressed as percentage of the aggregate market trading volume of all bonds in the index.</p>	<p>The index employs a liquidity driven weighting scheme using a combination of market value and absolute trading volume.</p> <p>The relative weight of a bond <i>i</i> is defined as two-thirds the market value of that bond, expressed as a percentage of the aggregate market value of all bonds in the index; and one-third of the trading volume of that bond, expressed as percentage of the aggregate market trading volume of all bonds in the index.</p> <p>Modifications are made to account for the following constraints:</p> <ol style="list-style-type: none"> 1. Maintain a minimum duration of 2.3 years. In cases where the index duration falls below this threshold, the lowest duration bond weights are added to the highest duration bond weights. 2. Ensure that individual security weights do not exceed 20% of the aggregate index weight. 3. Maintain a minimum of six constituents in the index regardless of liquidity score.

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