

# **S&P/B3 Futures Indices** *Methodology*

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# Introduction

## Index Objective, Highlights, and Index Family

The S&P/B3 Futures Indices consist of a fixed income futures index, a currency futures index, and related sub-indices.

One-Day Interbank Deposit Futures contracts (symbol DI1) are contracts in which the underlying is the effective interest rate, defined as the capitalized daily Interbank Deposit (DI) rates verified on the period between the trading day and the last trading day. The expiration dates of the DI1 futures contracts are matched with the maturities of LTN Bonds (quarterly on January Cycles) and NTN-F Bonds (annually in January).<sup>1</sup>

**S&P/B3 One-Day Interbank Deposit 3Y Futures Index.** The index measures the performance of one fixed income futures contract that rolls semi-annually.

- **S&P/B3 One-Day Interbank Deposit 3Y Futures Index USD ER.** The index is a USD currency version of the S&P/B3 One-Day Interbank Deposit 3Y Futures Index.
- **S&P/B3 One-Day Interbank Deposit 3Y Futures Index USD ER Hedged.** The index is a hedged version of the S&P/B3 One-Day Interbank Deposit 3Y Futures Index expressed in USD.

**S&P/B3 BRL-USD Futures Index.** The index measures the performance of currency futures contracts that roll monthly. For this index, both excess return (ER) and total return (TR) versions are calculated.

**S&P/B3 BRL-USD Mini Futures Index.** The index measures the performance of currency mini futures contracts that roll monthly. For this index, both excess return (ER) and total return (TR) versions are calculated.

**S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.** The index measures the performance of a basket of Brazilian One-Day Interbank Deposit Futures contracts selected and weighted to match the NTN-F Bond reference Index as described in *Index Construction*.

*Please refer to Appendix II for examples of the rebalancing process and roll procedures.*

The indices are calculated on a daily (End-of-Day) basis.

## 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>

<sup>1</sup> Brazilian government Fixed-rate bonds are identified as LTN, with an issue term of up to four years, and NTN-F bonds, with an issue term of up to 10 years.

S&P Dow Jones Indices' Index Mathematics Methodology	<a href="#">Index Mathematics Methodology</a>
S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology	<a href="#">Fixed Income 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.

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# Index Construction

## Index Eligibility

**S&P/B3 One-Day Interbank Deposit 3Y Futures Index, S&P/B3 BRL-USD Futures Index, and S&P/B3 BRL-USD Mini Futures Index.** The indices are constructed from the front month futures contract traded on the B3 exchange.

Index	Underlying Futures Contract	Symbol
S&P/B3 One-Day Interbank Deposit 3Y Futures Index	One-Day Interbank Deposit 3-Year Future	DI1
S&P/B3 BRL-USD Futures Index	Exchange Rate of Brazilian real per U.S. dollar (BRL-USD)	DOL
S&P/B3 BRL-USD Mini Futures Index	Exchange Rate of Brazilian real per U.S. dollar (BRL-USD)	WDO

**S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.** The index includes One-Day Interbank Deposit Futures contracts (symbol DI1) traded on the B3 exchange. As of the reference date, the DI1 Futures contract whose expiration matches the January maturity of the NTN-F bond is eligible for index inclusion provided that the expiration of the futures contract is between five and 10 years. Eligible futures are determined on a semi-annual basis as part of the index's semi-annual reconstitution.

## Constituent Weighting

**S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.** At each rebalancing, constituents are weighted based on their relative NTN-F bond market value weight in the NTN-F bond reference index.

The NTN-F bond reference index includes NTN-F bonds held in the market with maturities greater than five years and less than 10 years; constituent bonds must have a minimum par amount outstanding of 1 billion BRL. This reference index is market value weighted.

*For more information on index calculation, please refer to S&P Dow Jones Indices' Index Mathematics Methodology, and the Market Value and Weight sections in S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology.*

## Contract Rolls and Market Disruption Events

Each index is constructed from futures contracts and includes a provision for the replacement of the index futures contract (also referred to as "rolling").

- **S&P/B3 One-Day Interbank Deposit 3Y Futures Index.** This replacement occurs over a one-day rolling period every six months, which is on the second to last business day of the month in December and June, also known as the rolling date.
- **S&P/B3 BRL-USD Futures Index.** This replacement occurs over a one-day rolling period every month, which is two trading days prior to the last trade day of the futures contract.
- **S&P/B3 BRL-USD Mini Futures Index.** This replacement occurs over a one-day rolling period every month, which is two trading days prior to the last trade day of the mini futures contract.
- **S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.** The index rebalances on a semi-annual basis at the Rebalancing Date. No futures contract expires in the index.

**Designated Contract Expirations at Month Begin:**

Contract Symbol	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DI1	F+3	F+3	F+3	F+3	F+3	F+3	N+3	N+3	N+3	N+3	N+3	N+3
DOL	G	H	J	K	M	N	Q	U	V	X	Z	F
WDO	G	H	J	K	M	N	Q	U	V	X	Z	F

**Month Letter Codes:**

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

**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.

*For more details on Market Disruption Events, please refer to S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology.*

**Calculation of Excess Return Indices**

Except for the S&P/B3 One-Day Interbank Deposit 3Y Futures Index and S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index, on any trading date,  $t$ , each excess return (ER) index calculates as follows:

$$ExcessReturnIndex_t = ExcessReturnIndex_{t-1} * (1 + IndexExcessReturn_{t,t-1}) \quad (1)$$

where:

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

$IndexExcessReturn_{t,t-1}$  = The excess return from holding the underlying futures contract calculated as follows:

$$IndexExcessReturn_{t,t-1} = \frac{DCRP_t}{DCRP_{t-1}} - 1 \quad (2)$$

where:

$DCRP$  = The Daily Contract Reference Price of the futures contract.<sup>2</sup>

**S&P/B3 One-Day Interbank Deposit 3Y Futures Index.** The index does not correct the settlement price of the previous day as the index implicitly reinvests the initial cash in the Selic over rate or DI over.

**S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.** On any trading date,  $t$ , the index level calculates as follows:

$$ExcessReturnIndex_t = ExcessReturnIndex_{t-1} * \left( 1 + \sum \left( CW_t^c * \left( \frac{DCRP_t^c}{DCRP_{t-1}^c} - 1 \right) \right) \right)$$

where:

<sup>2</sup> The official close, as designated by the relevant exchange, is used.

- $c$  = The Designated contract
- $t$  = The business day on which the index is calculated
- $CW$  = The Contract Weight
- $DCRP$  = The Daily Contract Reference Price of the futures contract

The index does not correct the settlement price of the previous day as the index implicitly reinvests initial cash in the Selic over rate or DI over.

### Calculation of Total Return Indices

On any trading day  $t$ , each total return (TR) index includes the reinvestment rate for the initial cash outlay between dates  $t-1$  and  $t$  and calculates as follows:

$$IndexTotalReturn_t = IndexExcessReturn_{t-1} + DIAR_{t-1}^{(1/252)} \quad (3)$$

where:

$Delta_t$  = The number of business days between the current and previous business days.

$DIAR_{t-1}$  = The daily CETIP interbank overnight rate, effective on the preceding business day.<sup>3</sup>

### Total Return Index Calculations

On any trading date,  $t$ , each TR index calculates as follows:

$$TotalReturnIndex_t = TotalReturnIndex_{t-1} * (1 + IndexTotalReturn_t) \quad (4)$$

where:

$TotalReturnIndex_{t-1}$  = The TR index level on the preceding business day.

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<sup>3</sup> The daily CETIP interbank overnight rate is an annual rate calculated daily by the Center for Custody and Financial Settlement of Securities ("CETIP") and represents the average rate of all inter-bank overnight transactions in Brazil. The day count convention used is ACTBD/252. For more information, please refer to [www.cetip.com.br](http://www.cetip.com.br).



# Index Maintenance

## Rebalancing

**S&P/B3 One-Day Interbank Deposit 3Y Futures Index, S&P/B3 BRL-USD Futures Index, and S&P/B3 BRL-USD Mini Futures Index.** Explicit in the calculation of futures-based indices is the rolling of futures contracts. Therefore, no separate announcements are made.

**S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.** The index rebalances semi-annually, effective after the close of the last business day of June and December, as defined in the table below:

Rebalancing Schedule	
Rebalancing Frequency	Semiannual
Rebalancing Date	Last business day of June and December (T)
Announcement Date	T minus 3
Reference Date	T minus 4

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

## Currency of Calculation and Additional Index Return Series

In addition to the indices detailed in this methodology, additional return series versions of the indices may be available, including, but not limited to: currency, currency hedged, decrement, fair value, inverse, leveraged, and risk control versions. For a list of available indices, please refer to the [S&P DJI Methodology & Regulatory Status Database](#).

*For information on various index calculations, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.*

*For the inputs necessary to calculate certain types of indices, including decrement, dynamic hedged, fair value, and risk control indices, please refer to the Parameters documents available at [www.spglobal.com/spdji/](http://www.spglobal.com/spdji/).*

## Base Dates and History Availability

Index history availability, base dates, and base values are shown in the table below.

Index	Launch Date	First Value Date	Base Date	Base Value
S&P/B3 One-Day Interbank Deposit 3Y Futures Index	04/18/2017	01/02/2007	01/02/2007	100
S&P/B3 BRL-USD Futures Index	02/13/2017	01/02/1998	01/02/1998	100
S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index	12/30/2019	12/30/2013	12/30/2013	100
S&P/B3 BRL-USD Mini Futures Index (BRL)	06/16/2023	10/03/2011	10/03/2011	100

# Index Governance

## Index Committee

The S&P/B3 FIC Index Committee maintains the indices. All members of the Committee are full-time professionals at S&P Dow Jones Indices and B3. Meetings are held whenever deemed appropriate. 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 calculate daily when the relevant futures markets are open for official trading, excluding holidays and weekends.

*For more information, please refer to the Announcements section of S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology.*

## **Holiday Schedule**

The indices calculate daily based on the B3 exchange trading calendar.

*A complete holiday schedule for the year is available at [www.spglobal.com/spdji/](http://www.spglobal.com/spdji/).*

*For information on Calculations and Pricing Disruptions, Market Disruption Events and Holidays During Roll Period, Expert Judgment, Data Hierarchy, Unexpected Exchange Closures and Error Corrections, please refer to S&P Dow Jones Indices' Commodities Indices Policies & Practices Methodology.*

## **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.

## **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.spglobal.com/spdji/](http://www.spglobal.com/spdji/), 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 the [S&P DJI Methodology & Regulatory Status Database](#) for a complete list of indices covered by this document.

Index	Return Type	Ticker
S&P/B3 One-Day Interbank Deposit 3Y Futures Index	Excess Return	SPBD11F
S&P/B3 BRL-USD Futures Index	Excess Return Total Return	SPBBUFP SPBBUFT
S&P/B3 One-Day Interbank Deposit 3Y Futures Index USD ER	Excess Return	SPBD11FPU
S&P/B3 One-Day Interbank Deposit 3Y Futures Index USD ER Hedged	Excess Return	SPBD11FPUH
S&P/B3 One-Day Interbank Deposit 5Y- 10Y Futures Index.	Excess Return	SPBD5TFP
S&P/B3 BRL-USD Mini Futures Index (BRL)	Excess Return Total Return	SPBBUMFP SPBBUMFT

## Index Data

Index level data is available via subscription.

For product information, please contact S&P Dow Jones Indices, [www.spglobal.com/spdji/](http://www.spglobal.com/spdji/).

## Web site

For further information, please refer to S&P Dow Jones Indices' Web site at [www.spglobal.com/spdji/](http://www.spglobal.com/spdji/).

# Appendix I – Methodology Changes

## Methodology Changes

Methodology changes since February 13, 2017 are as follows:

<b>Change</b>	<b>Effective Date (After Close)</b>	<b>Previous</b>	<b>Methodology Updated</b>
Index Names	03/29/2019	The index names followed the BM&F naming convention (e.g., S&P/BM&F BRL-USD Futures Index)	The index names follow the B3 naming convention (e.g., S&P/B3 BRL-USD Futures Index)

# Appendix II – Rebalancing Process

## S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index Rebalancing

To better understand the index rebalancing process, please refer to the three hypothetical rebalancing examples outlined below.

For both the NTN-F bond reference index and the S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index, the Rebalance Date is the last business day of June and December. Both indices share *T minus 4* as a Reference Date.

### Example 1.

Rebalancing Date: Last business day of December YYYY

T minus 4 (From December YYYY rebalancing): Reference Date 25/12/YYYY

#### NTN-F Bonds with Maturity Greater Than Five Years and Less Than 10 years

Reference Date	Bond Identifier	Bond Maturity Date	Years To Maturity	Bond Market Value (MM)	Bond Weight
12/25/YYYY	NTN Bond A	01/01/2019	5	10,000	11.8%
12/25/YYYY	NTN Bond B	01/01/2021	7	30,000	35.3%
12/25/YYYY	NTN Bond C	01/01/2023	9	45,000	52.9%

#### S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.

Reference Date	D1 Future Identifier	Future Expiration Date*	Years To Maturity	D1 Futures weight
12/25/YYYY	DI1F19	01/01/2019	5	11.8%
12/25/YYYY	DI1F21	01/01/2021	7	35.3%
12/25/YYYY	DI1F23	01/01/2023	9	52.9%



**Example 2.**

Rebalance Date is the last business day of June YYYY+1

T minus 4 (From June YYYY+1 rebalance): Reference Date 24/06/YYYY

**NTN-F Bonds with Maturity Greater Than Five Years and Less Than 10 years**

Reference Date	Bond Identifier	Bond Maturity Date	Years To Maturity	Bond Market Value (MM)	Bond Weight
06/24/YYYY+1	NTN Bond A	01/01/2019	<5		
06/24/YYYY+1	NTN Bond B	01/01/2021	6.5	48,000	49.5%
06/24/YYYY+1	NTN Bond C	01/01/2023	8.5	49,000	50.5%

<- drop

**S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.**

Reference Date	DI1 Future Identifier	Future Expiration Date*	Years To Maturity	DI1 Futures Weight
06/24/YYYY+1	DI1F19	01/01/2019	<5	
06/24/YYYY+1	DI1F21	01/01/2021	7	49.5%
06/24/YYYY+1	DI1F23	01/01/2023	9	50.5%

<- drop

**Example 3.**

Rebalance Date is the last business day of December YYYY+1

T minus 4 (From June YYYY+1 rebalance): Reference Date 25/12/YYYY+1

**NTN-F Bonds with Maturity Greater Than Five Years and Less Than 10 years**

Reference Date	Bond Identifier	Bond Maturity Date	Years To Maturity	Bond Market Value (MM)	Bond Weight
25/12/YYYY+1	NTN Bond B	01/01/2021	6.0	55,000	42.3%
12/25/YYYY+1	NTN Bond C	01/01/2023	8.0	50,000	38.5%
12/25/YYYY+1	NTN Bond D	01/01/2025	10.0	25,000	19.2%

<-add

**S&P/B3 One-Day Interbank Deposit 5Y – 10Y Futures Index.**

Reference Date	DI1 Future Identifier	Future Expiration Date*	Years To Maturity	DI1 Futures Weight
12/25/YYYY+1	DI1F21	01/01/2021	6.0	42.3%
12/25/YYYY+1	DI1F23	01/01/2023	8.0	38.5%
12/25/YYYY+1	DI1F25	01/01/2025	10.0	19.2%

<- add

\* Note that expiration date is the first business day of the contract month.

# Disclaimer

## Performance Disclosure/Back-Tested Data

Where applicable, S&P Dow Jones Indices and its index-related affiliates (“S&P DJI”) defines various dates to assist our clients by providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the index is set to a fixed value for calculation purposes. The Launch Date designates the date when the values of an index are first considered live: index values provided for any date or time period prior to the index’s Launch Date are considered back-tested. S&P DJI defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company’s public website or its data feed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed “Date of introduction”) is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index’s public release date.

Please refer to the methodology for the Index for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Information presented prior to an index’s launch date is hypothetical back-tested performance, not actual performance, and is based on the index methodology in effect on the launch date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. In addition, forks have not been factored into the back-test data with respect to the S&P Cryptocurrency Indices. For the S&P Cryptocurrency Top 5 & 10 Equal Weight Indices, the custody element of the methodology was not considered; the back-test history is based on the index constituents that meet the custody element as of the Launch Date. Also, the treatment of corporate actions in back-tested performance may differ from treatment for live indices due to limitations in replicating index management decisions. Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered to reflect survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results.

Typically, when S&P DJI creates back-tested index data, S&P DJI uses actual historical constituent-level data (e.g., historical price, market capitalization, and corporate action data) in its calculations. As ESG investing is still in early stages of development, certain datapoints used to calculate certain ESG indices may not be available for the entire desired period of back-tested history. The same data availability issue could be true for other indices as well. In cases when actual data is not available for all relevant historical periods, S&P DJI may employ a process of using “Backward Data Assumption” (or pulling back) of ESG data for the calculation of back-tested historical performance. “Backward Data Assumption” is a process that applies the earliest actual live data point available for an index constituent company to all prior historical instances in the index performance. For example, Backward Data Assumption inherently assumes that companies currently not involved in a specific business activity (also known as “product involvement”) were never involved historically and similarly also assumes that companies currently involved in a specific business activity were involved historically too. The Backward Data Assumption allows the hypothetical back-test to be extended over more historical years than would be feasible using only actual data. For more information on “Backward Data Assumption” please refer to the FAQ. The methodology and factsheets of any index that employs backward assumption in the back-tested history



will explicitly state so. The methodology will include an Appendix with a table setting forth the specific data points and relevant time period for which backward projected data was used. Index returns shown do not represent the results of actual trading of investable assets/securities. S&P DJI maintains the index and calculates the index levels and performance shown or discussed but does not manage any assets.

Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US \$100,000 investment for a 12-month period (or US \$10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US \$1,650), the net return would be 8.35% (or US \$8,350) for the year. Over a three-year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US \$5,375, and a cumulative net return of 27.2% (or US \$27,200).

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