

# S&P Dow Jones Indices

A Division of **S&P Global**

# Dow Jones/BM&F Commodity Index *Methodology*

June 2018

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# Introduction

## Index Objective

The Dow Jones/BM&F Commodity Index is designed to be a broad measure of the Brazilian commodity futures market. The index emphasizes diversification and liquidity through a simple, straightforward, equal-weighted approach.

## 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' GSCI Reference Guide	<a href="#">GSCI Reference Guide</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 Constituents and Weightings

## Index Eligibility

The Dow Jones/BM&F Commodity Index includes only commodities that are tied to actual physical commodity futures listed on the BM&F Exchange. Eligible commodities are determined on an annual basis as part of the index's annual reconstitution described in *Index Construction and Maintenance*. The following table details the eligible commodities, eligible commodity contracts and their respective designated roll schedule, for the year 2017. Note that not all eligible commodities are included in the index at a given time. Please refer to *Index Construction and Maintenance* for details on the selection of index constituents.

## Eligible Commodities and Contracts

Commodity Group	Commodity	% Weight within Group	Ticker	Designated Contract Expirations at Month Begin											
				1	2	3	4	5	6	7	8	9	10	11	12
Sugar	Cash Settled Crystal Sugar	100%	ACF	G	J	J	M	M	U	U	U	Z	Z	Z	G
Cattle	Cash Settled Live Cattle	100%	BGI	G	H	J	K	M	N	Q	U	V	X	Z	F
Corn	Cash Settled Corn	100%	CCM	H	H	K	K	N	N	U	U	X	X	F	F
Ethanol	Cash Settled Hydrous Ethanol	100%	ETH	G	H	J	K	M	N	Q	U	V	X	Z	F
Coffee	Arabica Coffee 4/5	80%	ICF	H	H	K	K	N	N	U	U	Z	Z	Z	H
Coffee	Arabica Coffee 6/7	20%	KFE	H	H	K	K	N	N	U	U	Z	Z	Z	H
Soybeans	Cash Settled Soybean	10%	SFI	H	H	K	K	N	N	X	X	X	X	H	H
Soybeans	CME Group Mini-Sized Soybean	90%	SJC	H	H	K	K	N	N	Q	U	X	X	H	H
Petroleum	Cash-Settled Mini Crude Oil Futures Contract	100%	WTI	G	H	J	K	M	N	Q	U	V	X	Z	F
Gold	Gold Futures (250g)	100%	OZ1	G	H	J	K	M	N	Q	U	V	X	Z	F

## Month Letter Codes

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

## Index Construction and Maintenance

**Annual Reconstitution.** Prior to the January roll period, all physical commodities listed on the BM&F Exchange that have traded become eligible for the index and are included in the *Eligible Commodities and Contracts* table above. A contract is deemed ineligible if, at any time during the last year, the contract did not trade for five consecutive trading days. The contract eligibility data period is from the first business day<sup>1</sup> in January through the last business day in December with implementation during the designated roll period in January. The index is reconstituted and rebalanced over a five-day period from the fifth (5<sup>th</sup>) through the ninth (9<sup>th</sup>) business day of the month.

**Quarterly Rebalancing.** Once the eligible contracts are defined, the eligible commodity contracts that are not current index constituents are reviewed for index inclusion during the January, April, July and October roll periods. A contract is excluded from index inclusion if, at any time during the last 60 trading days prior to the rebalancing reference date, the contract did not trade for five consecutive trading days. Otherwise, the contract is added to the index. The rebalancing reference date is the fourth (4<sup>th</sup>) trading day of the rebalancing month.

<sup>1</sup> For purposes of this methodology document, business day is defined as a day on which the BM&F Exchange in Sao Paulo, Brazil is open for business.

**Monthly Deletions.** For any given constituent contract, if pricing is not available for five consecutive business days during the period between the prior month's reference date and the current month's reference date, that contract is dropped at the upcoming roll. The reference date for monthly deletions is the fourth (4<sup>th</sup>) trading day of each month. In the event a commodity contract is removed outside of the quarterly rebalancing, its weight is redistributed proportionally to all remaining constituent contracts in the index.

## Weighting Scheme

Each quarter, individual group commodities in the index are equally weighted based on the total number of commodity groups included in the index. In the event a commodity group is represented by multiple commodity contracts, the weight of the commodity group is split across the contracts based on the percentages defined in the *Eligible Commodities and Contacts* table on the prior page. These weights are determined based on the historic liquidity of each underlying commodity contract.

During the roll period, the commodity groups represented in the index are set to equal weight in accordance with the following formula:

$$W_g = 1 / N_t$$

where:

$W_g$  = The individual commodity group weight.

$N_t$  = The total number of commodity groups represented in the index as of the rebalancing date ( $t$ ).

Individual commodity weights within a represented commodity group are calculated in accordance with the following formula:

$$CW_c = W_g * LP_c$$

where:

$CW_c$  = The individual commodity weight within a represented commodity group.

$LP_c$  = The percentage weight of contract ( $c$ ) within its group (see *Eligible Commodities and Contacts* table on the prior page).

## Contract Rolls and Market Disruption Events

The index is designed to track the performance of a rolling basket of front-month Brazilian commodity futures, since futures contracts expire, the contracts must roll into the next front month contract to maintain continuity in the calculation of the index. Please refer to the *Eligible Commodities and Contacts* table on the prior page for the contract roll schedule.

The commodities included in the index are represented by futures with different maturities. Hence, the "front month contract" is the contract with an expiration date closest to the current date.

The index rolls on a monthly basis, into the next front month contract, rolling 20% per day over the fifth (5<sup>th</sup>) to ninth (9<sup>th</sup>) business day of every month.

In the event that a commodity does not receive a price during the roll period, the roll for that particular commodity will be held until the commodity receives a price.

*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 document located on our Web site, [www.spdji.com](http://www.spdji.com).*

# Index Calculation

## Calculation of the Index

The value of the index on any business day is equal to the product of (i) the value of the index on the immediately preceding business day, (ii) one plus the sum of the contract daily return and the CDI return (local rate) on the hypothetical investment in the index on the business day on which the calculation is made, and (iii) one plus the Treasury bill return on the hypothetical investment in the index for each non-business day since the immediately preceding business day. The value of the index has been normalized such that its hypothetical level on January 20, 2016 is 100.

## Calculation of the Total Dollar Weight (*TDW*) on Non-Roll Days

$$TDW_d = \sum_c (CWF_d^c * DCRP_d^c)$$

where:

*c* = The Designated Contract.

*d* = The business day on which the calculation is made.

*CWF* = The Contract Weight Factor which is calculated based on the percentage weights defined for each commodity within the index.

*DCRP* = The Daily Contract Reference Price.

## Calculation of the Normalizing Constant

**The Total Dollar Weight Ratio.** The Total Dollar Weight Ratio (*TDWR*) is calculated according to the following formula:

$$TDWR = \frac{\sum_c (CWF_{new}^c * DCRP_d^c)}{\sum_c (CWF_{old}^c * DCRP_d^c)}$$

where:

*c* = The Designated Contract.

*d* = The business day on which the calculation is made.

*CWF<sub>new</sub>* = The Contract Weight Factor that takes effect on the first day of the monthly roll period.

*CWF<sub>old</sub>* = The Contract Weight Factor for the prior roll period.

*DCRP* = The Daily Contract Reference Price.

**The Normalizing Constant.** With respect to a given roll period, the Normalizing Constant (*NC<sub>new</sub>*) is calculated on the last business day of the previous roll period.

The formula for calculating the Normalizing Constant is the following:

$$NC_{new} = NC_{old} * TDWR$$

## Contract Daily Return

On any given day, the contract daily return is equal to the applicable daily contract reference price on the specific commodity contract multiplied by the *CWF* and the appropriate “roll weight,” (Total Dollar Weight Obtained) divided by the total dollar weight of the contract on the preceding day (Total Dollar Weight Invested), minus one.

Calculation of the Spot Index (*DJBCI*):

$$DJBCI_d = \frac{TDW_d}{NC}$$

## Calculation of Total Dollar Weight During a Roll Period

In calculating the Total Dollar Weight (*TDW*) of the index during a roll period, the Contract Roll Weights (*CRW*) of the First Nearby Contract Expiration and the Roll Contract Expiration of each commodity are equal to: (i) on the first day of the roll period with respect to such commodity, 0.8 and 0.2, respectively; (ii) on the second day of the roll period, 0.6 and 0.4, respectively; (iii) on the third day of the roll period, 0.4 and 0.6 respectively; (iv) on the fourth day of the roll period, 0.2 and 0.8, respectively; and (v) on the fifth day of the roll period, 0.0 and 1.0, respectively. The roll period commences on the fifth business day of each month.

$$TDW_d = \sum_c CWF^c * (CRW1_d^c * DCRP1_d^c + CRW2_d^c * DCRP2_d^c)$$

where:

*c* = Each Designated Contract.

*d* = 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.

Excess and Total Return Indices are calculated based on the Contract Expiration that would be in the regular index one month from the current date.

## Calculation of *TDW* in Connection with Index Composition Changes

$$TDW_d = \frac{NC_{new}}{NC_{old}} \times \sum_c [CWF1^c \times CRW1_d^c \times DCRP1_d^c] + \sum_c [CWF2^c \times CRW2_d^c \times DCRP2_d^c]$$

where:

*c* = Each Designated Contract.

*d* = 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.

*CWF1* = The Contract Weight Factor of the First Nearby Contract Expiration.

*CWF2* = The Contract Weight Factor of the Roll Contract Expiration.

*DCRP* = The Daily Contract Reference Price of each respective Contract Expiration.

## Contract Daily Return (CDR) in Formulaic Terms

$$CDR_d = \frac{TDWO_d}{TDWI_{d-1}} - 1$$

where:

*TDWI* = Total Dollar Weight Invested. This reflects a hypothetical investment in the index based on the CWFs, CRW's and Daily Contract Reference Prices (DCRP) on the prior business day.

*TDWO* = Total Dollar Weight Obtained. This reflects the return on the hypothetical investment and is calculated based on the CWFs and CRWs in effect on the prior business day but includes Daily Contract Reference Prices (DCRP) used to calculate the index on the current business day.

## Daily Calculation of the Excess Return Index (DJBCI ER)

$$DJBCI ER_d = DJBCI ER_{d-1} * (1 + CDR_d)$$

## Calculation of the Total Return Index (DJBCI TR)

$$DJBCI TR_d = DJBCI TR_{d-1} * (1 + IndexTotalReturn_t)$$

For a funded investment, the total return between dates *t-1* and *t* includes the reinvestment rate for the initial cash outlay and is calculated as follows:

$$IndexTotalReturn_t = CDR_{t,t-1} + DIAR_{t-1} * \frac{Delta}{252}$$

where:

*Delta<sub>t</sub>* = The number of calendar days between the current and previous business days.

*DIAR<sub>t-1</sub>* = The most recent daily rate for DI-Cetip, effective on the preceding business day.<sup>2</sup>

*DI-Cetip* = The Average One-Day Interbank Deposit (aka CDI rate, or overnight DI rate) which is an annual rate and is calculated daily by the Central of Custody and Financial Settlement of Securities (CETIP). It represents the average rate of all inter-bank overnight transactions in Brazil.

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<sup>2</sup> The day count convention used is ACTBD/252. DI-Cetip rates are available at Cetip's Web site, [www.cetip.com.br](http://www.cetip.com.br).

# Index Governance

## **Index Committee**

The S&P/BM&F Index Committee oversees the daily management and operations of the Dow Jones/BM&F Commodity Index, and is responsible for all analytical methods and calculation of the indices. At each meeting, the Committee reviews any issues that may affect index constituents, statistics comparing the composition of the indices to the market, commodities that are being considered as candidates for addition to an index, and any significant market events. In addition, the Index Committee may revise the methodology covering rules for selecting commodities, 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.

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 document.*

# Index Policy

## **Holiday Schedule**

The Dow Jones/BM&F Commodity Index is calculated daily based on the BM&F holiday schedule.

*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 document located on our Web site, [www.us.spindices.com](http://www.us.spindices.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.

## **Currency, Currency Hedged, and Risk Control Indices**

The Dow Jones/BM&F Commodity Index is calculated in Brazilian reals and U.S. dollars.

WM/Reuters foreign exchange rates are taken daily at 4:00 PM London Time and used in the end-of-day calculation of the U.S. dollar versions of the index. These mid-market fixings are calculated by The WM Company based on Reuters data and appear on Reuters pages WMRA.

Additional currency, currency hedged, and risk control versions of the indices may be available. For a list of available currency, currency hedged, and risk control indices, please contact Client Services at [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

*For more information on currency, currency hedged, and risk control indices, please refer to S&P Dow Jones Indices' Index Mathematics 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.us.spindices.com](http://www.us.spindices.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 currency, currency hedged, risk control, and return type versions of the below indices that may exist are also covered by this document. Please contact [index\\_services@spglobal.com](mailto:index_services@spglobal.com) for a complete list of indices covered by this document.

Index Name (Currency)	Bloomberg
Dow Jones/BM&F Commodity Index (BRL)	DJBCIB
Dow Jones/BM&F Commodity Index ER (BRL)	DJBCIBP
Dow Jones/BM&F Commodity Index TR (BRL)	DJBCIBT
Dow Jones/BM&F Commodity Index (USD)	DJBCIU
Dow Jones/BM&F Commodity Index ER (USD)	DJBCIUP
Dow Jones/BM&F Commodity Index TR (USD)	DJBCIUT

## FTP

Index level data is available via FTP subscription.

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

## Web Site

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

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