
# DTI®, CTI® & FTI™ Methodologies

July 1, 2016

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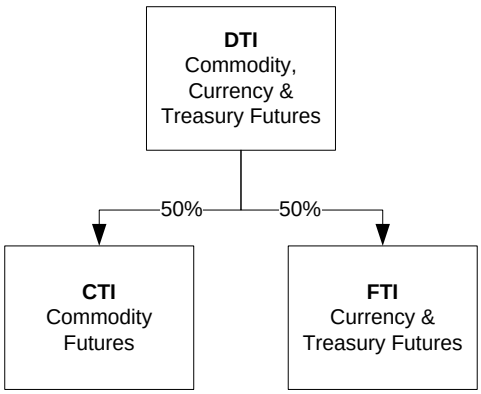
**AFT Long/Short Commodity and Financial Futures Index Family**

The AFT Long/Short Commodity and Financial Futures Index Family is composed of the Diversified Trends Indicator® (DTI®) and its sub-indexes, the Commodity Trends Indicator® (CTI®) and Financial Trends Indicator® (FTI™) (each an "Index" and collectively the "Indexes").

This paper will provide an overview of the Indexes and detail the calculation method of replicating the DTI®. As the only difference between the DTI® and its sub- indexes, the CTI® and FTI™, are the relative weights of their holdings, the methodology equally applies to all three Index calculations.

The DTI® is the parent index to both the CTI® and FTI™. It holds commodity futures, currency futures and US Treasury futures. The chart below provides an overview of these holdings.




Index Components are aggregated into Sectors. Each month on the Roll Date the Indexes undergo a roll process that will:

- Rebalance the Sector weights to their base weights
    - Rebalance Component weights within Multi-Component Sectors only on the roll at the last trading day of the year
- Determine a long/short (flat for Energy) direction for each Sector based on a trend-following weighted moving average methodology
- Roll maturing futures contracts to longer-dated contracts prior to their expiration

Each of these processes is integral to the uniqueness of the returns offered by the Indexes. The Component and Sector delineation allow for the resetting and rebalancing on the Sector level on a monthly basis, while allowing underlying Components to float relative to each other until year-end at which time they are reset and rebalanced to their base weights. Components within the Sectors also maintain the same long/short/flat direction during the month so the movements of like Components can follow larger trends in their respective markets; there are no intra month position adjustments. Finally, the fixed contract roll method allows replication without dealing with maturing contracts.

A critical point in the construction of the DTI® and CTI® is the treatment of the Energy Sector. Due to the significant level of continuous consumption, limited reserves, and oil cartel controls it is subject to rapid price increases in the event of perceived or actual shortages. While all other Sectors are allowed to be held short, Energy may not.[1] If the trend-following methodology calls for a short position in the Energy Sector, the Sector maintains a neutral or "flat" holding and the weight of the Energy Sector is allocated to the other Sectors. This is a forward looking rule to prevent the risk of ruin of the investment.

[1] The Natural Gas Sector, represented by the Natural Gas Component, may be held either long or short by the respective Indexes, effective as of May 1, 2012. Accordingly, the DTI® and CTI® may be positioned "short" in the Natural Gas sector when an unexpected natural, sociopolitical or other event occurs that causes rapid increases in Natural Gas prices. See Appendix A.

**The AFT Long/Short Commodity and Financial Futures Indexes**

Developed by Alpha Financial Technologies, LLC, the DTI® is a long/short rules-based investable financial product. It is designed with the potential to capture the economic benefit derived from fundamental events that creates both rising and declining trends[2]. Composed of unleveraged positions in U.S. exchange-traded futures contracts on 16 different tangible commodities, such as light crude oil and gold, as well as futures contracts on 8 different financials, such as major currencies and U.S. Treasury bonds, the DTI® seeks to differentiate itself from other indexes, trading methodologies and strategies. The DTI®'s sub-indexes, the CTI® and FTI™, follow the same methodology as the DTI® with the only difference between such Indexes being their Component weightings (the CTI® and FTI™ are composed of 16 different tangible commodities and 8 different financials, respectively.)

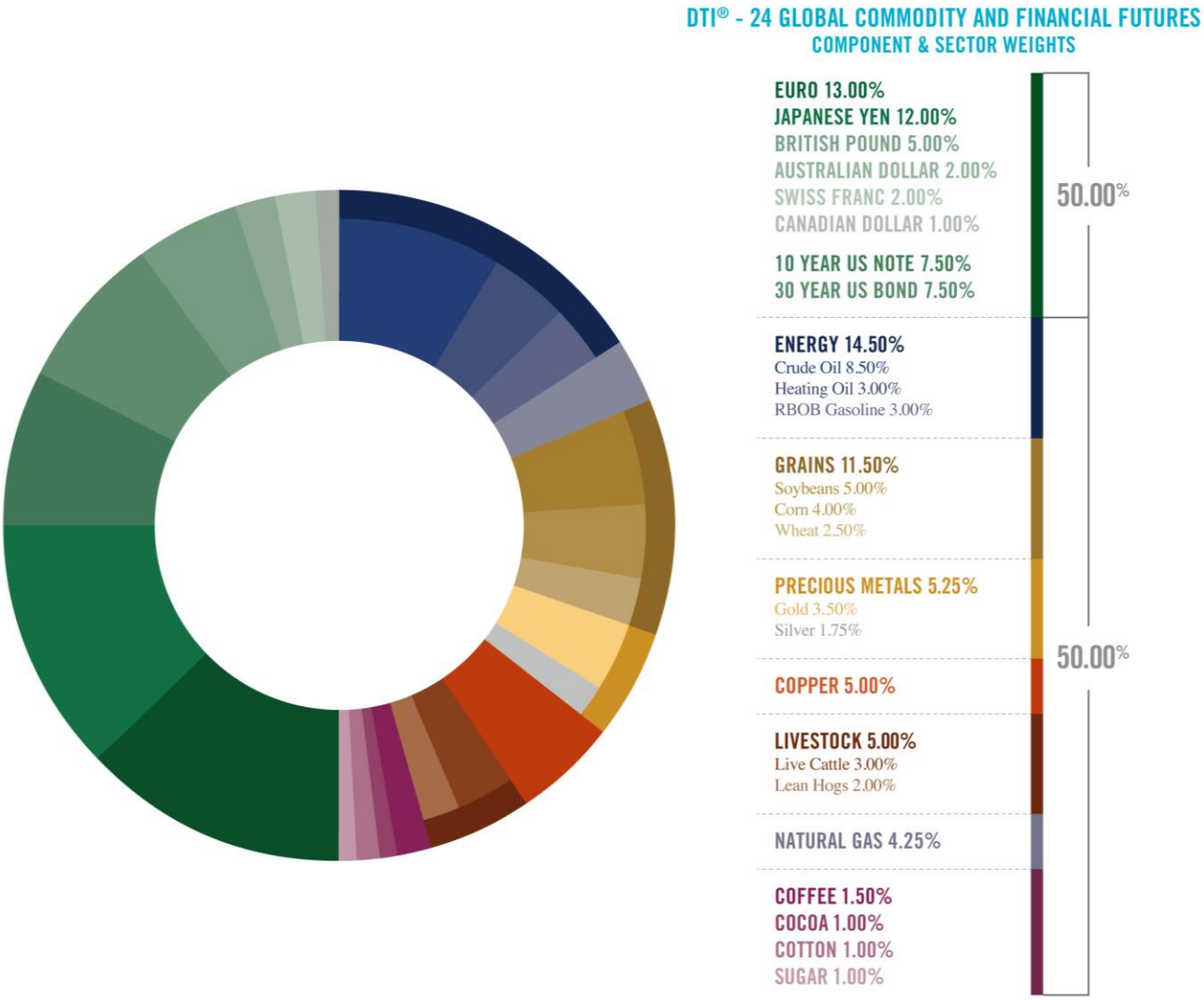
The Indexes are based on futures contract prices, not cash market prices. These prices may differ from the cash prices of specific commodities. Importantly, the Indexes are not long-only, but manage long or short exposures based on a rules-based, trend-following methodology.

The DTI® replicates a diversified portfolio of futures contracts (Components) formed into Sectors that are designed to reflect and track price trends. Exposure is divided equally 50/50 between tangible commodities (CTI®) and FX, US Treasury Notes/Bonds (FTI™) in order to seek to increase the internal non-correlation among the Components and to add liquidity to replicating portfolios.

Components of the Sectors are chosen based on fundamental characteristics and liquidity. Systematic rules are employed to establish a "long" or "short" Component position (with the exception of the Energy Sector, which is either long or flat, but never short). Sectors are rebalanced monthly; Components are rebalanced annually.

[2] There can be no assurance that the DTI® or its sub-indexes will achieve their objective or that losses will be avoided.

The Chart below indicates the DTI®'s current Component and Sector base weightings as of the beginning of each year (assuming the Energy Sector is long).



The Chart below compares the DTI®'s current Component and Sector base weightings as of the beginning of each year when the Energy Sector is long to when the Energy Sector is flat.

***Components & Base Weights***

| | | DTI | | CTI | | FTI |
|---|---|---|---|---|---|---|
| **Sector** | Component | Base Weight* | Energy Flat | Base Weight* | Energy Flat | Base Weight* |
| Energy | Crude Light | 8.50% | 0.00% | 17.00% | 0.00% | |
| | RBOB Gas | 3.00% | 0.00% | 6.00% | 0.00% | |
| | Heating Oil | 3.00% | 0.00% | 6.00% | 0.00% | |
| Livestock | Live Cattle | 3.00% | 3.51% | 6.00% | 8.45% | |
| | Lean Hogs | 2.00% | 2.34% | 4.00% | 5.63% | |
| Grains | Soybeans | 5.00% | 5.85% | 10.00% | 14.08% | |
| | Corn | 4.00% | 4.68% | 8.00% | 11.27% | |
| | Wheat | 2.50% | 2.92% | 5.00% | 7.04% | |
| Copper | | 5.00% | 5.85% | 10.00% | 14.08% | |
| Precious Metals | Gold | 3.50% | 4.09% | 7.00% | 9.86% | |
| | Silver | 1.75% | 2.05% | 3.50% | 4.93% | |
| Natural Gas | | 4.25% | 4.97% | 8.50% | 11.97% | |
| Sugar | | 1.00% | 1.17% | 2.00% | 2.82% | |
| Cotton | | 1.00% | 1.17% | 2.00% | 2.82% | |
| Cocoa | | 1.00% | 1.17% | 2.00% | 2.82% | |
| Coffee | | 1.50% | 1.75% | 3.00% | 4.23% | |
| Euro | | 13.00% | 15.20% | | | 26.00% |
| Japanese Yen | | 12.00% | 14.04% | | | 24.00% |
| British Pound | | 5.00% | 5.85% | | | 10.00% |
| Swiss Franc | | 2.00% | 2.34% | | | 4.00% |
| Australian Dollar | | 2.00% | 2.34% | | | 4.00% |
| Canadian Dollar | | 1.00% | 1.17% | | | 2.00% |
| US 30Y Bond | | 7.50% | 8.77% | | | 15.00% |
| US 10Y Note | | 7.50% | 8.77% | | | 15.00% |
| **Long Energy* | Total | **100.00%** | **100.00%** | **100.00%** | **100.00%** | **100.00%** |

The DTI® holds combinations of 24 Components aggregated into 18 Sectors (while the CTI® holds combinations of 16 Components aggregated into 10 Sectors and the FTI™ holds combinations of 8 Components each considered a separate Sector). Components are aggregated into Sectors where there is a strong relationship between them. For example, Gold and Silver make up the Precious Metals Sector. Components that are part of a multi-Component Sector are held in the same long/short direction (with the exception of the long/flat positioning of the Energy Sector).

The futures contracts are spread across Physical Commodities, Global Currencies and US Treasuries. 50% of the DTI® is allocated to Physical Commodities (CTI®); the remaining 50% is allocated to Global Currencies and US Treasuries (FTI™). The mix of the two asset classes creates internal diversification within the DTI® as our internal research has shown that the commodity side and financial side are not correlated.

To arrive at the Sector weightings when Energy is flat, divide the Sector base weight by one minus the Energy Sector base weight (x/(1-0.145)).

The weighting scheme of the Indexes is fixed.

**Physical Commodities**

The commodity portion of the DTI® is based on, but not exactly proportional to, historical production figures. As a result, the Energy Sector (14.50% in the DTI®; 29% in the CTI®) receives the largest portion on the commodity side, which is logical. Energy, as measured by its production, is more significant to the global economy than Softs (4.50% in the DTI®; 9% CTI® – each assuming Energy Sector is positioned long) and this is reflected in the weighting allocations. Physical Commodities will represent 50% of the DTI® when Energy is positioned long and 41.52% when Energy is positioned flat.

Correlated Components are grouped into Sectors in an attempt to avoid false trading signals (whipsaw markets: price trends that reverse quickly). This "Sector" process helps to create a more consistent and robust return stream. As an example, Gold and Silver are correlated and grouped together to form the Precious Metals Sector, which has a weighting of 5.25% in the DTI® (10.5% in the CTI®) when Energy is long. Each month, the Precious Metals Sector will be positioned either long or short depending upon the signal generated from the trading model. This means that both Gold and Silver will always have the same position; one can never be long when the other is short.

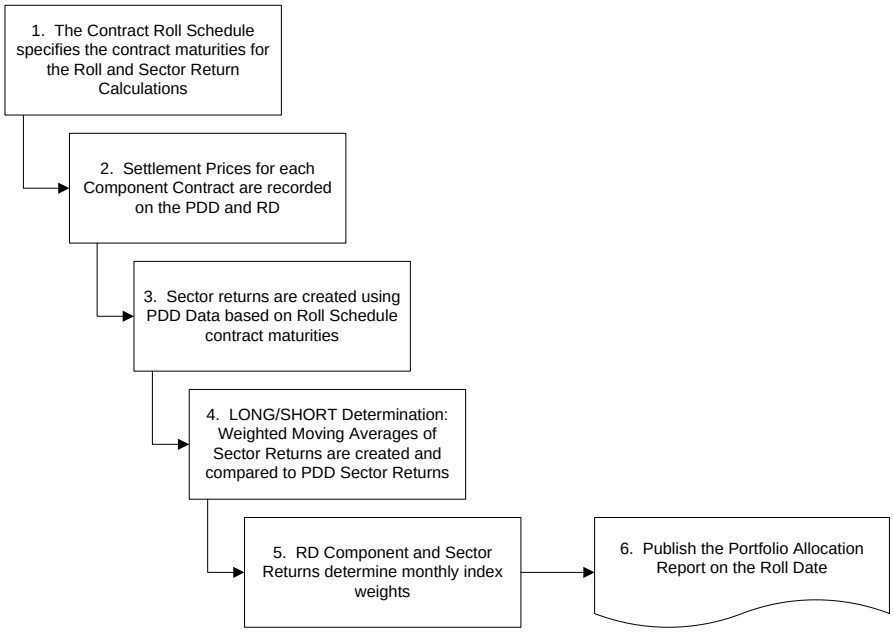
Soft commodities (Sugar, Cotton, Cocoa, and Coffee) are Sectors in and of themselves. As an example, the Coffee Sector is simply the Coffee Component. Each month, Coffee will be positioned either long or short depending upon the signal generated from the methodology.

**Currencies & US Treasuries**

The DTI®'s currencies and US Treasuries weightings are based on, but not directly proportional to, historical Gross Domestic Product (GDP) data. Therefore, the larger economic regions should get a higher weighting (e.g. Euro is 13% in the DTI® (26% in the FTI™) while the Aussie Dollar is 2.00% in the DTI® (4% in the FTI™)). Financials will represent 50% of the DTI® when Energy is positioned long and 58.48% when Energy is positioned flat.

These Components are Sectors in and of themselves. As an example, the Euro Sector is simply the Euro Component. Each month, the Euro will be positioned either long or short depending upon the signal generated from the Index methodology.

***Methodology Overview***




PDD: Price Determination Date
RD: Roll Date or End of Month

### 1. Establish Roll Contracts

The current holdings of the Indexes are based on the contract Roll Schedule. The Indexes will roll out of contracts prior to their maturity according to this fixed table.

AFT has limited the investment universe for the Indexes to US exchange-listed futures contracts mainly due to the fact that futures contracts have a daily settlement value whereby forwards contracts (i.e. OTC FX forwards) do not. The existence of a daily settlement price is essential for the purposes of obtaining accurate historical data and creating reliable pro-forma results.

**The Roll Schedule is fixed.**

| | | Roll Schedule | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Component** | **Contract** | ***JAN*** | ***FEB*** | ***MAR*** | ***APR*** | ***MAY*** | ***JUN*** | ***JUL*** | ***AUG*** | ***SEP*** | ***OCT*** | ***NOV*** | ***DEC*** |
| Natural Gas | NG | H | M | M | M | U | U | U | Z | Z | Z | H | H |
| Crude Light | CL | H | M | M | M | U | U | U | Z | Z | Z | H | H |
| RBOB Gas | XB | H | M | M | M | U | U | U | Z | Z | Z | H | H |
| Heating Oil | HO | H | M | M | M | U | U | U | Z | Z | Z | H | H |
| Live Cattle | LC | M | M | M | M | Q | Q | Z | Z | Z | Z | G | G |
| Lean Hogs | LH | M | M | M | M | Q | Q | Z | Z | Z | Z | G | G |
| Wheat | W | H | N | N | N | N | U | U | Z | Z | Z | H | H |
| Corn | C | H | N | N | N | N | U | U | Z | Z | Z | H | H |
| Soybeans | S | H | N | N | N | N | X | X | X | X | H | H | H |
| Copper | HG | H | K | K | N | N | U | U | Z | Z | Z | H | H |
| Gold | GC | J | J | M | M | Q | Q | Z | Z | Z | Z | G | G |
| Silver | SI | H | N | N | N | N | U | U | Z | Z | Z | H | H |
| Sugar | SB | H | K | K | N | N | V | V | V | H | H | H | H |
| Cotton | CT | H | N | N | N | N | Z | Z | Z | Z | Z | H | H |
| Cocoa | CC | H | N | N | N | N | U | U | Z | Z | Z | H | H |
| Coffee | KC | H | N | N | N | N | U | U | Z | Z | Z | H | H |
| J Yen | JY | H | H | M | M | M | U | U | U | Z | Z | Z | H |
| Brit Pound | BP | H | H | M | M | M | U | U | U | Z | Z | Z | H |
| Swiss Franc | SF | H | H | M | M | M | U | U | U | Z | Z | Z | H |
| Aussie $ | AD | H | H | M | M | M | U | U | U | Z | Z | Z | H |
| Canadian$ | CD | H | H | M | M | M | U | U | U | Z | Z | Z | H |
| Euro | EC | H | H | M | M | M | U | U | U | Z | Z | Z | H |
| T-Bond | US | H | M | M | M | U | U | U | Z | Z | Z | H | H |
| 10 Yr Note | TY | H | M | M | M | U | U | U | Z | Z | Z | H | H |

| **Contract Month Codes** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***JAN*** | ***FEB*** | ***MAR*** | ***APR*** | ***MAY*** | ***JUN*** | ***JUL*** | ***AUG*** | ***SEP*** | ***OCT*** | ***NOV*** | ***DEC*** |
| F | G | H | J | K | M | N | Q | U | V | X | Z |

The contract expiration applicable to Natural Gas in March (from but excluding the Rollover Date in February to and including the Roll Date in March) is the June contract.

### 2. Gather Component Contract Settlement Prices

Two settlement prices for each Component contract are used in the calculation of the final Indexes.

PDD Prices: Prices are gathered on the "Position Determination Date", the 2nd to last trading day of the month, to create monthly percentage change time series for each Sector (PDD price compared with PDD price from the month before). The time series for each Sector are then compared with their respective moving averages and the direction decision can be made for each Sector.

RD Price: Settlement prices are gathered on the Roll Date (RD), the last trading day of the month. The returns (RD Price for current Month compared with RD price from the prior month) are used to fix the weights of Components within multi-Component Sectors.

### 3. Create Sector Returns

The moving average algorithm is applied to the Sector level return history data. This is not a "spot" value comparison of a single contract but the running total percentage change from inception of the Sector. The Sector valuation is a "continuous contract" that incorporates pricing from individual contracts following the Roll Schedule.

The percentage change value is built from the PDD Pricing (settlement value on PDD of current month compared with the settlement value on the PDD from the month prior) for each Component within a Sector.

### 4. Determine Sector Long/Short Direction

The Indexes establish long or short positions once a month using a transparent, rules-based positioning process. All of the Sectors within the Indexes are positioned either long or short at each month-end (except Energy, which is positioned long or flat/neutral).

Long or short positions are always taken on the Sector level.

As an example, the Precious Metals Sector has a weighting of 5.25% in the DTI® (when Energy is long). Each month depending upon the signal generated from the trading model, Precious Metals will be positioned either 5.25% Long or 5.25% Short in the DTI® (when Energy is long). There is no relative strength screen or adjustment.

The Energy Sector is either held long or flat (no exposure) in the DTI® and CTI®. The direction decision is the same as other Sectors but a flat position replaces potential short exposure. If the Energy Sector is to be held flat on the Roll, the exposure is distributed on a pro-rata basis to all other Sectors (and their Components).

### 5. Adjust Sector/Component Weights

Sectors in the DTI® and CTI® have two "base" weights, one when the Energy Sector is long and one when the Energy Sector is flat. The Index weights are presented at inception of such Indexes.

Sector weights are fixed and rebalanced back to their base weight monthly. Components that are part of a multi-Component Sector (Energy, Livestock, Grains, and Precious Metals) are only reset back to their base weight within their Sector at the roll at the last trading day of the year.

For example (assuming Energy is long), the Japanese Yen (a single Component Sector) and the Grains (a multi-Component Sector) will rebalance to 12.00% and 11.50% of the DTI® respectively on the Roll Date. However, the individual Components within the Grains Sector will only rebalance to their base weight at the beginning of the year. During the year they "float" within the 11.50% DTI® Grains weighting.

### 6. Produce Portfolio Allocation Report

The final output of the methodology is the Portfolio Allocation Report (PAR). It contains the current weight, position and allocation of the DTI® or its sub-indexes the CTI® and FTI™. The completed PAR aggregates the current Index Components (Sector weights, Component weights, Sector direction) so that the Index may be replicated and valued each day.

| **DTI® Portfolio Allocation Report SAMPLE** | | | Active Roll Date: | | Mar 30, 2012 |
|---|---|---|---|---|---|
| **Contract Name** | **Contract Code** | **Weight** | **Position Long=1 Short =-1 Flat=0** | **Contract Month** | **Origination Price** |
| Wheat | W | 2.36% | -1 | N | 674 |
| Corn | C | 3.71% | -1 | N | 643.25 |
| Soybeans | S | 5.43% | -1 | N | 1408.25 |
| Crude Oil (Light) | CL | 8.10% | 1 | M | 103.54 |
| Heating Oil | HO | 3.09% | 1 | M | 3.1794 |
| Natural Gas | NG | 4.25% | -1 | M | 2.259 |
| Unleaded Gas | XB | 3.31% | 1 | M | 3.2493 |
| Lean Hogs | LH | 2.02% | -1 | M | 90.4 |
| Live Cattle | LC | 2.98% | -1 | M | 116.15 |
| Australian Dollar | AD | 2.00% | -1 | M | 1.0269 |
| British Pound | BP | 5.00% | 1 | M | 1.5988 |
| Canadian Dollar | CD | 1.00% | 1 | M | 1.001 |
| Japanese Yen | JY | 12.00% | -1 | M | 1.2078 |
| Swiss Franc | SF | 2.00% | -1 | M | 1.1086 |
| Treasury Bond | US | 7.50% | -1 | M | 137.75 |
| 10 Yr Note | TY | 7.50% | -1 | M | 129.484 |
| High Grade Copper | HG | 5.00% | 1 | N | 383.35 |
| Gold | GC | 3.40% | -1 | M | 1671.9 |
| Silver | SI | 1.85% | -1 | N | 3254.4 |
| Cocoa | CC | 1.00% | -1 | N | 2246 |
| Coffee | KC | 1.50% | -1 | N | 185 |
| Cotton | CT | 1.00% | -1 | N | 93.92 |
| Sugar #11 | SB | 1.00% | 1 | N | 23.82 |
| Euro | EC | 13.00% | -1 | M | 1.3339 |

**Index Creation: Technical Overview**

***Gather Prices***

1. Contract settlement prices are collected on the Position Determination Date (PDD) and Roll Date (RD).
2. For each underlying contract months the prices create a monthly % return.

| | **Wheat- Contract Return PDD (2nd LAST day)** | W-H | W-N | W-U | W-Z |
|---|---|---|---|---|---|
| ***JAN*** | **4.24%** | 4.24% | 11.34% | 11.60% | 0.00% |
| ***FEB*** | **22.02%** | 26.72% | 22.02% | 22.85% | 13.95% |
| ***MAR*** | **-5.77%** | -0.77% | -5.77% | -6.76% | -4.67% |
| ***APR*** | **-18.83%** | 0.00% | -18.83% | -17.68% | -17.52% |
| ***MAY*** | **-8.04%** | -30.99% | -8.04% | -7.77% | -7.16% |
| ***JUN*** | **20.12%** | 19.39% | 20.44% | 20.12% | 19.78% |
| ***JUL*** | **-13.62%** | -12.56% | -5.81% | -13.62% | -13.15% |
| ***AUG*** | **-0.18%** | -0.12% | 0.00% | 0.16% | -0.18% |
| ***SEP*** | **-17.63%** | -17.46% | -15.12% | -1.24% | -17.63% |
| ***OCT*** | **-19.46%** | -18.90% | -18.19% | 0.00% | -19.46% |
| ***NOV*** | **-0.85%** | -0.85% | -0.77% | -22.55% | -0.46% |
| ***DEC*** | **9.16%** | 9.16% | 8.17% | 7.46% | 1.31% |
| ***JAN*** | **-4.42%** | -4.42% | -4.14% | -3.51% | 0.00% |

| **Sample Roll Schedule: Wheat** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***JAN*** | ***FEB*** | ***MAR*** | ***APR*** | ***MAY*** | ***JUN*** | ***JUL*** | ***AUG*** | ***SEP*** | ***OCT*** | ***NOV*** | ***DEC*** |
| H | N | N | N | N | U | U | Z | Z | Z | H | H |

3. Create two time series based on monthly percentage change figures for each of the PDD Prices and RD Prices. The example above is a "Continuous Contract" for Wheat. Note that the Roll Schedule is used to select returns to build this history.

***Continuous Contract: Monthly % Return (PDD)***

$$MR_c(PDD) = \frac{SetP_c(PDD)}{SetP_c(PDD-1)} - 1$$

Where:

**PDD:** Position Determination Date; 2nd last trading day of the month

**MRc(PDD):** Monthly Return on the Position Determination Date of Component "c".

**SetPc(PDD):** the Settlement Price of the Roll Contract (see Roll Schedule) on the PDD of the Index Component "c".

**SetPc(PDD-1)**: the Settlement Price of the Roll Contract (see Roll Schedule) of Component "c" on the PDD immediately preceding the PDD.

***Sector Index Return***

**Annual Cumulative % Return**

Where the Sector is a single-Component Sector (i.e. Copper, Natural Gas and each Financial Component and Soft Component), the PDD and RD Continuous Contracts shall be used defined as the Sector Return for determining monthly direction (long/short).

Sector returns on the PDD are built on Component Returns and Component's base weights within Sectors:

$$SCR_j(PDD) = \frac{\sum_{c=1}^{n(j)} w_c(0) \times CR_c(PDD)}{\sum_{c=1}^{n(j)} w_c(0)}$$

Where:
**SCRj(PDD)**: The Sector Cumulative Return on the PDD of Sector "c".
**wc(0):** The Component "c" base weight
**CRc(PDD):** the Cumulative Return on the PDD of the Index Component "c".
**n(j):** means the number of Index Components comprising the Sector "j".
**c:** The Component "c".

**Monthly % Return**

On the PDD in January of each year the annual percentage return resets:

$$SMR_j(PDD) = SCR_j(PDD)$$

Otherwise:

$$SMR_j(PDD) = \frac{1 + SCR_j(PDD)}{1 + SCR_j(PDD-1)} - 1$$

**SMRj(PDD):** the Monthly Return on the PDD of Sector "j"
**SCRj(PDD):** the Cumulative Return on the PDD of the Sector "j".
**SCRj(PDD-1):** the Cumulative Return of the Sector "j" on the PDD immediately preceding the PDD.

**Sector Index Return**

The Sector Index Return is an input into the Sector Weighted Moving Average formula:

$$SIR_j(PDD) = \left(1 + SIR_j(PDD-1)\right) \times \left(1 + SMR_j(PDD)\right) - 1$$

**SIRj(PDD):** The Sector Index Return on the PDD for Sector "j"
**SIRj(PDD-1):** The Sector Index Return for Sector "j" on the PDD immediately preceding the PDD.
**SMRj(PDD):** the Monthly Return on the PDD of Sector "j"

**Apply Moving Average to Sector Returns**

The Sector returns (based on PDD Continuous Contracts) are compared with their weighted moving average (giving higher weights to more recent values). This is demonstrated graphically in the chart below.

The long/short (Energy Sector is long or flat but never short) decision is based on the rule that if the Sector monthly return is plotted below its moving average, the Sector is held short the following month. If the Sector is plotted above its moving average it is held long. All Components within a Sector are held in the same direction.

**Direction Decision: Weighted Moving Average**

The Indexes use a Weighted Moving Average (WMA) to determine whether to hold a Sector long or short (Energy Sector is long or flat but never short) during the month.

All Sectors maintain the same WMA inputs:

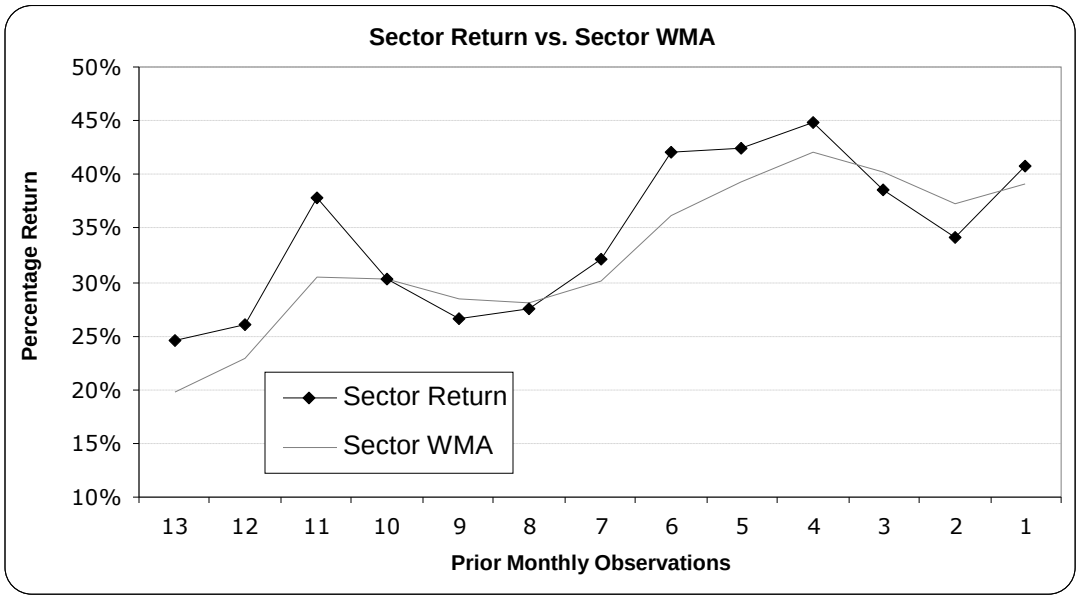
- Number of months: 7
- Weighting multiplier: 1.6

The WMA for Sector "j" is defined as:

$$WMA_j = \frac{1}{43.072575} * \sum_{n=0}^{6} 1.6^j * SIR_j(PDD)$$

The $WMA_j$ is then compared with the Sector Index Return for Sector "j" ($SIR_j$) to determine whether the Sector "j" will be held long (1), short (-1) or flat (0) after the roll. This is the Long Short Neutral Direction (LSND). All Components of the Sector "j" will maintain the same direction for the month.

$$LSND = \begin{cases} +1 & \text{if } SIR_j \geq WMA_j \\ -1 & \text{if } SIR_j < WMA_j \text{ where Sector j} \neq \text{Energy} \\ 0 & \text{if } SIR_j < WMA_j \text{ where Sector j} = \text{Energy} \end{cases}$$




***Sector Monthly Rebalancing***

Each month-end Roll will reset the current Sector weight back to its base weight. During the month the relative weights of the Sectors will change due to performance of the underlying Components.

$$sw_j(RD) = sw_j(0)$$

If LSND for the Energy Sector = 0

$$sw_j(RD) = \frac{sw_j(0)}{\left(1 - sw_{Energy}(0)\right)}$$

Where:
**swj(RD):** The weight of Sector "j" on the Roll Date
**swj(0):** The base weight, of Sector "j"
**swEnergy(0):** The base weight of the Energy Sector

***Monthly Multi-Component Sector Weighting***

Each month all Sectors rebalance to their base weights. The Components within Multi-Component Sectors (the Grains, Livestock, Energy, and Precious Metals) only rebalance to their base weights at the last Roll Date of the year. During the year these Component weights fluctuate within their Sectors.

Component valuations on the Roll Date (RD), the RD Prices, determine the weights of each Component within the Grains, Livestock, Energy, and Precious Metals Sectors. This process is similar to the values taken on the PDD, the PD Prices, for LSND determination.

Multi-Component Sectors will use the individual Component returns to create a Sector Return.

**Continuous Contract: Monthly % Return (Roll Date)**

$$MR_c(RD) = \frac{SetP_c(RD)}{SetP_c(RD-1)} - 1$$

Where:
**RD:** Roll Date; the last trading day of the month
**MRc(RD):** the Monthly Return on the Roll Date of Index Component "c".
**SetPc(RD):** the Settlement Price of the Roll Contract (see roll schedule) on the RD of Component "c".
**SetPc(RD-1)**: the Settlement Price of the Roll Contract (see roll schedule) of Component "c" on the RD immediately preceding the RD.

**Component Return: Annual % Return (Roll Date)**

On the RD in January of each year the annual percentage return resets:

$$CR_c(RD) = MR_c(RD)$$

Otherwise,

$$CR_c(RD) = \left(1 + CR_c(RD-1)\right) \times \left(1 + MR_c(RD)\right) - 1$$

Where:
**CRc(RD)** the Cumulative Return on the RD of Component "c".
**MRc(RD)** the Monthly Return on the RD of Component "c".
**CRc(RD-1)** the Cumulative Return of Component "c" on the RD immediately preceding the RD.

**Sector Index Return: Annual Cumulative % Return (Roll Date)**

Sector returns on the RD are built on Component Returns and each Component's base weight within Sectors:

$$SCR_j(RD) = \frac{\sum_{c=1}^{n(j)} w_c(0) \times CR_c(RD)}{\sum_{c=1}^{n(j)} w_c(0)}$$

Where:
**SCRj(RD)**: The Sector Cumulative Return on the RD of Sector "j".
**wc(0):** The Component "c" base weight
**CRc(RD):** the Cumulative Return on the RD of Component "c".
**n(j):** means the number of Index Components comprising the Sector "j".
**c:** The Component "c".

**Component Weights (Annual Roll Date)**

Each year-end Roll on the Roll Date in December will reset the current Sector weight back to its base weight for January. This is modified if the Energy Sector is flat. The Weights of Components within Multi-Component Sectors for the annual roll will be:

$$w_c(RD) = w_c(0)$$

If LSND for the Energy Sector = 0

$$w_c(RD) = \frac{w_c(0)}{\left(1 - sw_{Energy}(0)\right)}$$

Where:
**wc(RD):** The weight of Component "c" on the Roll Date
**wc(0):** The Component "c" base weight
**swEnergy(0):** The base weight of the Energy Sector

**Component Weights (Intra-year Roll Date)**

During the year Component weights within Multi-Component Sectors are allowed to "float" according to the following formula:

$$w_i(RD) = LSNP_{Energy}(PDD) \times w_i(0) \times \frac{\left(1 + CR_c(RD)\right)}{\left(1 + SCR_j(RD)\right)}$$
$$+ \left(1 - LSND_{Energy}(PDD)\right) \times \left(\frac{1}{1 - sw_{Energy}(0)}\right) \times w_i(0) \times \frac{\left(1 + CR_c(RD)\right)}{\left(1 + SCR_j(RD)\right)}$$

Where:
**$LSND_{Energy}$(PDD):** Long, Short or Neutral Direction for the Energy Sector. This value is determined on the PDD preceding the RD and is either a 1(long) or 0(flat) for the Energy Sector.
**$w_c$(0):** The Component "c" base weight
**$CR_c$(RD):** the Cumulative Return on the RD of the Index Component "c".
**$SCR_j$(RD):** The Sector Cumulative Return on the RD of Sector "j".
**$sw_{Energy}$(0**): The Sector base weight for the Energy Sector.

**Index Calculation**

Index values are calculated daily after the close of the underlying Component markets. Each futures exchange will publish a settlement value for each Component and these prices create a daily "P/L" for the Index.

Valuing the Indexes requires settlement prices for the specific contract maturities detailed in the PAR.

***Calculation of Price Return***

One data point on the PAR is a theoretical number of contracts held to replicate the Indexes presuming an unleveraged portfolio size of ten million US Dollars. These contracts are unrounded and may serve as the basis for a daily Index return.

Each day the settlement value for the contracts held in the theoretical portfolio should be compared with the settlement price of the contracts in the PAR. This price move, the direction and the contract multiplier (all on the PAR) will determine a daily Component P/L that can be summed to understand the performance of the $10MM portfolio. The dollar appreciation can be compared to the beginning of month level to determine a daily percentage change in the Index level.

***Price Return***

Each trading day the Indexes will be valued based on the settlement prices of their respective Component contracts. The Price Return is a sum of the contract percentage changes that does not include any interest component.

$$DTIPR(t) = DTIPR(RD) \times \left( 1 + \sum_{c=1}^{Z} \left( LSND_c(RD) \times w_c(RD) \times \left( \frac{SetP_c(t)}{SetP_c(RD)} - 1 \right) \right) \right)$$

Where:
**DTIPR(t):** The value of the DTI® PR on day "t"
**DTIPR(RD):** The value of the DTI® PR on the Roll Date preceding day "t"
**t:** the current Trading day
**$LSND_c$(RD):** The Long Short Neutral Direction of the Component "C". This value is either a 1, -1, or 0.
**$w_c$(RD):** The weight of Component "c" on the Roll Date
**$SetP_c$(t):** The settlement price of Component "c" on day "t"
**$SetP_c$(RD):** The settlement price of Component "c" on the Roll Date

Note that positions roll at the close of business on the Roll Date. Index valuations on the Roll Date (t=RD) will refer to the prior Roll Date for Component prices, direction, and weights.

***Total Return Calculation***

The "Total Return" of each Index simulates the returns of implementing such AFT Index in a futures trading account. The interest return on futures "collateral" is represented by the yield of a three month US Treasury Bill contract that is rolled quarterly. The daily yield is added to the Index returns and, on the Roll, the interest is invested in the Index resulting in a compounding effect.

An example of the DTI® Total Return Calculation is as follows:

At the Index inception the DTI® Total Return (DTITR) base value is 1000:

DTITR(0)=1000

On a given trading day "t":

DTITR(t) = I(t) + R(t)

For any time t (t > RD):

$$I(t) = DTITR(RD) \times \left( 1 + \frac{DTIPR(t) - DTIPR(RD)}{DTIPR(RD)} \right)$$

Where:
**I(t):** The value of the DTI® without the most recent quarterly impact of the interest rate component on trading day "t"
**DTITR(RD):** The value of the DTI® Total Return on the Roll Date (RD) prior to day "t"
**DTIPR(RD):** The value of the DTI® PR on the Roll Date preceding day "t"

Note that positions roll at the close of business on the Roll Date at their settlement prices. Index valuations on the Roll Date (t=RD) will refer to the prior Roll Date for Component prices, direction, and weights.

The Interest Rate (R(t)) is reinvested in the Index on the quarterly Roll Date and calculated as:

$$R(t) = DTITR(RD) \times \sum_{t=RD+1}^{t} \left( rate(t_{-1}) \times \frac{(t - t_{-1})}{360} \right)$$

Where:

**R(t):** The value of the interest rate component on day "t"

**DTITR(RD):** The value of the DTI® Total Return on the Roll Date (RD) prior to day "t"
**RD:** The Roll Date prior to day "t"
**$t_{-1}$:** The trading day immediately preceding day "t"
**rate($t_{-1}$):** The US 3-Month T-Bill rate at auction as published on Bloomberg page GB3 <Govt>

**Index Committee**

In order to provide for the smooth functioning of the Indexes, the Index Committee will make any decisions that cannot be systematized or that occur on an *ad hoc* basis. For instance, the Index Committee will address any circumstances that may arise, the treatment for which is not sufficiently documented in this paper. The Index Committee will implement established methodology or determine new policy if market conditions warrant change. The Index Committee may modify the calculation methodology for each Index systematically or on an *ad hoc* basis, as described below. The objective of the Index Committee is always to maintain or improve liquidity in the Indexes. It is never the objective of the Index Committee to improve or degrade the performance of the Indexes (although Index performance may be affected as a result of actions taken by the Index Committee).

***Nominated Committee Members***

- Victor Sperandeo
- Adam Watts
- Dwayne Williams

New members may be added to the Index Committee if agreed by all of the existing members of the committee at the time such decision is taken. Any current member (other than Victor Sperandeo) may be removed from the Index Committee if agreed by all other existing members of the committee at the time such decision is made.

**Index Publication**

***Calculation Agent***

Alpha Financial Technologies, LLC

Daily and historical DTI® values are available at www.aftllc.com.

**Market Limit Moves/Market Disruption Events**

It is possible for there to be a limit move in one or more of the underlying futures contracts.[3]

The daily Index calculation is typically indifferent to a Component limit move as the settlement value of the particular contract would simply be the limit value for that day. As a result, replicating an Index when a contract is limit up or limit down may cause slippage with the benchmark Index.

If a limit move occurs on a Roll Date and the settlement price of the particular contract is determined by the limit price, then the Index Committee acting in a commercially reasonable manner may adjust the closing value of each affected Index in a manner that disregards the official settlement price and instead replaces that price with a price at which an Index licensee replicating each affected Index could fill an order to buy and sell the affected futures contract(s) on such day. There are some situations meeting this set of criteria for which the Index Committee would not use a price for a Component that differs from its official settlement price.

The Index Committee acting in a commercially reasonable manner will determine the price for the affected futures contract(s) by sourcing a reasonable, market-based, price for an equivalent risk instrument as the limit-priced futures

[3] A "limit move" refers to a suspension of or limitation on trading by an Exchange or the Commodity Futures Trading Commission by reason of movements in the price of one or more futures contracts of an Index Component reaching the limit price permitted by such Exchange or the CFTC (as the case may be) on a given day.

contract(s) (which includes but is not limited to the pricing of deep in-the-money puts and calls which can be executed).

If the Index Committee is considering modifying the calculation methodology for any Index due to market disruption or a limit move on a Roll Date, the Index Committee will use commercially reasonably efforts to notify Index licensees and calculation agents of this decision or possibility thereof on a timely basis. The Index Committee will use commercially reasonable efforts to provide, on a timely basis, Index licensees and calculation agents with the prices used to determine the Index closing level whenever a change is made.

**Holidays**

The Indexes follow the New York Stock Exchange (www.nyse.com) holiday calendar. US Futures Exchanges do not disseminate settlement values on these holidays.

**Adjustment Events**

The calculation methodology for the Indexes may be adjusted, amended, deleted or otherwise altered by the Index Committee, acting in good faith in a commercially reasonable manner at any time, on such date as the Index Committee shall designate. These adjustments may include, but are not limited to the following:

*(a)* *Illegality*: any adjustments required because it has become unlawful in any applicable jurisdiction for an Index licensee to sell or purchase any of the Index Components; or

*(b)* *Calculation Agent*: any adjustments required as a result of the Calculation Agent ceasing or advising it will cease, for any reason, to calculate an Index; or

*(c)* *Clarificatory:* any adjustments required for clarificatory or for minor or technical reasons; or

*(d)* *Integrity:* such other adjustments as are necessary to ensure the integrity of the Index.

each an "**Adjustment Event**". The Index Committee will use commercially reasonable efforts to provide, on a timely basis, Index licensees and calculation agents with prior notice of all Adjustment Events.

**Determination and Calculation**

Unless otherwise expressly stated, all Index calculations shall be made by the Calculation Agent and all such calculations and determinations shall be final and binding (save in the case of manifest error).

Whilst it is intended that the Calculation Agent will employ the methodology described in this paper to make determinations in respect of each Index, no assurance can be given that market, regulatory, judicial or fiscal circumstances or any other circumstances will not arise that would necessitate a modification or change in such methodology. As a result, any such circumstance (or other Index calculation issue that may arise, the treatment for which is not sufficiently documented in this paper) shall be promptly referred to the Index Committee for deliberation. The Index Committee may make any such modification or change to such methodology that it considers necessary to reflect such circumstances. The Index Committee will use commercially reasonable efforts to provide, on a timely basis, Index licensees and calculation agents with prior notice of all such modifications.

**Amendments Made to Methodology for the Indexes**

Appendix A contains a list of those amendements made to the methodology for the Indexes since the inception of the Indexes on January 1, 2004.

**Glossary**

| | |
|---|---|
| Component | One of the underlying contracts in the AFT Indexes. A Component may be part of a multi-Component Sector (e.g. Wheat is in the Grains Sector) or a single Component Sector (e.g. the Euro contract is the only Component of the Euro Sector) |

| | |
|---|---|
| Energy Flat | If the Energy Sector return is underperforming the moving average return the DTI® and CTI® will hold no exposure (flat position) to the Sector. Exposure that would normally be allocated to Energy will be distributed to the other Sectors. |
| RD or Roll Date | The last trading day of the month. |
| RD Prices | Values recorded on the last day of the month are used to calculate the weight of Components within a multi-Component Sector (Grains, Livestock, Energy, and Precious Metals Sectors). They also determine the number of contracts required to align a portfolio with the Index weighting. |
| Long-Short Decision | Each month each Sector's performance is compared to a specified moving average. If a Sector is outperforming the moving average the Sector will be held long for the next roll, if underperforming, the position will be short. Note that Energy is an exception as it may only be held long or flat. |
| PDD | The 2nd to last trading day of the month; the Position Determination Date<br>The PDD returns time series is a comparison of the settlement price of a Component on the PDD of the prior month to the PDD of the current month. |
| PDD Prices | The prior day prices are the basis for the Sector time series that create the moving average. It is the comparison of the PDD time series to the moving average that results in a Long-Short Decision. The PDD Prices are not used to value the Index. |
| Roll | Each roll period during which the Sector Components and Sectors are re-weighted, a long-short direction change may occur, and contracts may roll from near-month to a longer dated month. |
| Sector | A grouping of similar individual Components. The multi-Component Sectors that are considered for calculation purposes are Energy, Livestock, Grains and Precious Metals. Sectors are rebalanced on the Roll Date to their base weights but the weights of Components within these Sectors are allowed to vary. |

## Appendix A

Amendments Made to the Methodology for the Indexes Since the Inception of the Indexes on January 1, 2004:

- Amended to change the Calculation Agent from Standard & Poor's to Bloomberg. (*Effective as of November 15, 2009*).

- Amended to reflect that the Indexes shall cease being calculated using a random computer selection of any one of five business days after the end of the month as the monthly roll date (the "Random Roll Date"), with positions being determined the trading day before the last trading day of the month, based in each case on the daily settlement prices of the respective futures contracts represented in the methodology, and commence being calculated with the monthly roll date being the last trading day of the month (the "End of Month Roll Date") and the positions being determined the prior trading day, based in each case on the daily settlement prices of the respective futures contracts represented in the methodology. (*Effective as of November 15, 2009*).

- Amended to reflect that the DTI® and CTI® shall commence using a slightly different contract schedule for Copper and Gold than that used previously. (*Effective as of November 15, 2009*).

- Amended to reflect the action that the Index Committee is permitted to take in the event of a "limit move" in the price of an Index Component or other market disruption event on a Roll Date. (*Effective as of June 30, 2011*).

- Amended to add Brad White as an additional Index Committee member. (*Effective as of June 30, 2011*).

- Amended to clarify the discretion that the Index Committee possesses discretion to adjust the methodology for the Indexes in response to certain specified Adjustment Events or any other circumstances that may arise that would necessitate a modification or change in such methodology for the Indexes. (*Effective as of August 1, 2011*).

- Amended to clarify that new members of the Index Committee must be approved by all existing members, and that current members (other than Victor Sperandeo) may be removed from the Index Committee if agreed by all other existing members. (*Effective as of August 1, 2011*).

- Amended to clarify that Index calculations shall be made by the Calculation Agent and all such calculations and determinations shall be final and binding (save in the case of manifest error). (*Effective as of August 1, 2011*).

- Amended to change the construction of the Energy Sector of the DTI® and CTI® and the creation of a Natural Gas Sector. The base weight of the Energy Sector will be reduced to reflect the extraction of the Natural Gas Component. The Natural Gas Sector, represented by the Natural Gas Component, may be held either long or short by the respective Indexes. (*Effective as of May 1, 2012*).
    - Effective as of May 1, 2012, when the Energy Sector is position flat for a given month, the weighting allocated to the other Sectors for such month will be lower than the weighting that would have been allocated to the other Sectors prior to May 1, 2012, as (i) the weighting of the Energy Sector has been reduced due to the extraction of the Natural Gas Component and (ii) a portion of the Energy Sector's weighting will be allocated *pro-rata* to the Natural Gas Sector.

- Amended to remove Brad White as an Index Committee member and add Dwayne Williams as an Index Committee member. (*Effective as of June 18, 2014*).

- Amended to change the Calculation Agent from Bloomberg to Alpha Financial Technologies, LLC. (*Effective as of July 1, 2016*).

*Changes to any Index methodology may have a material impact on the results of such Index, whether positive or negative.*

## Certain Risk Factors & Disclosures

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