

# THOMSON REUTERS INDICES

## CONTINUOUS COMMODITY TOTAL RETURN INDEX

December 2012



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## Index Description

The Thomson Reuters Continuous Commodity Total Return Index ("Index") is a broad based commodity index that reflects the price movement of 17 exchange-traded futures contracts. The commodities are considered in equal-weights, which are maintained through continuous arithmetic averaging.

The commodity weights that are rebalanced to their equal target weights with each price update in turn consist of the averages of at least 2 and up to 5 contracts for each commodity. The combination of referring to contracts across the term structure and the equal weighting of their price averages results in unusually broad exposure to prices as compared to the exposure other futures based commodity indices provide. The commodities included in the index are subject to periodic revisions; most recently the index has been revised effective January 7<sup>th</sup> 2013.

## Methodology

The previous version of the CCITR has history going back to Aug, 20<sup>th</sup> 1999, when the value was 170.8338. History of the excess return version of the original CRB index, on which this return index is based, goes back to 1957. Real time values and daily values based on settlement prices for index are calculated and published by Thomson Reuters, the real time and settlement values are also carried by NYSE Arca. The daily return is calculated by multiplying the previous day index value with the daily return of the reference basket.

The individual commodity contributions are calculated as follows:

1. Arithmetic averages for each commodity on the relevant business day are calculated.

$$avg_t = \sum_1^{17} w * c_{m,t}$$

where,

$c_{m,t}$  stands for the sum across the included contracts for each of the 17 commodities, so

$$c_{m,t} = \sum_1^x \frac{s_{x,t}}{m},$$

where s stands for the price of a given contract month

For example: Corn sum (as of Jan 7, 2013) =  $\frac{(\text{Mar '13 Corn price} + \text{May '13 Corn price} + \text{Jul '13 Corn price})}{3}$

$avg_t$  stands for the daily average of settlement prices

w is the equal weight of 5.88% (1/17<sup>th</sup>) for each constituent commodity

m stands for each commodity

t stands for each trading day for which updated settlement prices are available

2. Today's value of the average for the 17 components is then used with yesterday's value to derive the applicable fair value index ("CRBCC"):

$$CRBCC_t = CRBCC_{t-1} * \left( \frac{avg_t}{avg_{t-1}} \right)$$

The CRBCC defines the actively considered set of futures contracts for each commodity as defined further in the 6 roll schedules listed in the appendix.

3. Total Return:

$$CCITR_t = CCITR_{t-1} * \left( \frac{avg_t}{avg_{t-1}} + tbill_t \right)$$

where,

CCITR stands for the index level, set at 100 on Jan 1<sup>st</sup>, 1982

tbill stands for the US Treasury Bill return for the given day, calculated as:

$$tbill_t = \frac{1}{91} \sqrt{\left( \frac{1}{1 - \left( \frac{91}{360} \right) * T - Bill Rate_{t-1}} \right)}$$

**Note:** that for example after a weekend, 3 days of returns are due to be added to the index.

### Contract Roll

The roll periods take place during the week leading up to the second Friday of the same six months (Jan, Feb, Apr, June, Aug, and Nov) every year. The roll implies a change from the pre-roll basket of contracts to the post-roll basket according to the following pattern:

At the close of the 1<sup>st</sup> roll day (a Monday): 20% post-roll basket + 80% pre-roll basket

Intraday of the 2<sup>nd</sup> roll day (a Tuesday): 20% post-roll basket + 80% pre-roll basket

At the close of the 2<sup>nd</sup> roll day: 40% post-roll basket + 60% pre-roll basket

Intraday of the 3<sup>rd</sup> roll day (a Wednesday): 40% post-roll basket + 60% pre-roll basket

At the close of the 3<sup>rd</sup> roll day: 60% post-roll basket + 40% pre-roll basket

Intraday of the 4<sup>th</sup> roll day (a Thursday): 60% post-roll basket + 40% pre-roll basket

At the close of the 4<sup>th</sup> roll day: 80% post-roll basket + 20% pre-roll basket

Intraday of the 5<sup>th</sup> roll day (a Friday): 80% post-roll basket + 20% pre-roll basket

At the close of the 5<sup>th</sup> roll day: 100% post-roll basket

Good Friday can fall on the second Friday in April (eg 2017). In this case, the open on the following Monday shows the final 40% of the roll rather than the final 20%. If no trading takes place during the roll for other reasons, reallocation between contracts without a price change is implemented for such days.

### Real-Time Pricing Considerations

The index is calculated: 5:00am - 6:00pm ET (internal), 8:00am - 8:22pm ET (NYSE Arca)

The index settles on a final value at around 3:15pm ET. On the internal instrument, outputs start at 5am ET carrying the previous day close and then the index will start fluctuating at 8am ET when the underlying contracts begin trading.

## Constituent Contracts

Contract	Name	Exchange	Included contract months
CL	Crude Oil	NYMEX	All 12 calendar months
HO	Heating Oil	NYMEX	All 12 calendar months
NG	Natural Gas	NYMEX	All 12 calendar months
C	Corn	CBOT	Mar, May, Jul, Sep, Dec
S	Soybeans	CBOT	Jan, Mar, May, Jul, Aug, Nov
LC	Live Cattle	CME	Feb, Apr, Jun, Aug, Oct, Dec
GC	Gold	COMEX	Feb, Apr, Jun, Aug, Dec
HG	Copper	COMEX	Mar, May, Jul, Sep, Dec
SB	Sugar	ICE US	Mar, May, July, Oct
CT	Cotton	ICE US	Mar, May, July, Dec
CC	Cocoa	ICE US	Mar, May, July, Sep, Dec
KC	Coffee	ICE US	Mar, May, July, Sep, Dec
W	Wheat	CBOT	Mar, May, Jul, Sep, Dec
LH	Lean Hogs	CME	Feb, Apr, Jun, Jul, Aug, Oct, Dec
SI	Silver	COMEX	Mar, May, Jul, Sep, Dec
BO	Soy Oil	CBOT	Jan, Mar, May, Jul, Aug, Sep, Oct, Dec
PL	Platinum	COMEX	Jan, Apr, Jul, Oct

## Appendix - Commodities Included and Roll Calendar

### JANUARY ROLL:

Positions	January Post Roll Positions	Contract Changes on Roll Date
Crude Oil Feb, Mar, Apr, May, Jun	Mar, Apr, May, Jun, Jul	Feb to Jul
Heating Oil Feb, Mar, Apr, May, Jun	Mar, Apr, May, Jun, Jul	Feb to Jul
Natural Gas Feb, Mar, Apr, May, Jun	Mar, Apr, May, Jun, Jul	Feb to Jul
Corn Mar, May, Jul	Mar, May, Jul	
Wheat Mar, May, Jul	Mar, May, Jul	
Soy Beans Mar, May, Jul	Mar, May, Jul, Aug	Add Aug
Soy Oil Mar, May, Jul	Mar, May, Jul, Aug	Add Aug
Live Cattle Feb, Apr, Jun	Apr, Jun, Aug	Feb to Aug
Lean Hogs Feb, Apr, Jun, Jul	Apr, Jun, Jul, Aug	Add Aug
Sugar #11 Mar, May, Jul	Mar, May, Jul	
Cotton Mar, May, Jul	Mar, May, Jul	
Coffee Mar, May, Jul	Mar, May, Jul	
Cocoa Mar, May, Jul	Mar, May, Jul	
Gold Feb, Apr, Jun	Apr, Jun, Aug	Feb to Aug
Silver Mar, May, Jul	Mar, May, Jul	
Platinum Apr, Jul	April, Jul	

Copper Mar, May, Jul

Mar, May, Jul

## FEBRUARY ROLL:

Positions	February Post Roll Positions	Contract Changes on Roll Date
Crude Oil Mar, Apr, May, Jun, Jul	May, Jun, Jul, Aug, Sep	Mar-Apr to Aug-Sep
Heating Oil Mar, Apr, May, Jun, Jul	May, Jun, Jul, Aug, Sep	Mar-Apr to Aug-Sep
Natural Gas Mar, Apr, May, Jun, Jul	May, Jun, Jul, Aug, Sep	Mar-Apr to Aug-Sep
Corn Mar, May, Jul	May, Jul, Sep	Mar to Sep
Wheat Mar, May, Jul	May, Jul, Sep	Mar to Sep
Soy Beans Mar, May, Jul, Aug	May, Jul, Aug	Mar to May, Jul, Aug
Soy Oil Mar, May, Jul, Aug	May, Jul, Aug, Sep	Mar to Sep
Live Cattle Apr, Jun, Aug	Jun, Aug, Oct	Apr to Oct
Lean Hogs Feb, Apr, Jun, Jul, Aug	Apr, Jun, Jul, Aug, Oct	Feb to Oct
Sugar #11 Mar, May, Jul	May, Jul, Oct	Mar to Oct
Cotton Mar, May, Jul	May, Jul	Mar to May-Jul
Coffee Mar, May, Jul	May, Jul, Sep	Mar to Sep
Cocoa Mar, May, Jul	May, Jul, Sep	Mar to Sep
Gold Apr, Jun, Aug	Jun, Aug	Apr to Jun-Aug
Silver Mar, May, Jul	May, Jul, Sep	Mar to Sep
Platinum April, Jul	Jul, Oct	Apr to Oct
Copper Mar, May, Jul	May, Jul, Sep	Mar to Sep

## APRIL ROLL:

Positions	April Post Roll Positions	Contract Changes on Roll Date
Crude Oil May, Jun, Jul, Aug, Sep	Jul, Aug, Sep, Oct, Nov	May-Jun to Oct-Nov
Heating Oil May, Jun, Jul, Aug, Sep	Jul, Aug, Sep, Oct, Nov	May-Jun to Oct-Nov
Natural Gas May, Jun, Jul, Aug, Sep	Jul, Aug, Sep, Oct, Nov	May-Jun to Oct-Nov
Corn May, Jul, Sep	Jul, Sep, Dec	May to Dec
Wheat May, Jul, Sep	Jul, Sep, Dec	May to Dec
Soy Beans May, Jul, Aug	Jul, Aug, Nov	May to Nov
Soy Oil May, Jul, Aug, Sep	Jul, Aug, Sep, Oct, Dec	May to Oct-Dec
Live Cattle Jun, Aug, Oct	Aug, Oct, Dec	Jun to Dec



Lean Hogs Apr, Jun, Jul, Aug, Oct	Jun, Jul, Aug, Oct, Dec	Apr to Dec
Sugar #11 May, Jul, Oct	Jul, Oct	May to Jul-Oct
Cotton May, Jul	Jul, Dec	May to Dec
Coffee May, Jul, Sep	Jul, Sep, Dec	May to Dec
Cocoa May, Jul, Sep	Jul, Sep, Dec	May to Dec
Gold Jun, Aug	Aug, Dec	Jun to Dec
Silver May, Jul, Sep	Jul, Sep, Dec	May to Dec
Platinum Jul, Oct	Jul, Oct	
Copper May, Jul, Sep	Jul, Sep, Dec	May to Dec

#### JUNE ROLL:

Positions	June Post Roll Positions	Contract Changes on Roll Date
Crude Oil Jul, Aug, Sep, Oct, Nov	Sep, Oct, Nov, Dec, Jan	Jul-Aug to Dec-Jan
Heating Oil Jul, Aug, Sep, Oct, Nov	Sep, Oct, Nov, Dec, Jan	Jul-Aug to Dec-Jan
Natural Gas Jul, Aug, Sep, Oct, Nov	Sep, Oct, Nov, Dec, Jan	Jul-Aug to Dec-Jan
Corn Jul, Sep, Dec	Sep, Dec	Jul to Sep-Dec
Wheat Jul, Sep, Dec	Sep, Dec	Jul to Sep-Dec
Soy Beans Jul, Aug, Nov	Nov, Jan	Jul-Aug to Nov-Jan
Soy Oil Jul, Aug, Sep, Oct, Dec	Sep, Oct, Dec, Jan	Jul-Aug to Jan
Live Cattle Aug, Oct, Dec	Oct, Dec, Feb	Aug to Feb
Lean Hogs Jun, Jul, Aug, Oct, Dec	Aug, Oct, Dec, Feb	Jun-Jul to Feb
Sugar #11 Jul, Oct	Oct, Mar	Jul to Mar
Cotton Jul, Dec	Dec, Mar	Jul to Mar
Coffee Jul, Sep, Dec	Sep, Dec	Jul to Sep-Dec
Cocoa Jul, Sep, Dec	Sep, Dec	Jul to Sep-Dec
Gold Aug, Dec	Dec, Feb	Aug to Feb
Silver Jul, Sep, Dec	Sep, Dec	Jul to Sep, Dec
Platinum Jul, Oct	Oct, Jan	Jul to Jan
Copper Jul, Sep, Dec	Sep, Dec	Jul to Sep, Dec

#### AUGUST ROLL:

Positions	August Post Roll Positions	Contract Changes on Roll Date
Crude Oil Sep, Oct, Nov, Dec, Jan	Dec, Jan, Feb, Mar, Apr	Sep-Oct-Nov to Feb-Mar-Apr
Heating Oil Sep, Oct, Nov, Dec, Jan	Dec, Jan, Feb, Mar, Apr	Sep-Oct-Nov to Feb-Mar-Apr

Natural Gas Sep, Oct, Nov, Dec, Jan	Dec, Jan, Feb, Mar, Apr	Sep-Oct-Nov to Feb-Mar-Apr
Corn Sep, Dec	Dec, Mar, May	Sep to Mar-May
Wheat Sep, Dec	Dec, Mar, May	Sep to Mar-May
Soy Beans Nov, Jan	Jan, Mar, May	Nov to Mar-May
Soy Oil Sep, Oct, Dec, Jan	Dec, Jan, Mar, May	Sep-Oct to Mar-May
Live Cattle Oct, Dec, Feb	Dec, Feb, Apr	Oct to Apr
Lean Hogs Aug, Oct, Dec, Feb	Dec, Feb, Apr	Aug-Oct to Apr
Sugar #11 Oct, Mar	Mar, May	Oct to May
Cotton Dec, Mar	Dec, Mar, May	Add May
Coffee Sep, Dec	Dec, Mar, May	Sep to Mar-May
Cocoa Sep, Dec	Dec, Mar, May	Sep to Mar-May
Gold Dec, Feb	Dec, Feb, Apr	Add Apr
Silver Sep, Dec	Dec, Mar, May	Sep to Mar-May
Platinum Oct, Jan	Jan, Apr	Oct to Apr
Copper Sep, Dec	Dec, Mar, May	Sep to Mar-May

#### NOVEMBER ROLL:

Positions	November Post Roll Positions	Contract Changes on Roll Date
Crude Oil Dec, Jan, Feb, Mar, Apr	Feb, Mar, Apr, May, Jun	Dec-Jan to May-Jun
Heating Oil Dec, Jan, Feb, Mar, Apr	Feb, Mar, Apr, May, Jun	Dec-Jan to May-Jun
Natural Gas Dec, Jan, Feb, Mar, Apr	Feb, Mar, Apr, May, Jun	Dec-Jan to May-Jun
Corn Dec, Mar, May	Mar, May, Jul	Dec to Jul
Wheat Dec, Mar, May	Mar, May, Jul	Dec to Jul
Soy Beans Jan, Mar, May	Mar, May, Jul	Jan to Jul
Soy Oil Dec, Jan, Mar, May	Mar, May, Jul	Dec-Jan to Jul
Live Cattle Dec, Feb, Apr	Feb, Apr, Jun	Dec to Jul
Lean Hogs Dec, Feb, Apr	Feb, Apr, Jun, Jul	Dec to Jun-Jul
Sugar #11 Mar, May	Mar, May, Jul	Add Jul
Cotton Dec, Mar, May	Mar, May, Jul	Dec to Jul
Coffee Dec, Mar, May	Mar, May, Jul	Dec to Jul
Cocoa Dec, Mar, May	Mar, May, Jul	Dec to Jul
Gold Dec, Feb, Apr	Feb, Apr, Jun	Dec to Jun
Silver Dec, Mar, May	Mar, May, Jul	Dec to Jul
Platinum Jan, Apr	Apr, Jul	Jan to Jul
Copper Dec, Mar, May	Mar, May, Jul	Dec to Jul



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