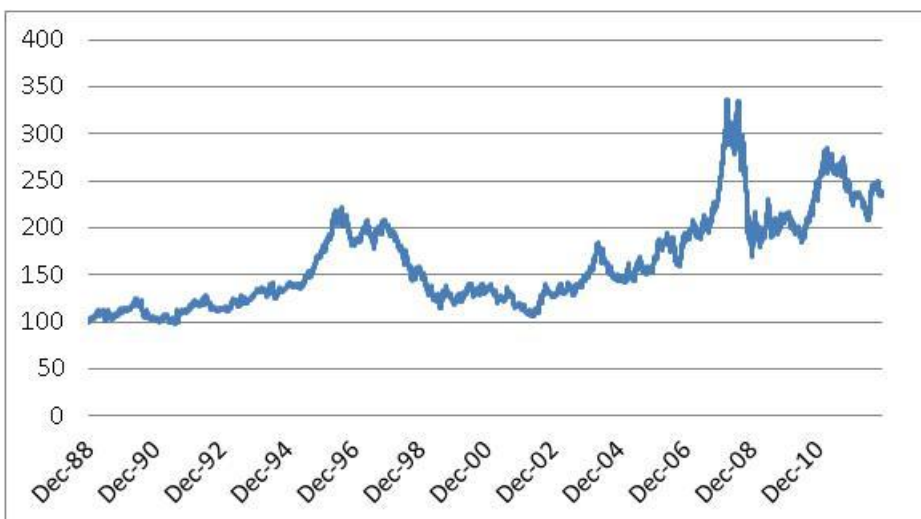


# DBIQ Diversified Agriculture Index

## Summary

- *DBIQ Diversified Agriculture Index is based on 11 commodities drawn from the agriculture sectors*
- *Of the 11 commodities comprising the index, 5 commodities (Corn, Soybeans, Sugar, Wheat and Kansas Wheat) employ the Optimum Yield (OY) technology to select future contracts and 6 commodities (Feeder Cattle, Live Cattle, Lean Hogs, Cocoa, Coffee and Cotton) employ a predefined rolling schedule to select future contracts..*
- *Deutsche Bank Liquid Commodities Indices Optimum Yield (DBLCI-OY) are designed to maximize potential roll returns by selecting, for each commodity, the futures contract with the highest implied roll yield.*
- *The OY technology aims to maximize the potential roll benefits in backwardated markets and minimize the loss from rolling down the curve in contango markets*
- *This index rebalances yearly to fixed weights on the 6<sup>th</sup> Business day of November according to the index holiday calendar*

## Historical Index Performance



Source: Deutsche Bank

### Index Development Contacts:

London: +44 (0)207 545 0505  
Hong Kong: +852 2203 6786  
New York: +1 212 250 8998



## Index Description

DBIQ Diversified Agriculture Index is based on 11 commodities drawn from agriculture sectors. The 11 index components of the index are Corn, Soybeans, Sugar, Wheat and Kansas Wheat employing the OY contract selection methodology and Feeder Cattle, Live Cattle, Lean Hogs, Cocoa, Coffee and Cotton employing a predefined rolling schedule.

The DBIQ Diversified Agriculture Index employs a rule based approach for each of its index components when it 'rolls' from one futures contract to another for each commodity in the index. For the OY index components rather than select the new future based on a predefined schedule (e.g. monthly) the index rolls to that future (from the list of tradable futures which expire in the next thirteen months) which generates the maximum implied roll yield. These component indices aim to maximize the potential roll benefits in backwardated markets and minimize the loss from rolling down the curve in contango markets.

If the price of a future is greater than the spot price, the market is in contango. If the price of a future is below the spot price, the market is in backwardation. In a contango market, as the futures time to expiry decreases in general, the price will tend towards the spot price. Assuming a flat spot price, this results in the future price falling. The opposite is true for a market in backwardation. A contango market will tend to cause a drag on an index while a market in backwardation will tend to cause a push on an index.

For the component indices employing the OY technology the selected index future contract is rolled to a new contract, when the existing contract is close to expiry. For the remaining component indices, the contract roll follows a predefined rolling schedule. For full details on the roll convention refer to Contract Selection Section.

The benchmark DBIQ Diversified Agriculture Index is a yearly rebalanced to fixed weights index of the 11 individual commodity index components.

The index is calculated on each index business day using the exchange closing prices. Index business days are defined as days on which the New York Mercantile Exchange (NYMEX) is open for business.

## Index Rebalancing and Weighting

The main index is rebalanced yearly on the 5<sup>th</sup> business day of November each year according to the index holiday calendar. The index rebalances its index components to fixed base weights as shown in the table below

Commodity	Rolling Methodology	Base Weight
Cattle(Feeder Cattle)	Predefined Schedule	4.167%
Cocoa	Predefined Schedule	11.111%
Coffee "C"	Predefined Schedule	11.111%
Corn	Optimum Yield	12.500%
Cotton #2	Predefined Schedule	2.778%
Lean Hogs	Predefined Schedule	8.333%
Live Cattle	Predefined Schedule	12.500%
Soybeans	Optimum Yield	12.500%
Sugar #11	Optimum Yield	12.500%
Wheat	Optimum Yield	6.250%
Wheat (Kansas Wheat)	Optimum Yield	6.250%

## DBIQ Diversified Agriculture Index Calculation

The benchmark index is re-weighted on an annual basis on the 6th business day of November. The index level calculation is the same for both excess and total returns in all currencies. It is expressed as the weighted average return of the underlying component indices.

$$IL(t,rt) = \left( \sum_{cf} \frac{CIL(t,rt,cf)}{CIL(d,rt,cf)} * w(d,cf) \right) * IL(d,rt)$$

Where

IL (t,rt)	= Index level on day t with return type rt
IL(d,rt)	= Index level on last rebalancing day d with return type rt
CIL(t,rt)	= Component index level for commodity cf on day t with return type rt
CIL(d,rt)	= Component index level for commodity cf on last rebalancing day d with return type rt
W(d,rt)	= Base Weight of commodity cf on last rebalancing day d

### Component Index Calculation

For each component index the excess return is equal to the percentage change of the underlying commodity futures market values. The indices have two contracts throughout roll periods and one contract on other days. The index return is equal to the change in current atoms index levels multiplied by the relevant holdings.

The excess return index level is expressed as

$$CIL(t,er) = \frac{\sum_i PC(t,i) * N(t-1,i)}{\sum_i PC(t-1,i) * N(t-1,i)} * CIL(t-1,er)$$

Where

CIL (t,er)	= Component Excess Return Index level on day t
CIL (t-1,er)	= Component Excess Return Index level on day t-1
PC(t,i)	= Close price of commodity future i on day t
PC(t-1,i)	= Close price of commodity future i on index calculation day t-1
N(t-1,i)	= Notional holdings of commodity future i on index calculation day t-1

The total return index level is expressed as

$$CIL(t,tr) = \left( \frac{CIL(t,er)}{CIL(t-1,er)} + Rt(t) \right) * (1 + Rt(t))^{d(t,t-1)} * CIL(t-1,tr)$$

$$Rt(t) = \left( 1 - \frac{91}{360} y(t-1) \right)^{\left( \frac{1}{91} \right)} - 1$$

Where

CIL(t,tr)	= Total Return Index level on day t
CIL(t-1,tr)	= Total Return Index level on day t-1
Rt(t)	= T-bill return on day t
d(t,t-1)	= Number of calendar days between day t and index calculation day t-1 excluding day t
y(t-1)	= 3-month benchmark T-bill yield on index calculation day t-1

## Contract Selection

Each index component implements one of the two contract selection methodologies as indicated in the weights table above

### Component Indices employing Optimum Yield Technology

For each component index on the first index business day of each month (the “Verification Date”) each commodity futures contract currently in the index is tested for continued inclusion in the index based on the month in which the contract delivery of the underlying commodity can start (the “Delivery Month”). If, on the Verification Date, the Delivery Month is the next month, a new contract is selected.

For each component index, the new commodity futures contract selected will be the contract with the maximum “implied roll yield” based on the closing price for each eligible contract. Eligible contracts are any contracts having a Delivery Month (i) no sooner than the month after the Delivery Month of the commodity future currently in the index, and (ii) no later than the 13th month after the Verification Date.

The contract with the maximum roll yield is selected. If two contracts have the same roll yield the contract with the minimum number of months to the exchange expiry month is selected.

The implied roll yield is expressed as:

$$Y(t, i) = \left( \frac{PC(t, b)}{PC(t, i)} \right)^{\left( \frac{1}{F(t, i, b)} \right)} - 1$$

Where

- Y(t,i) = On any day t, the implied roll yield for entering into the commodity futures contract with expiration month i
- PC(t,b) = Closing price of the base commodity future b
- PC(t,i) = Closing price of any eligible futures contract i
- F(t,i,b) = Fraction of year between the base futures contract b and the futures contract with expiration month i. Calculated as number of calendar days between dates divided by 365

### Component Indices employing Predefined Rolling Schedule

On the first Index Business Day of each month, each non-OY Single Commodity Index will select a new futures contract to replace the old futures contract as provided in the following schedule.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Cocoa</b>	H	K	K	N	N	U	U	Z	Z	Z	H	H
<b>Coffee</b>	H	K	K	N	N	U	U	Z	Z	Z	H	H
<b>Cotton</b>	H	K	K	N	N	Z	Z	Z	Z	Z	H	H
<b>Live Cattle</b>	J	J	M	M	Q	Q	V	V	Z	Z	G	G
<b>Feeder Cattle</b>	H	J	K	Q	Q	Q	U	V	X	F	F	H
<b>Lean Hogs</b>	J	J	M	M	N	Q	V	V	Z	Z	G	G

Where

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Letter Code</b>	F	G	H	J	K	M	N	Q	U	V	X	Z

## Monthly Index Roll Period

For each component index if the current index holding no longer meets the inclusion criteria the monthly index roll unwinds the old contract holding and enters a position in the new contract. This takes place between the 2nd and 6th business day of the month.

On each day during the roll period the new notional holdings are calculated. The calculations for the old commodities that are leaving the index and the new commodities that are entering are different.

The notional of the old commodity contract  $i$  is expressed as:

$$N(t, i) = N(t - 1, i) * \frac{6 - db(t)}{7 - db(t)}$$

The notional of the new commodity contract  $j$  is expressed as:

$$N(t, j) = N(t - 1, j) + \frac{PC(t, i) * N(t - 1, i)}{PC(t, j) * (7 - db(t))}$$

Where

$N(t-1, i)$  = Notional holding of old commodity future  $i$  on index calculation day  $t-1$

$N(t, i)$  = Notional holding of old commodity future  $i$  on index calculation day  $t$

$N(t-1, j)$  = Notional holding of new commodity future  $j$  on index calculation day  $t-1$

$N(t, j)$  = Notional holding of new commodity future  $j$  on index calculation day  $t$

$db(t)$  = Number of index business days in the month up to and including day  $t$

If the current index holding continues to meet the inclusion criteria, no roll occurs and the notional holding is kept constant. Similarly on all days that are not monthly index roll days the notional holding of each commodity future remains constant.

$$N(t, i) = N(t - 1, i)$$

## Index Guide Disclaimers

This document is intended for information only and does not create any legally binding obligations on the part of Deutsche Bank AG and/or its affiliates ("DB"). This document is intended to provide a summary of the index it purports to describe. No warranty or representation is made as to the correctness, completeness and accuracy of the information.

Without limitation, this document does not constitute an offer, an invitation to offer or a recommendation to enter into any transaction. When making an investment decision, you should rely solely on the final documentation relating to the transaction. Products based on the index or indices described in this document may not be appropriate for all investors and before entering into any transaction you should take steps to ensure that you fully understand the transaction and have made an independent assessment of the appropriateness of the transaction in the light of your own objectives and circumstances, including the possible risks and benefits of entering into such transaction. Refer to your DB Sales person for product related information. For general information regarding the nature and risks of the proposed transaction and types of financial instruments please go to [www.globalmarkets.db.com/riskdisclosures](http://www.globalmarkets.db.com/riskdisclosures). You should also consider seeking advice from your own advisers in making this assessment. If you decide to enter into a transaction with DB, you do so in reliance on your own judgment. Past performance is no indication of future results.

This material was prepared by DBIQ. It is not investment research, and has not been prepared in accordance with legal requirements designed to promote the independence of such. Any opinions expressed herein may differ from the opinions expressed by other DB departments including the Research Department. DB may engage in transactions in a manner inconsistent with any views discussed herein. DB trades or may trade as principal in instruments (or related derivatives) linked to the index or indices described in this document, and may have proprietary positions in the instruments (or related derivatives). DB may make a market in such instruments (or related derivatives), which may in extreme circumstances affect the levels of the index or indices described.

In no event shall DB have any liability (whether in negligence or otherwise) to any person in connection with such person's use of the Index, unless such use is pursuant to a transaction between that party and DB relating to the Index and such liability results from wilful default and/or gross negligence on the part of DB.

The distribution of this document and availability of related products and services in certain jurisdictions may be restricted by law. You may not distribute this document, in whole or in part, without our express written permission. DB specifically disclaims all liability for any direct, indirect, consequential or other losses or damages including loss of profits incurred by you or any third party that may arise from any reliance on this document or for the reliability, accuracy, completeness or timeliness thereof. DB is authorized by Bundesanstalt für Finanzdienstleistungsaufsicht under German Banking Law (competent authority: BaFin - Federal Financial Supervising Authority) and regulated in the UK by the Financial Services Authority for the conduct of UK business.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. In the U.S. this report is approved and/or distributed by Deutsche Bank Securities Inc., a member of the NYSE, the NASD, NFA and SIPC. In Germany this report is approved and/or communicated by Deutsche Bank AG Frankfurt authorized by the BaFin. In the United Kingdom this report is approved and/or communicated by Deutsche Bank AG London, a member of the London Stock Exchange and regulated by the Financial Services Authority for the conduct of investment business in the UK and authorized by the BaFin. This report is distributed in Hong Kong by Deutsche Bank AG, Hong Kong Branch, in Korea by Deutsche Securities Korea Co. This report is distributed in Singapore by Deutsche Bank AG, Singapore Branch, and recipients in Singapore of this report are to contact Deutsche Bank AG, Singapore Branch in respect of any matters arising from, or in connection with, this report. Where this report is issued or promulgated in Singapore to a person who is not an accredited investor, expert investor or institutional investor (as defined in the applicable Singapore laws and regulations), Deutsche Bank AG, Singapore Branch accepts legal responsibility to such person for the contents of this report. In Japan this report is approved and/or distributed by Deutsche Securities Inc. The information contained in this report does not constitute the provision of investment advice. In Australia, retail clients should obtain a copy of a Product Disclosure Statement (PDS) relating to any financial product referred to in this report and consider the PDS before making any decision about whether to acquire the product. Deutsche Bank AG Johannesburg is incorporated in the Federal Republic of Germany (Branch Register Number in South Africa: 1998/003298/10). Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published by any person for any purpose without Deutsche Bank's prior written consent. Please cite source when quoting.

Copyright © 2012 Deutsche Bank AG