

S&P Dynamic Futures Index *Methodology*

December 2018

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Introduction

Index Objective and Overview

The S&P Dynamic Futures Index (S&P DFI) measures trends based on price movements of certain highly liquid futures contracts, while limiting volatility. The futures contracts are represented individually on either a “long” or “short” basis, depending on market momentum. With both long and short individual components, the index is designed to capture the economic benefit over long time periods, derived from both rising and declining trends within a cross-section of futures markets.

Highlights¹

The key characteristics of the index are:

- The index is comprised of 24 futures contracts, grouped into 14 sectors: eight financial and six commodity sectors. The financial sector includes eight global financial futures contracts. The commodities sector includes 16 traditional, physical commodity components (futures contracts). The financials and commodities sectors are equal weighted.
- Long or short positions are determined by measuring the current component price relative to an exponential moving average.
- To maintain a balanced weighting across different commodity sectors, the weighting scheme of the S&P GSCI Light Energy Index is applied at the beginning of each year.
- To maintain appropriate weighting across different financial contracts, each country’s current year IMF estimate for nominal Gross Domestic Product (GDP) is used to derive contract weights at the beginning of each year.
- Component weights are reset monthly to the annually-defined target weights.
- Positions are rolled from the 1st thru the 5th business days of the month.

For more information on the S&P GSCI Light Energy Index, please refer to the S&P GSCI Index Methodology.

The S&P DFI Methodology

This methodology uses various terms and definitions similar to the S&P GSCI Index Methodology. Where not specifically noted otherwise in this document, the rules of the S&P GSCI Methodology will prevail. Where the terms in this document are also defined in the S&P GSCI Methodology, the definitions in this document prevails.

Index Family

S&P Dow Jones Indices also calculates two sub-indices representing components of the S&P DFI. These are the S&P DFI Commodity (reflecting the physical commodity futures components of the S&P DFI) and the S&P DFI Financial (reflecting the financial futures components of the S&P DFI) Indices. Excess and Total Return sub-indices are calculated and published for each of these two market sectors.

¹ Prior to the July 2012 rebalancing, positions were determined on a sector level, (as described above), with each sector having its own position signal (long, short, neutral for Energy sector only) as opposed to the current individual component level (long or short only).

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	Commodities Indices Policies & Practices
S&P Dow Jones Indices' 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 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

General Eligibility Requirements

The 24 components and general membership of the index are reviewed by the Index Committee periodically based on market conditions and the membership is subject to composition changes if deemed necessary.

Physical Commodities Futures and Financial Futures. To be eligible for inclusion in the S&P DFI, a Contract must be a physical commodity or a financial instrument, and may not be on a short term interest rate (STIR) or an equity index. The Contracts need not require physical delivery by their terms in order for a commodity to be considered a physical commodity.

Weighting Scheme

The S&P GSCI Light Energy Index is comprised of the same Designed Contracts as the S&P GSCI, but the Contract Production Weights (CPW) of all Designed Contracts in the energy sector are one-fourth (1/4) their size in the S&P GSCI. There are some component differences between the S&P GSCI Light Energy Index and S&P DFI. The table below summarizes the differences as of January 31, 2018.

To derive the weighting scheme for the S&P DFI on the last business day of January of each year, we start with the weights of the components of the S&P GSCI Light Energy Index, and then reallocate the relative weights among the components by 1) removing the weights of components not in existence in the S&P DFI, such as Feeder Cattle, Aluminum High Grade, Lead, Nickel, and Zinc, and 2) picking the most liquid components in the S&P GSCI Light Energy Index, such as Chicago Wheat instead of Kansas City Wheat, WTI Crude Oil instead of Brent Crude Oil, and Unleaded Gasoline instead of Gasoil, where more than one futures contracts track the same component.

Chart 1 – S&P DFI Commodities Initial Weightings 2018 (as of January 31st, 2018)

S&P GSCI Light Energy Components	Weight	S&P DFI Components	Weights related to S&P GSCI Light Energy	Weights related to S&P DFI
Chicago Wheat	4.99%	Chicago Wheat	4.99%	6.92%
Kansas City Wheat	1.89%			
Corn	7.90%	Corn	7.90%	10.94%
Soybeans	5.89%	Soybeans	5.89%	8.16%
Coffee "C"	1.39%	Coffee	1.39%	1.92%
Sugar #11	2.92%	Sugar	2.92%	4.05%
Cocoa	0.53%	Cocoa	0.53%	0.74%
Cotton #2	2.69%	Cotton	2.69%	3.72%
Lean Hogs	3.85%	Lean Hogs	3.85%	5.33%
Live Cattle	7.02%	Live Cattle	7.02%	9.72%
Feeder Cattle	2.14%			
Heating Oil	1.99%	Heating Oil	1.99%	2.76%
Gas Oil	2.40%			
Unleaded Gasoline	2.16%	Unleaded Gasoline	2.16%	2.99%
WTI Crude Oil	12.75%	WTI Crude Oil	12.75%	17.66%
Brent Crude Oil	8.78%			
Natural Gas	1.49%	Natural Gas	1.49%	2.06%
Aluminum High Grade	6.86%			
Copper - Grade A	8.64%	Copper	8.64%	11.97%
Lead	1.61%			
Nickel	1.44%			
Zinc	2.72%			
Gold	7.17%	Gold	7.17%	9.93%
Silver	0.81%	Silver	0.81%	1.13%
Total	100.00%	Total	72.17%	100.00%

Gross domestic product (GDP) is an indication of a country's economic significance and is used in selecting and making allocations to currency financials in the S&P DFI. The annual GDP data, reported in U.S. dollars, is obtained from the World Economic Outlook (WEO) database of the International Monetary Fund (IMF). The current year IMF estimates for nominal GDP is used to determine the weight for the financial (currency) future components. The data from the IMF are updated twice a year in April and September. The GDP number released in the September report of previous year is used for determining the weights of the currency futures for the current year.

Chart 2 – 2018 Estimated Nominal Gross Domestic Product

RELATED SECTOR WEIGHT	REGION	GDP (USD Billion)
40.62%	United States	19,861.63
35.64%	European Monetary Union	17,428.21
10.66%	Japan	5,213.49
5.42%	United Kingdom	2,649.06
3.43%	Canada	1,676.12
2.82%	Australia	1,381.23
1.41%	Switzerland	691.91

Nominal GDP estimates from the International Financial Statistics of the IMF

The markets in the Index are divided equally between tangible commodities and financials (excluding equities and short term interest rates) in order to decrease correlation among the components. This is done to produce a smooth, less volatile return.

Chart 3 – S&P DFI Weighting Scheme Example 2018

Market	Market Weights	Sector	Sector Weight	Component	Component Weight			
Commodities	50.00%	Energy	12.74%	WTI Crude Oil	8.83%			
				Heating Oil	1.38%			
				RBOB Unleaded Gas	1.50%			
				Natural Gas	1.03%			
		Industrial Metals	5.98%	5.98%	Copper	5.98%		
					Precious Metals	5.53%	Gold	4.96%
							Silver	0.56%
		Livestock	7.53%	7.53%	Lean Hogs	2.66%		
					Live Cattle	4.86%		
					Grains	13.01%	13.01%	Corn
		Soybeans	4.08%					
		Wheat	3.46%					
		Softs	5.21%	5.21%	Coffee	0.96%		
					Cocoa	0.37%		
					Sugar	2.02%		
					Cotton	1.86%		
		Financials	50.00%	Australian Dollar	1.41%	Australian Dollar	1.41%	
				British Pound	2.71%	British Pound	2.71%	
				Canadian Dollar	1.71%	Canadian Dollar	1.71%	
				Euro	17.82%	Euro	17.82%	
Japanese Yen	5.33%			Japanese Yen	5.33%			
Swiss Franc	0.71%			Swiss Franc	0.71%			
U.S. Treasury Notes	10.15%			U.S. Treasury Notes	10.15%			
U.S. Treasury Bonds	10.15%			U.S. Treasury Bonds	10.15%			

Rebalancing

Monthly Rebalancing for Component Weights. Components are rebalanced to their fixed weights at the beginning of each month. The rebalancing reference date is the second to last S&P DFI business day of the month and implemented over a five-day period from the first (1st) through the fifth (5th) S&P DFI business days of the month.

Monthly rebalancing helps to keep volatility low. An extended component trend could overweight the S&P DFI and potentially lead to significantly higher volatility of the strategy. Because the components are rebalanced, the aggregate markets are reset to equal weighting each month (50% each commodities and financials).

Annual Rebalancing for Component Weights. At the end of each year, each of the commodity components is rebalanced to the weightings derived from the S&P GSCI Light Energy Index, and the financial components are rebalanced to reflect the previous year's relevant nominal GDP figures. The component weights vary over time, as production and GDP figures change. Rebalancing the components annually, to reflect the changes in the S&P GSCI Light Energy Index weighting and relevant GDP figures, allows the strategy to better reflect the underlying economic developments and different stages of the market cycle.

Index Construction

Overview of the Index Construction

The S&P DFI is designed to capture both upward and downward price trends while moderating overall volatility. Components of the strategy are chosen based on fundamental characteristics and the liquidity needed for an investable model.

Position Determination.

The rule for the index regarding long or short positions is summarized as follows:

- **Long positions** are tracked when a component's current price input is greater than or equal to the exponential average of the past seven price inputs;
- **Short positions** are tracked when a component's current price input is less than the exponential average of the past seven price inputs.

The position is determined on the second to last S&P DFI business day of the month (defined as the position determination date, or PDD) when the monthly percentage change of a component's price is compared to past monthly price changes, exponentially weighted to give greatest weight to the most recent return and least weight to the return seven months prior. See the *Appendix* for details regarding the exponential average. The weighted sum of the percentage changes of all the component prices equals the daily movement of the index.

The trade activity period (TAP) is the five S&P DFI business day period when the positions are executed from the first (1st) thru the fifth (5th) S&P DFI business days of the month.

The roll rules and procedures followed are those as specified in the *S&P GSCI Methodology*, sections VI.2 (b), VI.2 (c) and VI.2 (d).

Sectors versus Components

Effective as of the July 2012 rebalancing, all S&P DFI component positions are determined at the component level. For information on the methodology used prior to the July 2012 rebalancing, please contact S&P Dow Jones Indices' client support group.

No Short Exemptions

Prior to the July 2012 rebalancing, energy positions were restricted from short positions. Beginning with the July 2012 rebalancing, all S&P DFI component positions are determined independently and there is no short exemption for any components.

Index Maintenance

The S&P DFI is a strategy index designed to capture futures contract price trends, but futures contracts have limited durations. Consequently, for the index to be calculated through time it must change (or roll) from tracking contracts that are approaching expiration to tracking new contracts. Currently, each contract has three to four roll periods each year and its own “roll pattern” based on historical liquidity. The following rules are observed in rolling the strategy futures contracts from an existing contract to the next contract:

- The non-currency component contracts are rolled from the current contract to the next contract beginning with the trade activity period (TAP) for the month that is two months before the current contract matures.
- The currency contracts are rolled from the current contract to the next maturing futures contract four times per year as of the first TAP for the month prior to the contract’s final maturity month.

Chart 4 - Active contract schedule used for price inputs of the index

Commodity	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Heating Oil	H	M	M	M	U	U	U	Z	Z	Z	H	H
WTI Crude Oil	H	M	M	M	U	U	U	Z	Z	Z	H	H
Natural Gas	H	M	M	M	U	U	U	Z	Z	Z	H	H
Unleaded Gas	H	M	M	M	U	U	U	Z	Z	Z	H	H
Copper	H	K	K	N	N	U	U	Z	Z	Z	H	H
Gold	J	J	M	M	Q	Q	Z	Z	Z	Z	G	G
Silver	H	N	N	N	N	U	U	Z	Z	Z	H	H
Lean Hogs	M	M	M	M	Q	Q	Z	Z	Z	Z	G	G
Live Cattle	M	M	M	M	Q	Q	Z	Z	Z	Z	G	G
Corn	H	N	N	N	N	U	U	Z	Z	Z	H	H
Soybeans	H	N	N	N	N	X	X	X	X	H	H	H
Wheat	H	N	N	N	N	U	U	Z	Z	Z	H	H
Cocoa	H	N	N	N	N	U	U	Z	Z	Z	H	H
Coffee	H	N	N	N	N	U	U	Z	Z	Z	H	H
Cotton	H	N	N	N	N	Z	Z	Z	Z	Z	H	H
Sugar	H	K	K	N	N	V	V	V	H	H	H	H
Australian Dollar	H	H	M	M	M	U	U	U	Z	Z	Z	H
British Pound	H	H	M	M	M	U	U	U	Z	Z	Z	H
Canadian Dollar	H	H	M	M	M	U	U	U	Z	Z	Z	H
Euro	H	H	M	M	M	U	U	U	Z	Z	Z	H
Japanese Yen	H	H	M	M	M	U	U	U	Z	Z	Z	H
Swiss Franc	H	H	M	M	M	U	U	U	Z	Z	Z	H
U.S. Treasury Bond	H	M	M	M	U	U	U	Z	Z	Z	H	H
U.S. Treasury Note	H	M	M	M	U	U	U	Z	Z	Z	H	H

Chart 5 – Month Letter Codes

LETTER	CONTRACT EXPIRATION
F	JAN
G	FEB
H	MAR
J	APR
K	MAY
M	JUN
N	JUL
Q	AUG
U	SEP
V	OCT
X	NOV
Z	DEC

Chart 6 – Commodities, Contract Codes, and Exchanges.

Reuters Code	Bloomberg Code	Currency & Commodities Contracts	Exchange
AD	AD	Australian Dollar	Chicago Mercantile Exchange
BP	BP	British Pound	Chicago Mercantile Exchange
C	C	Corn	Chicago Board Of Trade
CC	CC	Cocoa	Intercontinental Exchange - US
CD	CD	Canadian Dollar	Chicago Mercantile Exchange
CL	CL	WTI Crude Oil	NYMEX
CT	CT	Cotton #2	Intercontinental Exchange - US
GC	GC	Gold	NYMEX
HG	HG	Copper	NYMEX
HO	HO	Heating Oil	NYMEX
JY	JY	Japanese Yen	Chicago Mercantile Exchange
KC	KC	Coffee 'C'	Intercontinental Exchange - US
LC	LC	Live Cattle	Chicago Mercantile Exchange
LH	LH	Lean Hogs	Chicago Mercantile Exchange
NG	NG	Natural Gas	NYMEX
RB	XB	RBOB Gasoline	NYMEX
S	S	Soybeans	Chicago Board Of Trade
SB	SB	Sugar #11	Intercontinental Exchange - US
SF	SF	Swiss Franc	Chicago Mercantile Exchange
SI	SI	Silver	NYMEX
TY	TY	US 10 Year Bond	Chicago Board Of Trade
URO	EU	Euro	Chicago Mercantile Exchange
US	US	US Long Bond	Chicago Board Of Trade
W	W	Chicago Wheat	Chicago Board Of Trade

Currency, Currency Hedged, Inverse, Leveraged, and Risk Control Indices

Additional currency, currency hedged, inverse, leveraged, and risk control versions of the indices may be available. For a list of available indices, please contact Client Services at index_services@spglobal.com.

For more information on currency, currency hedged, inverse, leveraged, and risk control indices, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.

Index Calculation

Daily Calculation

Spot Calculation. On a given business day, d , the spot price ($SPOT$) of the index containing i number of Components/Commodities (c) is calculated as follows:

$$SPOT_d = \frac{\left(\sum_{c=1}^i TDW1 + SC1 \right)}{NC_{old}} + \frac{\left(\sum_{c=1}^i TDW2 + SC2 \right)}{NC_{new}}$$

where

$\sum_{c=1}^i TDW1$ = The sum of the Total Dollar Weight (TDW) of each Component's (c 's) Current Contract.

$\sum_{c=1}^i TDW2$ = The sum of the TDW of each Component (c 's) next Contract

$SC1$ = The Short Component effective during the last month, expressed in the same terms as Contract Production Weights, ($CPWs$).

$SC2$ = The Short Component effective in the current month, expressed in the same terms as $CPWs$.

NC_{old} = Normalizing Constant effective during the last month

NC_{new} = Normalizing Constant effective during this month

The Short Component (SC) is allocated to the amount of weight remaining in the Index after the weights of each component has been defined based on the long and short positions and their respective percentage weights. Adding the weight of the Short Component to the sum of the weights of the Components will make the weights in the Index sum to 100%.

The Short Component is calculated as follows:

$$SC = \left(1 - \sum ComponentWeights \right) * 1000$$

Total Dollar Weight Calculation. On any day, d , the Total Dollar Weight (TDW) for Commodity c is the product of its Contract Production Weight, Contract Roll Weight and Daily Contract Price for the current and next contracts, respectively.

$$TDWc_d = CPWc_d * CRWc_d * DCRPc_d$$

where:

$TDWc_d$ = Total Dollar Weight for Commodity c on day d .

CPW_{c_d} = Contract Production Weight for Commodity c set on the first business day of the month.

CRW_{c_d} = Contract Roll Weights for Commodity c on day d

$DCRP_{c_d}$ = Daily Contract Price for Commodity c on day d

Contract Production Weights. Are determined on the last business day of the month. The CPW value is calculated as follows:

$$CPW = \frac{\text{ComponentWeight}}{DCRP_d * 1000}$$

Contract Roll Weights Logic. On a given non-roll day, $CRW1 = 1$ and $CRW2 = 0$

During the Roll Period the CRW value is computed as follows:

For the S&P DFI the number of roll days is five (5).

$$CRW = \frac{100\%}{\text{number of roll days}} = 20\%$$

Since the number of roll days is five, 20% of its component will roll in and roll out daily, keeping the aggregate Component weight's 100%.

Days	CRW1	CRW2
1	0.8	0.2
2	0.6	0.4
3	0.4	0.6
4	0.2	0.8
5	0	1

The S&P DFI holds the roll for two (2) days after its completion, so the $CRW1$ value during the roll hold days will be 0 and the $CRW2$ value will be 1.

Normalizing Constant

$$NC_{new} = NC_{old} * \frac{\sum (CPW_{new} * DCRP1_d + CPW_{new} * DCRP2_d) + SC1}{\sum (CPW_{old} * DCRP1_d + CPW_{old} * DCRP2_d) + SC2}$$

where

- CPW_{new} = This month's Contract Production Weight
- CPW_{old} = Last month's Contract Production Weight
- $SC1$ = The Short Component effective during the last month
- $SC2$ = The Short Component effective in the current month
- $DCRP1_d$ = Current contract price on day d
- $DCRP2_d$ = Next contract price on day d
- NC_{old} = Normalizing Constant effective as of the last month

Excess Return Calculation. On any Business Day, the S&P DFI Excess Return (ER) index level is equal to the product of the S&P DFI ER index level on the immediately preceding S&P DFI Business Day multiplied by one plus the Contract Daily Return as of that day. The Index is calculated to a seven (7) digit precision.

$$ER_d = ER_{d-1} * [1 + CDR_d]$$

where

- ER_d = Excess Return Value for Business Day d .
- ER_{d-1} = Excess Return Value as of the immediate preceding Business Day.
- CDR_d = Contract Daily Return of the Index.

Contract Daily Return Calculation. The Contract Daily Return (CDR) on any Business Day, d , is equal to the ratio obtained by dividing the Total Dollar Weight Obtained by the Total Dollar Weight Invested on the immediately preceding Business Day, minus one.

$$CDR_d = \frac{TDWO_d}{TDWI_d} - 1$$

where

- $TDWO_d$ = The Total Dollar Weight Obtained for Business Day d .
- $TDWI_d$ = The Total Dollar Weight Invested as of the immediate preceding Business Day.

Total Dollar Weight Obtained. On any given day, d , the Total Dollar Weight Obtained ($TDWO$) is the amount obtained from an investment on the immediately preceding day. The $TDWO$ for a given day is calculated using the *Component Weights* and *Contract Roll Weights* in effect on the immediately preceding day $d-1$ and the Daily Contract Reference Prices used to calculate the S&P DFI Index on day d .

$$TDWO_d = \frac{NC_{new}}{NC_{old}} * \left[\left(\sum_{c=1}^i (CPW_{new_d} * CRW_{1_{d-1}} * DCRP_{1_d}) + SC1 * CRW_{1_{d-1}} \right) + \left(\sum_{c=1}^i (CPW_{new_d} * CRW_{2_{d-1}} * DCRP_{2_d}) + SC2 * CRW_{2_{d-1}} \right) \right]$$

where

- CPW_{new_d} = Contract Production Weight of the Component on day d
- $CRW_{1_{d-1}}$ = The roll-out percentage of the Contract Roll Weight on day $d-1$
- $CRW_{2_{d-1}}$ = The roll-in percentage of the Contract Roll Weight on day $d-1$
- $DCRP_{1_d}$ = Current contract price on day d
- $DCRP_{2_d}$ = Next contract price on day d
- $SC1$ = Short Component effective last month
- $SC2$ = Short Component effective in the current month.
- NC_{old} = Normalizing Constant effective as of the last month
- NC_{new} = Normalizing Constant effective during this month

Total Dollar Weight Invested. On any given day, d , the Total Dollar Weight Invested ($TDWI$) is equal to the Total Dollar Weight of the immediate preceding business day $d-1$ and can be calculated as follows:

$$TDWI_d = \frac{NC_{new}}{NC_{old}} * \left[\left(\sum_{c=1}^i (CPW_{new_d} * CRW1_{d-1} * DCRP1_{d-1}) + SC1 * CRW1_{d-1} \right) + \left(\sum_{c=1}^i (CPW_{new_d} * CRW2_{d-1} * DCRP2_{d-1}) + SC2 * CRW2_{d-1} \right) \right]$$

where

CPW_{new_d}	=	Contract Production Weight of the Component on day d
$CRW1_{d-1}$	=	The roll-out percentage of the Contract Roll Weight on day $d-1$
$CRW2_{d-1}$	=	The roll-in percentage of the Contract Roll Weight on day $d-1$
$DCRP1_d$	=	Current contract price on day $d-1$
$DCRP2_d$	=	Next contract price on day $d-1$
$SC1$	=	Short Component effective last month
$SC2$	=	Short Component effective in the current month.
NC_{old}	=	Normalizing Constant effective as of the last month
NC_{new}	=	Normalizing Constant effective during this month

Total Return Calculation. On any given calendar day, d , the Treasury Bill Return (TBR) is equal to an amount determined in accordance with the following formula:

$$TBR_d = \left[\frac{1}{1 - \frac{91}{360} * TBAR_{d-1}} \right]^{1/91} - 1$$

where:

$TBAR_{d-1}$ = The 3 month T-Bill Rate available on the immediately preceding Business Day, $d-1$.

On any Business Day, the value of the S&P DFI Total Return (TR) Index is equal to the product of (i) the value of the S&P DFI TR on the immediately preceding Business Day, (ii) one plus the sum of the Contract Daily Return and the Treasury Bill Return on the day on which the calculation is made, and (iii) one plus the Treasury Bill Return for each non S&P DFI Business Day since the immediately preceding S&P DFI Business Day. The result of the foregoing calculation is, then, rounded to seven (7) digits of precision. The calculation of the S&P DFI TR for any Business Day, d , is obtained by rounding the expression below to seven digits of precision.

$$SPDTITR_d = SPDTITR_{d-1} * (1 + CDR_d + TBR_d) * (1 + TBR_d)^{days}$$

where:

$SPDTSITR_{d-1}$	=	The previous day's S&P DFI TR Index value
CDR_d	=	The Contract Daily Return on day d .
TBR_d	=	Treasury Bill Return on day d .
$Days$	=	Number of non-business days since the last immediate preceding Business Day.

Glossary

Term	Description
CDR	Contract Daily Return
CPW	Contract Production Weight
CRW	Contract Roll Weight
DCRP	Daily Contract Reference Price
Active Contract	A liquid, actively traded Contract with respect to a Designated Contract, as defined or identified by the relevant Trading Facility or, if no such definition or identification is provided by the Trading Facility, as defined by standard custom and practice in the industry.
Contract Expiration	A date or term specified by the Trading Facility on or through which a Contract is traded as the date or term on, during or after which such Contract will expire, or delivery or settlement will occur. The contract expiration may, but is not required to, be a particular contract month.
NC	Normalizing Constant
Roll Period.	With respect to any Designated Contract, the period of five Business Days beginning on the 1 st Business Day of each calendar month and ending on the 5 th Business Day of such month.
ER Index	Excess Return Index, which is the accretion of the Contract Daily Return indexed to a normalized value
Spot Index	The index that reflects the price levels of the Designated Contracts and the CPW of each such Contract.
TR Index	The Total Return Index incorporates the returns of the ER Index and the Treasury Bill Return.
TDW	Total Dollar Weight
TDWO	Total Dollar Weight Obtained
TDWI	Total Dollar Weight Invested
TBR	Treasury Bill Rate

Index Data

In order to reflect the performance of a total return investment in commodities, three separate but related indices have been developed based on the S&P DFI.

1. The S&P DFI Spot Index, which is based on price levels of the contracts included in the S&P DFI.
2. The S&P DFI Excess Return Index (S&P DFI ER), which incorporates the returns of the S&P DFI Spot Index as well as the discount or premium obtained by “rolling” hypothetical positions in such contracts forward as they approach delivery.
3. The S&P DFI Total Return Index (S&P DFI TR), which incorporates the returns of the S&P DFI ER and interest earned on hypothetical fully collateralized contract positions on the commodities included in the S&P DFI.

Index Governance

Index Committee

S&P Dow Jones Indices has established an Index Committee to oversee the daily management and operations of the S&P DFI, 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 S&P DFI is calculated daily based on the CME group holiday schedule. The Index is calculated when the majority of the S&P DFI contracts are open for official trading and official settlement prices are provided, excluding holidays and weekends.

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

Contact Information

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

Index Dissemination

Tickers

The table below lists headline indices covered by this document. All currency, currency hedged, inverse, leveraged, 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 for a complete list of indices covered by this document.

Index Name	Bloomberg Real Time	Bloomberg EOD
S&P DFI Index	SPDFI	SPDFII
S&P DFI Index ER	SPDFIP	SPDFIIP
S&P DFI Index TR	SPDFITR	SPDFIITR
S&P DCFI Index	SPDCFI	SPDFCI
S&P DCFI Index ER	SPDCFIP	SPDFCIP
S&P DCFI Index TR	SPDCFITR	SPDFCITR
S&P DFFI Index	SPDFFI	SPDFNI
S&P DFFI Index ER	SPDFFIP	SPDFFNP
S&P DFFI Index TR	SPDFFITR	SPDFFNTR

Index Data

Daily constituent and index level data are available via subscription.

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

Appendix

Component Futures Contracts

The following are the futures contracts, exchanges, ticker symbols and dates that the various markets currently included in the S&P DFI became available for use in index simulations. The “Inclusion” column indicates the first month for which the returns of the market in question could reasonably be included in the index simulations. Typically a contract would not be eligible for inclusion until approximately one year after the contract first began to trade. The delay is due, in part, to the need for the contract to have established sufficient liquidity.

Futures Contract	Exchange	Symbol	Inclusion
Australian Dollar	CME	AD	February 1988
British Pound	CME	BP	January 1985
Canadian Dollar	CME	CD	January 1985
Euro (<i>replaced the German Mark</i>)	CME	EU	January 2000
German Mark	CME	DM	January 1985
Japanese Yen	CME	JY	January 1985
Swiss Franc	CME	SF	January 1985
US 10 Year Treasury Note	CBOT	TY	January 1985
US Treasury Bond	CBOT	US	January 1985

CBOT: Chicago Board of Trade

CME: Chicago Mercantile Exchange

Exponential Average Multiplier Schedule

To create an exponential average for comparison, price inputs (percentage change from current and previous six position determination dates, *PDDs*) are weighted using a multiplier per the schedule below, which is based on 1.6^0 , 1.6^1 , 1.6^2 , etc.

Number of Months	Multiplier	Weight
7	1	2.32%
6	1.6	3.71%
5	2.56	5.94%
4	4.096	9.51%
3	6.5536	15.22%
2	10.48576	24.34%
1	16.777216	38.95%
Sum	43.072576	100.00%

The weight given to each month is based on its multiplier versus the accumulation of the multipliers. For example, the price seven months prior is 2.32% ($1/43.072576$), and so on. Therefore, 78.5% of the index's moving average is weighted to the price movements of the last three months, making current price movements more important than those of the more distant past.

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