



# THE DIAPASON COMMODITIES INDEX®



**2011 Version**  
January, 2011

## **DIAPASON COMMODITIES INDEX® MANUAL 2011**

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*The information presented in this DCI® Manual mirrors the methodology that is used for deciding on the composition and calculation of the Diapason Commodities Index® (DCI®).*

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# DIAPASON COMMODITIES INDEX® MANUAL 2011

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## **DIAPASON COMMODITIES INDEX® MANUAL 2011**

**The committee governing the DCI® has decided to do the following changes:**

- To reflect changes in liquidity figures, the TGE Non-GMO Soybean Futures contract will be replaced by the TGE Soybean Future contract.
- The committee has also decided to modify the “Business Day” definition by increasing the level of contracts open to the trading on a specific day (sum of initial weights) from 0.8 to 0.9.
- Due to its very specific Open Interest (OI) and liquidity profiles (OI split all along the curve; poor liquidity), it has been decided that the weight of the coal will be capped to its 2010 initial weight until the liquidity will increase on the traded months.

This new rule has been defined to improve the DCI® replication.

**Those changes will be implemented during the January 2011 roll period.**

# DIAPASON COMMODITIES INDEX® MANUAL 2011

## 1. Preface

The Diapason Commodities Index (“DCI®” or the “Index”) is designed to provide a broad yet liquid representation of large, mid and small commodity futures inside the Organisation for Economic Co-operation and Development. The OECD region covers exchanges in Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea (South), Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. The Index was created by Diapason Commodities Management (“DCM”) in July 2006.

The index consists of 47 components that cover four major raw material divisions: agriculture products 22.48%, base metals 13.83%, precious metals 11.62%, and energy 52.07%.

## 2. DCI® Methodology

### 2.1. DCI® Construction

Diapason Commodities Management, which created the DCI®, used two main principles in designing the Index:

- World Trade Significance (WTS)
- World Contract Liquidity (WCL)

#### **(1) World Trade Significance**

A commodity will be considered fit to be included in the index if it represents a significant role (larger than 0.1% of total world trade) in international exports. Precious metals, electricity, and ethanol weightings are excluded from this export screening process. Precious metals, petroleum distillates and ethanol are only included on the basis of corresponding world production shares. The weight of electricity is purely based on its WCL.

#### **(2) World Contract Liquidity**

WCL is defined as the most recent average combined market value and open interest. A commodity will be considered fit to be included if its WCL exceeds 25'000'000 USD. Worldwide, 84 contracts are for that reason currently eligible as of December 15<sup>th</sup> 2010. All DCI® contracts have to pass the WCL threshold. DCM has the right to adjust this threshold whenever identified as appropriate.

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## 2.2. DCI® Weights

### 2.2.1 Primary Initial Weights (PIW)

Primary Initial Weights are defined as the sum of 33.33% WTS Weights and 66.67% WCL Weights.

### 2.2.2 Cap components with PIW exceeding 10 times World Contract Liquidity Weights

We cap the components for which Primary Initial Weight exceeds 10 times the World Contract Liquidity Weight. We reallocate the excess weight proportionally to the other components.

The resulting weights are the Initial Weights (IW) of the DCI®.

### 2.2.3 Cap components with $IW(n)$ exceeding 2 times $IW(n-1)$

The Initial Weight in year  $n$ ,  $IW(n)$ , of a component can not exceed 2 times its Initial Weights in year  $n-1$ ,  $IW(n-1)$ :

So if  $IW(n) \geq 2 \times IW(n-1)$  then  $IW(n) = 2 \times IW(n-1)$  and the “excess weight” will be reallocated proportionally to other components.

### 2.2.4 Cap on specific components

Due to poor liquidity and trading issues on designated components, the Index committee decided to add a specific cap equal to their previous year Initial Weight (IW 2010):

- ICE Rotterdam Coal Monthly (XA) initial weighting is capped to 0.536%

The “excess weight” is reallocated proportionally to other components.

The resulting weights are the Initial Weights (IW) of the DCI®.

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### 2.3. Definition

<i>CC</i>	Continuity Constant. The constant used to maintain continuity of the Price Index during the re-balancing periods.
<i>MCW</i>	Monthly Contract Weight. The nominal weights or Scalars multiplied DCP and calculated on the business day preceding the start of the roll period such that on such day, Initial weights are equal to effective index weights.
<i>IW</i>	Initial Weight. The Percentage Index weight fixed for each component represented in the DCI® index methodology and ratified by the DCI® committee.
<i>DCP</i>	Daily Contract Price: is the daily reference price used in the calculation of the index. First and second DCI® nearby are designated by the DCI® committee.
<i>FX</i>	FX is the Foreign currency rate used to convert a Futures contract value expressed in its original currency to the currency in which the index is quoted. The expression of FX is given according to market standard and practices and adjusted by the CRY factor.
<i>CRY Factor</i>	The CRY Factor is the adjusting factor used in the foreign currency conversion.
<i>DCW</i>	The Daily Component Weight is the product of currency adjusted Daily Contract Prices (DCP) with Monthly Contract weights (MCW).
<i>TCW</i>	For an index, the Total Component Weight (TCW) is the sum of Daily Component weights (DCW).
<i>RW</i>	Roll Weight, is for each component, the weight associated to the first and second DCI® nearby for each day of the roll period. During the roll period, the RW can take the values 1.0, 2/3, 1/3 and 0.0.
<i>TCWR</i>	The Total Component Weight Ratio of Total Component Weight in use on the day prior to the first roll day of the re-weighting periods and used in order to maintain continuity of the Total Component Weight during those transition periods.
<i>BDR</i>	The Basket Daily return is the daily composite basket return weighted appropriately by RWs and MCWs to reflect assets held from one DCI® Business Day to the next.

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<b>IRR</b>	Interest Rate Return is the return reflecting the fixed income performance of the index in its designated currency from one DCI® Business Day to the next.
<b>ARR</b>	For any DCI® Business Day, the Available Reference Rate is the rate of interest associated with the reference price source to which the Available Reference Rate adjustment is added.
<b>PI</b>	Price Index or the simple measure of composite basket price level notwithstanding any adjustment due to rolls. The Price index is only tradable at maturity and its forward price curve follows forward price curve of its underlying constituents.
<b>ER</b>	Excess Return Index, measures the uncollateralized returns of the DCI® basket on a roll adjusted basis.
<b>TR</b>	Total Return Index, measures the collateralized returns of the DCI® basket.

### 3. THE DCI® Calculation

Diapason Commodities Management calculates and published three indices:

- The “Price Index” (DCI® -PI),
- The “Excess return” (DCI® -ER),
- The “Total Return” (DCI® -TR).

#### 3.1 The DCI® Price Index (DCI® PI)

##### 3.1.1 Price Index calculation during non roll periods

The DCI® Price Index (DCI®-PI) tracks the price level of commodities represented in the index.

The DCI® Price Index is equal to the Total Component Weight (TCW) divided by the Continuity Constant (CC).

The TCW for any given non-roll date is calculated as the sum of adjusted Daily Contract Prices (DCP), times respective Monthly Contract Weights (MCW). The DCP are adjusted by price scalars reflecting reference currency rates versus the U.S. Dollar such that all DCP adjusted are expressed in U.S. Dollars. For non-roll days we have:

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$$DCI®-PI_t = \frac{\sum_{c=1,N} DCW_{c,t}}{CC} = \frac{TCW_t}{CC} \quad (1)$$

Where:

$$DCW_{c,t} = DCP_{c,t} \times MCW_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}} \quad (2)$$

$MCW_{c,t}$  is the Monthly Contract Weight for each Index component,

$DCP_{c,t}$  is the Daily Contract Price in the local currency,

$FX_{c,t}$  is the Currency exchange rate between the quotation currency of the component instrument and the index reference currency. For official settlement price, the DCI® Index use a direct or USD cross fixing price,

CRY Factor is +1 or -1 (see table I.B below)

**TABLE I.B . DEFINITION CRY EXCHANGE RATES, CRY FACTORS DEFINITIONS.**

CCY	CCY		Quotation	CRY Factor	Rate Source
USD	USD			1	
CAD	CAD	USD-CAD	CAD per USD	-1	BB: CAD Curncy HP <GO>
JPY	JPY	USD-JPY	JPY per USD	-1	BB: JPY Curncy HP <GO>
AUD	AUD	AUD-USD	USD per AUD	1	BB: AUD Curncy HP <GO>

### 3.1.2 The Roll period - Index Rebalancing and continuity

On the DCI®, the roll occurs during the last three DCI® business days of the month. During the roll period, the index is shifted from the first to the second nearby baskets at a rate of 33.33% per day.

On the last DCI® Business Day, the roll is completed unless the roll period is extended for a component as a result of a market disruption event such as a limit day or a market disruption event.

During the roll period of each month the Index is rebased towards Initial Weights (IW), as defined by the DCI® committee.

The DCI® will roll into new Monthly Contract Weights (MCWs) and Continuity Constants (CCs). On the day before the start of the roll period, the DCI® is calculated based on the old MCWs and CCs of the current DCI® period.

During the roll period the calculation of Total Component Weight takes the following expression:

$$DCI®-PI_t = \frac{TCW_t}{CC} \quad (1)$$

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Where:

$$TCW_t = \frac{CC_{new}}{CC_{old}} \left[ \sum_{c=1,N} MCW_{c,old} \times RW1_{c,t} \times DCP1_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}} \right] + \sum_{c=1,N} MCW_{c,new} \times RW2_{c,t} \times DCP2_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}} , \quad (3)$$

Where RWs can take the following values

$$RW_c = \{1, 1/3, 2/3, 0\} ,$$

With

$$TCWR_t = \frac{\sum_{c=1,N} MCW_{c,new} \times DCP2_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}}}{\sum_{c=1,N} MCW_{c,old} \times DCP2_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}}} , \quad (4)$$

And

$$CC_{new} = TCWR_t \times CC_{old} , \quad (5)$$

If there is a disruption event on or beyond the last 3 business days of the Month, the amount to be rolled will be carried forward until the next DCI® business day.

The calculation of the new MCWs and CC is effected monthly, at close of business on the business day immediately preceding the first roll day (i.e. the fourth to last business day of the month).

On that day, the new MCWs are solved such that the calculated effective weights match the Initial Weights (IW) defined by the DCI® Committee.

We define  $MCW_{c=R,new} = x = 10000$  , where  $R (1 \leq R \leq N)$  and 10000 is an arbitrary constant.

We then solve for each component i,

$$\frac{MCW_{i,new} \times DCP_{i,t} \times [FX_{i,t}]^{CRY \text{ Factor}}}{\sum_{c=1,N} MCW_{c,new} \times DCP_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}}} - IW_i = 0 \quad (6)$$

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Which have the following analytic solution:

$$\begin{aligned}
 MCW_1 &= \frac{IW_1 \times DCP_R \times [FX_{R,t}]^{\text{CRY Factor}}}{IW_R \times DCP_1 \times [FX_{1,t}]^{\text{CRY Factor}}} x \\
 MCW_2 &= \frac{IW_2 \times DCP_R \times [FX_{R,t}]^{\text{CRY Factor}}}{IW_R \times DCP_2 \times [FX_{2,t}]^{\text{CRY Factor}}} x \\
 MCW_3 &= \frac{IW_3 \times DCP_R \times [FX_{R,t}]^{\text{CRY Factor}}}{IW_R \times DCP_3 \times [FX_{3,t}]^{\text{CRY Factor}}} x \\
 &\vdots \\
 MCW_R &= x
 \end{aligned} \tag{7}$$

Once the new MCWs are determined, the new Continuity Constant is calculated using equation (5) above.

### 3.2 The DCI® Excess Return (DCI® ER)

#### 3.2.1 Calculation during non roll periods

The DCI® ER is an Excess Return Index. It represents the uncollateralized return of the DCI® basket. The index is calculated according to the following formula:

Define BDR (Basket Daily Return) as:

$$BDR_t = \frac{TCWF_t}{TCWI_{t-1}} - 1 \tag{8}$$

With

$$TCWI_{t-1} = \sum_{c=1,N} DCP_{c,t-1} \times [FX_{c,t-1}]^{\text{CRY Factor}} \times MCW_{c,t-1} \tag{9}$$

$$TCWF_t = \sum_{c=1,N} DCP_{c,t} \times [FX_{c,t}]^{\text{CRY Factor}} \times MCW_{c,t-1} \tag{10}$$

Where

TCWF is the Total Component Weight Final  
 TCWI is the Total Component Weight Initial

The expression of the DCI® ER is:

$$DCI^{\text{®}}-ER_t = DCI^{\text{®}}-ER_{t-1} \times (1 + BDR_t) \tag{11}$$

The DCI® ER is set equal to 1000 on 31<sup>st</sup> of July 1998.

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### 3.2.2 Calculation during roll periods

The Basket Daily Return is defined as the percentage change in the TCW of the DCI® from one DCI® Business Day to the next. It reflects the return that would have been realized by holding positions in the first and second DCI® nearby contracts appropriately weighted to reflect the MCWs (IW), from the closing of the exchange on the prior DCI® Business Day to the closing of the exchange on the next DCI® Business Day.

The Roll weights (RW) used to calculate TCWI and TCWF are the one used to calculate the Total Component Weight on the Business Day immediately preceding the calculation date.

During the roll period we have:

$$TCWI_{t-1} = \frac{CC_{new}}{CC_{old}} \left[ \sum_{c=1,N} MCW_{c,old} \times RW1_{c,t-1} \times DCP1_{c,t-1} \times [FX_{c,t-1}]^{CRY \text{ Factor}} \right] + \sum_{c=1,N} MCW_{c,new} \times RW2_{c,t-1} \times DCP2_{c,t-1} \times [FX_{c,t-1}]^{CRY \text{ Factor}} \quad , \quad (12)$$

and

$$TCWF_t = \frac{CC_{new}}{CC_{old}} \left[ \sum_{c=1,N} MCW_{c,old} \times RW1_{c,t-1} \times DCP1_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}} \right] + \sum_{c=1,N} MCW_{c,new} \times RW2_{c,t-1} \times DCP2_{c,t} \times [FX_{c,t}]^{CRY \text{ Factor}} \quad , \quad (13)$$

Where RWs can take the following values

$$RW1_{c,t-1} = \{1, 2/3, 1/3, 0\} \quad , \quad RW2_{c,t-1} = \{0, 1/3, 2/3, 1\} \quad ,$$

And then

$$DCI®-ER_t = DCI®-ER_{t-1} \times (1 + BDR_t) \quad (14)$$

With

$$BDR_t = \frac{TCWF_t}{TCWI_{t-1}} - 1 \quad (8)$$

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### 3.3 The DCI® TOTAL RETURN (DCI® TR)

#### 3.3.1 Calculation of the Total Return Index

The DCI® TR Index is calculated according to the following formula:

$$DCI^{\circledR}-TR_t = DCI^{\circledR}-TR_{t-1} \times (1 + BDR_t + IRR_t) \quad (15)$$

Where

IRR: **Interest Rate Return**, is the compounding factor defined as

$$IRR_t = \left[ \frac{1}{1 - \frac{91}{360} \times DRR_{t-1}} \right]^{\frac{\text{days}}{91}} - 1, \quad (16)$$

Where “days” is the integer number of calendar days from the previous DCI® business day to the DCI® business day on which the calculation is made.

DRR : **Daily Reference Rate**, is a function of the rate available on the immediately preceding DCI® Business Day (ARR)

$$DRR_t = 0.9 \times ARR_t \quad (17)$$

Where  $ARR_t$  is the Available Reference Rate.

The DCI® TR is set equal to 1000 on July 31st, 1998.

#### 3.3.2 Available Reference Rate

The Available Reference Rate ARR used for the calculation of the DCI® Total Return index is defined below:

ARR is the 91-Day U.S. Treasury Bill (3 Months) auction rate, designated as “high Rate” as published by the “treasury security auction Results” report, published by the Bureau of Public Debt and available on Bloomberg USB3MTA Index <GO> or Reuters USAUCTION9.

The rate is generally published once per week on Monday and effective on the DCI® Business Day immediately following.

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### 3.4 DCI® Business Day definition and Disruption event

#### 3.4.1 DCI® Business Day Definition

A DCI® Business Day  $d$  is a day on which  $\sum_{c=1,N} IW_c \times CalOpen_{c,d} \geq 0.9$  where

$CalOpen_{c,d}$  is equal to 1 when the exchange associated to the contract  $c$  is open for trading on the specific date  $d$  (and is equal to 0 when the exchange associated to the contract  $c$  is closed for trading on date  $d$ ).

#### 3.4.2 Adjustments for Market disruption

A Market Disruption Event will be defined as any day upon which the trading of a contract involved in the index calculation is disrupted or the fair determination of its price is interfered with subject to the following:

- a. The contract settles at the limit (up or down) price set by the exchange.
- b. The contract trades on exchange which is not open for trading on the specific day.
- c. The exchange upon which the contract trades closes trading in that contract at a time prior to the published closing time, unless the altered closing time was brought to public attention by the closing time on the trading day prior to the day in question.
- d. The settlement closing price published by the exchange does not reflect properly, in the opinion of the DCI® Committee, the fair price of that contract.

If a Market Disruption Event occurs during the roll or rebalancing period for one or more commodities, the specific contracts involved are neither rolled nor rebalanced on that day. For those contracts, the RWs and the MCWs remain identical to the values they had on the DCI® Business Day immediately preceding the Market Disruption day. The roll period and the rebalancing period will be extended for this or these particular components only until the next available business day upon which no market disruption event occurs for that or those contracts.

If, after a period of five business days, no settlement price has been made available by the exchange, the DCI® committee will determine, in good faith, the settlement prices necessary for the rolling of the contracts and for the calculation of the index.

The existence of a Market Disruption shall be determined by the DCI® Committee.

Outside of the roll period the index is calculated using the last trading price available. In particular the calculation of the MCWs will use the last price available regardless of whether a Market Disruption Event has occurred.

Example of values taken by RW1 and RW2 for a specific contract over the June 06 roll period if June 28th is a “market disruption event day”:

Theoretical Roll		First Roll Day	Second Roll Day	Last Roll Day				
Effective Roll		First and Second Roll Day		Last Roll Day				
Index	Day	27.juin	28.juin	29.juin	30.juin	01.juil	02.juil	03.juil
<b>Price Index</b>	RW1	1.00	<b>1.00</b>	0.33	<b>0.00</b>	1.00	1.00	1.00
	RW2	0.00	<b>0.00</b>	0.67	<b>1.00</b>	0.00	0.00	0.00
<b>Excess Return</b>	RW1	1.00	1.00	<b>1.00</b>	<b>0.33</b>	0.00	1.00	1.00
	RW2	0.00	0.00	<b>0.00</b>	<b>0.67</b>	1.00	0.00	0.00

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### **3.4.3 FX Market and Interest Rate Market disruption**

In the unlikely event of a referenced price source failing to publish a valid fixing rate for a referenced currency exchange rate or a valid Interest rate, the DCI® committee can decide to replace it by a new source with immediate effect.

### **3.4.4 Market emergency**

In cases of extraordinary circumstances the DCI® committee can decide to take any appropriate action to protect the DCI® Index investor.

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### Appendix A: Contracts Initial Weights

Name	Bloomberg Code	Exchange	Ccy	Weight IW
NYMEX WTI	CL	NYM	USD	14.7480%
ICE Brent	CO	ICE	USD	10.3960%
COMEX Gold	GC	CMX	USD	9.1060%
ICE Gas Oil	QS	ICE	USD	6.5400%
LME Copper	LP	LME	USD	5.8810%
NYMEX Natural Gas	NG	NYM	USD	5.7790%
NYMEX No. 2 Heating Oil	HO	NYM	USD	5.4000%
NYMEX RBOB (gasoline blendstock)	XB	NYM	USD	4.6700%
LME Aluminium	LA	LME	USD	4.1440%
CBOT Soybeans	S	CBT	USD	3.1520%
CBOT Corn	C	CBT	USD	3.0750%
NYBOT Sugar #11	SB	NYB	USD	2.1520%
CBOT Wheat	W	CBT	USD	1.7700%
COMEX Silver	SI	CMX	USD	1.6840%
CME live Cattle	LC	CME	USD	1.4640%
LME Zinc	LX	LME	USD	1.3870%
LME Nickel	LN	LME	USD	1.3660%
TOCOM Gasoline	JV	TCM	JPY	1.2160%
NYBOT Coffee C	KC	NYB	USD	1.1370%
NYBOT cotton #2	CT	NYB	USD	1.1320%
CBOT Soybean Meal	SM	CBT	USD	1.1240%
KCBT Wheat	KW	KCB	USD	0.9930%
CBOT Soybean oil	BO	CBT	USD	0.9640%
CJCE Kerosene	JX	TCM	JPY	0.8610%
EURONEXT Cocoa	QC	LIF	GBP	0.8300%
CME Lean Hogs	LH	CME	USD	0.8280%
NYMEX Platinum	PL	NYM	USD	0.6440%
TOCOM Crude Oil	CP	TCM	JPY	0.5750%
CME feeder Cattle	FC	CME	USD	0.5650%
ICE Rotterdam Coal Monthly	XA	NYM	USD	0.5360%
LME Lead	LL	LME	USD	0.5340%
EEE Phelix Baseload Monthly	GI	NYM	EUR	0.5280%
ICE Natural Gas	FN	ICE	GBP	0.5080%
CBOT Rough Rice	RR	CBT	USD	0.4400%
NYBOT Cocoa	CC	NYB	USD	0.4350%
TOCOM Rubber	JN	TCM	JPY	0.4110%
EURONEXT Robusta Coffee	DF	LIF	USD	0.3710%
NYBOT Orange Juice Frozen Concentrate	JO	NYB	USD	0.3410%
CME Random Lumber	LB	CME	USD	0.3220%
TGE Soybeans	JS	TGE	JPY	0.3190%
EURONEXT White Sugar	QW	LIF	USD	0.3160%
CBOT Ethanol	DL	CBT	USD	0.3150%
LME Tin	LT	LME	USD	0.2750%
EURONEXT Rapeseed	IJ	EN	EUR	0.2540%
LME Aluminium Alloy	LY	LME	USD	0.2430%
NYMEX Palladium	PA	NYM	USD	0.1850%
TGE Corn	JC	TGE	JPY	0.0840%
TGE NGM Soybeans	KS	TGE	JPY	0.0000%

## DIAPASON COMMODITIES INDEX® MANUAL 2011

### Appendix B: DCI ® Agriculture Initial Weights

Name	Bloomberg Code	Exchange	Ccy	Weight IW	Scalar
CBOT Soybeans	S	CBT	USD	14.0220%	100.00
CBOT Corn	C	CBT	USD	13.6794%	100.00
NYBOT Sugar #11	SB	NYB	USD	9.5734%	100.00
CBOT Wheat	W	CBT	USD	7.8740%	100.00
CME live Cattle	LC	CME	USD	6.5127%	100.00
NYBOT Coffee C	KC	NYB	USD	5.0581%	100.00
NYBOT cotton #2	CT	NYB	USD	5.0358%	100.00
CBOT Soybean Meal	SM	CBT	USD	5.0002%	1.00
KCBT Wheat	KW	KCB	USD	4.4175%	100.00
CBOT Soybean oil	BO	CBT	USD	4.2884%	100.00
EURONEXT Cocoa	QC	LIF	GBP	3.6923%	1.00
CME Lean Hogs	LH	CME	USD	3.6834%	100.00
CME feeder Cattle	FC	CME	USD	2.5135%	100.00
CBOT Rough Rice	RR	CBT	USD	1.9574%	1.00
NYBOT Cocoa	CC	NYB	USD	1.9351%	1.00
TOCOM Rubber	JN	TCM	JPY	1.8284%	1.00
EURONEXT Robusta Coffee	DF	LIF	USD	1.6504%	1.00
NYBOT Orange Juice Frozen Concentrate	JO	NYB	USD	1.5170%	100.00
CME Random Lumber	LB	CME	USD	1.4324%	1'000.00
TGE Soybeans	JS	TGE	JPY	1.4191%	1'000.00
EURONEXT White Sugar	QW	LIF	USD	1.4058%	1.00
EURONEXT Rapeseed	IJ	EN	EUR	1.1299%	1.00
TGE Corn	JC	TGE	JPY	0.3737%	1'000.00
TGE NGM Soybeans	KS	TGE	JPY	0.0000%	1'000.00

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### Appendix C: DCI® Metals Initial Weights

Name	Bloomberg Code	Exchange	Ccy	Weight IW	Scalar
COMEX Gold	GC	CMX	USD	35.7814%	1.00
LME Copper	LP	LME	USD	23.1090%	1.00
LME Aluminium	LA	LME	USD	16.2835%	1.00
COMEX Silver	SI	CMX	USD	6.6172%	1.00
LME Zinc	LX	LME	USD	5.4501%	1.00
LME Nickel	LN	LME	USD	5.3676%	1.00
NYMEX Platinum	PL	NYM	USD	2.5306%	1.00
LME Lead	LL	LME	USD	2.0983%	1.00
LME Tin	LT	LME	USD	1.0806%	1.00
LME Aluminium Alloy	LY	LME	USD	0.9549%	1.00
NYMEX Palladium	PA	NYM	USD	0.7269%	1.00

### Appendix D: DCI® Energy Initial Weights

Name	Bloomberg Code	Exchange	Ccy	Weight IW	Scalar
NYMEX WTI	CL	NYM	USD	28.3223%	1.00
ICE Brent	CO	ICE	USD	19.9647%	1.00
ICE Gas Oil	QS	ICE	USD	12.5595%	1.00
NYMEX Natural Gas	NG	NYM	USD	11.0981%	1.00
NYMEX No. 2 Heating Oil	HO	NYM	USD	10.3703%	100.00
NYMEX RBOB (gasoline blendstock)	XB	NYM	USD	8.9684%	100.00
TOCOM Gasoline	JV	TCM	JPY	2.3352%	1.00
CJCE Kerosene	JX	TCM	JPY	1.6535%	1.00
TOCOM Crude Oil	CP	TCM	JPY	1.1042%	1.00
ICE Rotterdam Coal Monthly	XA	NYM	USD	1.0293%	1.00
EEE Phelix Baseload Monthly	GI	NYM	EUR	1.0140%	1.00
ICE Natural Gas	FN	ICE	GBP	0.9756%	100.00
CBOT Ethanol	DL	CBT	USD	0.6049%	1.00

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## Appendix E: Roll Matrix

Generic Code	Contract	Jan 1	Feb 2	Mar 3	Apr 4	May 5	Jun 6	Jul 7	Aug 8	Sep 9	Oct 10	Nov 11	Dec 12
CL	NYMEX WTI	H	J	K	M	N	Q	U	V	X	Z	F	G
NG	NYMEX Natural Gas	H	J	K	M	N	Q	U	V	X	Z	F	G
CO	ICE Brent	H	J	K	M	N	Q	U	V	X	Z	F	G
LP	LME Copper	H	J	K	M	N	Q	U	V	X	Z	F	G
LA	LME Aluminium	H	J	K	M	N	Q	U	V	X	Z	F	G
GC	COMEX Gold	J	J	M	M	Q	Q	Z	Z	Z	Z	G	G
HO	NYMEX No. 2 Heating Oil	H	J	K	M	N	Q	U	V	X	Z	F	G
QS	ICE Gas Oil	H	J	K	M	N	Q	U	V	X	Z	F	G
LB	CME Random Lumber	H	K	K	N	N	U	U	X	X	F	F	H
CP	TOCOM Crude Oil	K	M	N	Q	U	V	X	Z	F	G	H	J
JV	TOCOM Gasoline	M	N	Q	U	V	X	Z	F	G	H	J	K
S	CBOT Soybeans	H	K	K	N	N	X	X	X	X	F	F	H
C	CBOT Corn	H	K	K	N	N	U	U	Z	Z	Z	H	H
XB	NYMEX RBOB (gasoline blendstock)	H	J	K	M	N	Q	U	V	X	Z	F	G
SB	NYBOT Sugar #11	H	K	K	N	N	V	V	V	H	H	H	H
W	CBOT Wheat	H	K	K	N	N	U	U	Z	Z	Z	H	H
LC	CME live Cattle	J	J	M	M	Q	Q	V	V	Z	Z	G	G
LX	LME Zinc	H	J	K	M	N	Q	U	V	X	Z	F	G
JX	TOCOM Kerosene	M	N	Q	U	V	X	Z	F	G	H	J	K
SI	COMEX Silver	H	K	K	N	N	U	U	Z	Z	Z	H	H
KC	NYBOT Coffee C	H	K	K	N	N	U	U	Z	Z	Z	H	H
KW	KCBT Wheat	H	K	K	N	N	U	U	Z	Z	Z	H	H
CT	NYBOT cotton #2	H	K	K	N	N	Z	Z	Z	Z	Z	H	H
XA	ICE Rotterdam Coal Monthly	H	M	M	M	U	U	U	Z	Z	Z	H	H
FN	ICE Natural Gas	H	J	K	M	N	Q	U	V	X	Z	F	G
LN	LME Nickel	H	J	K	M	N	Q	U	V	X	Z	F	G
SM	CBOT Soybean Meal	H	K	K	N	N	Z	Z	Z	Z	Z	F	H
GI	EEE Phelix Baseload Monthly	H	J	K	M	N	Q	U	V	X	Z	F	G
LH	CME Lean Hogs	J	J	M	M	Q	Q	V	V	Z	Z	G	G
JN	TOCOM Rubber	K	M	N	Q	U	V	X	Z	F	G	H	J
JC	TGE Corn	F	F	H	H	K	K	N	N	U	U	X	X
BO	CBOT Soybean oil	H	K	K	N	N	Z	Z	Z	Z	Z	F	H
QW	EURONEXT White Sugar	H	K	K	Q	Q	V	V	V	Z	Z	H	H
FC	CME feeder Cattle	H	H	J	K	Q	Q	U	V	X	F	F	F
QC	EURONEXT Cocoa	H	K	K	N	N	U	U	Z	Z	Z	H	H
DF	EURONEXT Robusta Coffee	H	K	K	N	N	U	U	X	X	F	F	H
RR	CBOT Rough Rice	H	K	K	N	N	U	U	X	X	F	F	H
KS	TGE NGM Soybeans	V	Z	Z	G	G	J	J	M	M	Q	Q	V
LY	LME Aluminium Alloy	H	J	K	M	N	Q	U	V	X	Z	F	G
CC	NYBOT Cocoa	H	K	K	N	N	U	U	Z	Z	Z	H	H
LL	LME Lead	H	J	K	M	N	Q	U	V	X	Z	F	G
DL	Ethanol CBOT	H	J	K	M	N	Q	U	V	X	Z	F	G
JO	NYBOT Orange Juice Frozen Concentrate	H	K	K	N	N	U	U	X	X	F	F	H
PL	NYMEX Platinum	J	J	N	N	N	V	V	V	F	F	F	J
LT	LME Tin	H	J	K	M	N	Q	U	V	X	Z	F	G
PA	NYMEX Palladium	H	M	M	M	U	U	U	Z	Z	Z	H	H
IJ	Rapeseed	K	K	K	Q	Q	Q	X	X	X	G	G	G
JS	TGE Soybeans	V	Z	Z	G	G	J	J	M	M	Q	Q	V

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### Appendix F: Liquidity Weights and Fundamental Weights

Name	2011 World Trade Significance Weights	2011 World Contract Liquidity Weights
NYMEX WTI	6.7278%	17.6695%
ICE Brent	9.1133%	10.2695%
COMEX Gold	6.7361%	9.6190%
ICE Gas Oil	6.9326%	5.8615%
LME Copper	0.9184%	7.9278%
NYMEX Natural Gas	5.5724%	5.4559%
NYMEX No. 2 Heating Oil	6.9326%	4.2359%
NYMEX RBOB (gasoline blendstock)	6.0278%	3.6470%
LME Aluminium	0.6064%	5.6074%
CBOT Soybeans	1.0145%	3.9879%
CBOT Corn	1.6940%	3.5373%
NYBOT Sugar #11	1.4110%	2.3638%
CBOT Wheat	1.5598%	1.7443%
COMEX Silver	0.9713%	1.9169%
CME live Cattle	1.1352%	1.5197%
LME Zinc	0.1857%	1.8853%
LME Nickel	0.3117%	1.7919%
TOCOM Gasoline	6.0278%	0.1206%
NYBOT Coffee C	1.1266%	1.0591%
NYBOT cotton #2	1.2593%	0.9850%
CBOT Soybean Meal	1.3926%	0.9072%
KCBT Wheat	1.5598%	0.6367%
CBOT Soybean oil	0.6878%	1.0307%
CJCE Kerosene	3.9692%	0.0854%
EURONEXT Cocoa	0.8996%	0.7336%
CME Lean Hogs	0.8730%	0.7444%
NYMEX Platinum	1.1638%	0.3364%
TOCOM Crude Oil	4.1547%	0.0570%
CME feeder Cattle	1.1352%	0.2373%
ICE Rotterdam Coal Monthly	2.7583%	0.5353%
LME Lead	0.0590%	0.7323%
EEE Phelix Baseload Monthly	0.7420%	0.3828%
ICE Natural Gas	0.8135%	0.3185%
CBOT Rough Rice	1.1513%	0.0507%
NYBOT Cocoa	0.2254%	0.5091%
TOCOM Rubber	1.0009%	0.0867%
EURONEXT Robusta Coffee	0.6981%	0.1806%
NYBOT Orange Juice Frozen Concentrate	0.8170%	0.0773%
CME Random Lumber	6.0319%	0.0319%
TGE Soybeans	1.0145%	0.0316%
EURONEXT White Sugar	0.3672%	0.2668%
CBOT Ethanol	0.7924%	0.0517%
LME Tin	0.0590%	0.3634%
EURONEXT Rapeseed	0.3876%	0.1688%
LME Aluminium Alloy	0.6064%	0.0435%
NYMEX Palladium	0.2651%	0.1314%
TGE Corn	0.1109%	0.0641%
TGE NGM Soybeans	0.0000%	0.0000%

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### Appendix G: a 107 contracts universe

Future Contracts inside OECD	Exchange	Ticker	Future Contracts inside OECD	Exchange	Ticker
WHEAT FUTURE(CBT)	CBT	W	WTI CRUDE FUTURE	NYM	CL
WHEAT FUTURE(KCB)	KCB	KW	GASOLINE NY UNLD	NYM	HU
MILL WHEAT EURO	EOP	CA	HEATING OIL FUTR	NYM	HO
WHEAT	LIF	QK	US DOLLAR FUT	KFE	KU
CORN FUTURE	CBT	C	KEROSENE FUT CCO	CCO	KZ
CORN FUTURE	KAN	AQ	GASOLINE FUT CCO	CCO	HQ
MAIZE FUT	EOP	EP	KEROSENE FUT TCOM	TCM	JX
CORN FUTURE (TGE)	TGE	JC	CRUDE OILFUT TCOM	TCM	CP
ROUGH RICE (CBOT)	CBT	RR	GASOLINE FUT TCOM	TCM	JV
BREWING BARLEY	WTB	BE	ICE NAT GAS FUTR	ICE	FN
BARLEY ALB. (WCE)	WCE	WA	NATURAL GAS FUTR	NYM	NG
NON-GMO SOYBEAN	TGE	KS	COAL FUTURE	NYM	QZ
SOYBEANS (TGE)	TGE	JS	100 oz. GOLD	NYL	ZP
NON-GMO SYBN(FFE)	KAN	NC	GOLD FUTURE TCOM	TCM	JG
SOYBEAN FUTURE	CBT	S	GOLD 100 OZ FUTR	CMX	GC
SUGAR #16 (DOMST)	NYB	SF	SILVER FUT TCOM	TCM	JI
SOYBEAN MEAL FUTR	CBT	SM	5000 oz SILVER	NYL	ZI
SOYBEAN OIL FUTR	CBT	BO	SILVER FUTURE	CMX	SI
CATTLE FEEDER FUT	CME	FC	PALLADIUM TCOM	TCM	JM
LIVE CATTLE FUTR	CME	LC	PALLADIUM FUTURE	NYM	PA
LEAN HOGS FUTURE	CME	LH	PLATINUM FUTURE	NYM	PL
PORK BELLIES FUT	CME	PB	PLATINUM FUT TCOM	TCM	JA
FRZN SHRIMP (KAN)	KAN	FS	PJM MONTHLY ELCTR	NYM	DM
SUGAR RAW (TGE)	TGE	JR	ICE ECX EMISSION	ICE	MO
SUGAR, RAW (KAN)	KAN	SJ	RED WHEAT FUT MGE	MGE	MW
SUGAR #11 (WORLD)	NYB	SB	GASOLINE RBOB FUT	NYM	XB
SUGAR #14 (DOMST)	NYB	SE	NORDPOOL BASE MONTHLY	EEE	NELIM
WHITE SUGAR (LIF)	LIF	QW	LME NASAAC 3MO (\$)	LME	LMNADS03
FCOJ-A FUTURE	NYB	JO	DENATURED ETHANOL	CBT	DL
ARABICA COFFEE FU	TGE	JZ	RAPESEED EURO	EOP	IJ
ROBUSTA COFFEE FU	TGE	FZ	NEW YORK HDD FUT	CME	NF
COFFEE 'C' FUTURE	NYB	KC	Uranium Futures	NYM	UXA
COFF ROBUSTA 10tn	LIF	DF	EGGS FUTURE	CCO	EA
COCOA FUTURE	NYB	CC	MILLING WHEAT FUT	ASX	MV
COCOA FUTURE - LI	LIF	QC	MILK FUTURE	CME	DA
LUMBER FUTURE	CME	LB	BUTTER CASH FUTR	CME	V6
COTTON NO.2 FUTR	NYB	CT	BUTTER FUTURES	CME	UR
WOOL FUTURE (SFE)	SFE	OL	SOYBEAN FUTURE	BMF	SQ
WOOL, FINE (SFE)	SFE	OS	BARLEY ALB. (WCE)	WCE	WA
WOOL, BROAD (SFE)	SFE	OQ	CANOLA FUTR (WCE)	WCE	RS
RUBBER FUT TCOM	TCM	JN	OAT FUTURE	CBT	O
TSR20 RUBBER FUT	CCO	ZN	WOOL, FINE (SFE)	SFE	OS
LME COPPER FUTURE	LME	LP	DME Oman Crude Fu	DME	OQA
COPPER FUTURE	CMX	HG	LME PRI ALUM FUTR	LME	LA
LME ALUM ALY 3MO (\$)	LME	LMAADS03	LME COPPER FUTURE	LME	LP
LME NASAAC FUTURE	LME	LK	LME ZINC FUTURE	LME	LX
FERROUS SCRAP FUT	CCO	AN	LME LEAD FUTURE	LME	LL
NASDAQ COMP EMINI	CME	NL	LME NICKEL FUTURE	LME	LN
WTI CRUDE FUTURE	ICE	EN	LME TIN FUTURE	LME	LT
BRENT CRUDE FUTR	ICE	CO	FEED BARLEY FUT	ASX	FY
GAS OIL FUT (ICE)	ICE	QS	SORGHUM FUTURE	ASX	SX
GLOBEX BRENT CRD	NYM	CD	PHELIX BASE FUT	EEE	GI
COAL 2-MONTH FUT	EEE	NA	ICE RTD MONTH COA	ICE	XA
ICE RBY MNTH COAL	ICE	XO			