

## DBIQ Optimum Yield Diversified Commodity Index

### Summary

DBIQ Optimum Yield Diversified Commodity Index is based on 14 commodities drawn from the energy, precious metals, industrial metals and agriculture sectors. The 14 sub-index components of the index are Aluminum, Brent Crude, Copper, Corn, Gold, Heating Oil, Light Crude, Natural Gas, RBOB Gasoline, Silver, Soybean, Sugar, Wheat and Zinc.

Deutsche Bank Liquid Commodities Indices Optimum Yield (DBLCIOY) are designed to maximize potential roll returns by selecting, for each commodity, the futures contract with the highest implied roll yield. The index 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 6th Business day of November according to the index holiday calendar.

### Index Suite

The indices are calculated and published to Bloomberg in the following versions:

Table 1: Index Suite

Index Name	Return Type	Currency	Bloomberg Ticker
DBIQ Optimum Yield Diversified Commodity Index TR	TR	USD	DBLCDBCT
DBIQ Optimum Yield Diversified Commodity Index Excess Return	ER	USD	DBLCDBCE

Source: DBIQ

### Key Index Information

Index Inception Date	Index Live Date	Index Business Day
02-DEC-88	04-SEP-09	Index business days are defined as days on which the New York Mercantile Exchange (NYMEX) is open for business.

## Index Selection Day

Table 2: Index Selection Day

Index Name	Index Selection Day
DBIQ Optimum Yield Diversified Commodity Index	<p>DBIQ Optimum Yield Diversified Commodity Index is based on 14 commodities drawn from the energy, precious metals, industrial metals and agriculture sectors. The 14 index components of the index are Aluminum, Brent Crude, Copper, Corn, Gold, Heating Oil, Light Crude, Natural Gas, RBOB Gasoline, Silver, Soybean, Sugar, Wheat and Zinc</p> <p>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. As the Brent Crude Oil delivery is based on Exchange Futures for physical method and the exchange do not define a delivery schedule, DBIQ have determined the Delivery Month will be the calendar month following the last trading day of the contract.</p>

Source: DBIQ

## Index Rebalancing Day

Table 3: Index Rebalancing Day

Index Name	Index Rebalancing Day
DBIQ Optimum Yield Diversified Commodity Index	<p>The benchmark DBIQ Optimum Yield Diversified Commodity Index is a yearly rebalanced to fixed weights index of the 14 individual commodity index components.</p>

Source: DBIQ

## Index Owner and Index Administrator

Each Index is a Deutsche Bank AG proprietary index. Each Index is the intellectual property of Deutsche Bank AG (“Deutsche Bank AG” or the “Index Owner”, which expression shall include any successor in such capacity). The Index Owner owns the copyright and all other intellectual property rights to each Index and this Index Guide. Any use of these intellectual property rights must be with the prior written consent of the Index Owner.

Each Index will be governed by the Index Administrator. The initial Index Administrator shall be Deutsche Bank AG operating through Deutsche Bank Index Quant (“DBIQ”), a research unit within Deutsche Bank AG via its internal processes and the “Index Administrator” shall mean Deutsche Bank AG acting in such capacity or any successor thereto. The Index Administrator controls the creation and operation of the index administrative process, including all stages and processes involved in the production and dissemination of the Index.

The Index Administrator has implemented and maintains the DBIQ User Guidance and Administrator Handbook Overview (the “Overview”), which sets out a summary of the policies, procedures and controls implemented by the management of the Index Administrator to promote sound business practices for the lifecycle management of the Index Owner’s proprietary benchmarks by the Index Administrator. The Overview also includes the Index Administrator’s policy related to quality of benchmarks and input data management. Additional issues related to governance, controls, benchmark classification and risk controls, periodic reviews and conflicts of interest are also addressed.

The Overview is available on the DBIQ homepage under the following URL (the “DBIQ Website”):

<https://index.db.com>

## Index Publication

The level of each Index on each relevant Index Business Day shall be published:

- 1) on the DBIQ Website; and
- 2) where applicable, on Bloomberg under the Bloomberg ticker in respect of such Index as set out in Table 1 above.

Any such publication may be restricted by means determined as appropriate for such purpose by the Index Administrator in its sole and absolute discretion including, but not limited to, password protection on the DBIQ Website restricting access to a limited set of persons in accordance with arrangements agreed between the Index Administrator and such person. The Index Administrator may, at any time and without notice, change the frequency or method publication of an Index, as the case may be. The Index Administrator accepts no legal liability to any person for publishing or not continuing to publish for any period of time and level in respect of an Index at any particular place or any particular time.

## Index Rules and Calculations

DBIQ Optimum Yield Diversified Commodity Index is based on 14 commodities drawn from the energy, precious metals, industrial metals and agriculture sectors. The 14 index components of the index are Aluminum, Brent Crude, Copper, Corn, Gold, Heating Oil, Light Crude, Natural Gas, RBOB Gasoline, Silver, Soybean, Sugar, Wheat and Zinc.

The Deutsche Bank Optimum Yield Diversified Commodity 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. 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. The index aims 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.

The selected index future contract is rolled to a new contract, when the existing contract is close to expiry. For full details on the roll convention refer to Contract Selection section.

The benchmark DBIQ Optimum Yield Diversified Commodity Index is a yearly rebalanced to fixed weights index of the 14 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.

### DBIQ Optimum Yield Diversified Commodity Index Calculation

The benchmark index is re-weighted on an annual basis on the 6th business day of November. It is expressed as the weighted average return

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

Where

IL (t,rt) = Index level on index calculation 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 index calculation 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 based on 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 futures contracts prices in the index 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 index calculation day t

CIL (t-1,er) = Component Excess Return Index level on index calculation day t-1

PC(t,i) = Close price of commodity future i on index calculation 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 index calculation day t

$CIL(t-1, tr)$	= Total Return Index level on index calculation day t-1
$R_t(t)$	= T-bill return on index calculation day t
$d(t, t-1)$	= Number of calendar days between index calculation 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

## Index Rebalancing

The main index is rebalanced yearly on the 6th 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

Table 4: Fixed Weights

Commodity	Base Weight
Aluminum	4.167%
Brent Crude	12.375%
Copper - Grade A	4.167%
Corn	5.625%
Gold	8.000%
Heating Oil	12.375%
Light Crude	12.375%
Natural Gas	5.500%
RBOB Gasoline	12.375%
Silver	2.000%
Soybeans	5.625%
Sugar #11	5.625%
Wheat	5.625%
Zinc	4.167%

Source: DBIQ

## Index Selection

### Contract Selection

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 (“Selection event”). As the Brent Crude Oil delivery is based on Exchange Futures for physical method and as the exchange do not define a delivery schedule, DBIQ have assessed the Delivery Month will be the calendar month following the last trading day of the contract. For the avoidance of doubt, tables 5-9 define the contracts that are eligible for selection for each calendar month for different commodities in case of a Selection event.

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:

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

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 on index calculation day t
$PC(t, i)$	= Closing price of any eligible futures contract i on index calculation day t
$F(t, i, b)$	= 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
$b$	= Base commodity future is the commodity future currently in the index

## Index Roll Period

For each component index if the current index holding no longer meets the inclusion criteria the index 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:

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

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  $t$
- $PC(t, i)$  = Closing price of the old commodity future on index calculation day  $t$
- $PC(t, j)$  = Closing price of the new commodity future on index calculation 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 index roll days the notional holding of each commodity future remains constant.

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

Table 5: Contract Eligibility Schedule for Light Crude, Heating Oil, Gold, Silver, RBOB Gasoline, Natural Gas, Aluminium, Zinc, Copper Optimum Yield Indices

Rebalancing Month	Current Contract	Eligible Contracts											
		1	2	3	4	5	6	7	8	9	10	11	12
Jan	G	H	J	K	M	N	Q	U	V	X	Z	F*	G*
Feb	H	J	K	M	N	Q	U	V	X	Z	F*	G*	H*
Mar	J	K	M	N	Q	U	V	X	Z	F*	G*	H*	J*
Apr	K	M	N	Q	U	V	X	Z	F*	G*	H*	J*	K*
May	M	N	Q	U	V	X	Z	F*	G*	H*	J*	K*	M*
Jun	N	Q	U	V	X	Z	F*	G*	H*	J*	K*	M*	N*
Jul	Q	U	V	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*
Aug	U	V	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*
Sep	V	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*
Oct	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*	X*
Nov	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*	X*	Z*
Dec	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*	X*	Z*	F**

\* Represents a contract for the next calendar year, for example in January 2024 the 11<sup>th</sup> eligible contract is January 2025

\*\* Represents a contract for the second next calendar year, for example in December 2024 the 12<sup>th</sup> eligible contract is January 2026



Source: DBIQ

Table 6: Contract Eligibility Schedule Brent Optimum Yield Index

Rebalancing Month	Current Contract	Eligible Contracts											
		1	2	3	4	5	6	7	8	9	10	11	12
Jan	H	J	K	M	N	Q	U	V	X	Z	F*	G*	H*
Feb	J	K	M	N	Q	U	V	X	Z	F*	G*	H*	J*
Mar	K	M	N	Q	U	V	X	Z	F*	G*	H*	J*	K*
Apr	M	N	Q	U	V	X	Z	F*	G*	H*	J*	K*	M*
May	N	Q	U	V	X	Z	F*	G*	H*	J*	K*	M*	N*
Jun	Q	U	V	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*
Jul	U	V	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*
Aug	V	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*
Sep	X	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*	X*
Oct	Z	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*	X*	Z*
Nov	F*	G*	H*	J*	K*	M*	N*	Q*	U*	V*	X*	Z*	F**
Dec	G*	H*	J*	K*	M*	N*	Q*	U*	V*	X*	Z*	F**	G**

\* Represents a contract for the next calendar year, for example in January 2024 the 10<sup>th</sup> eligible contract is January 2025

\*\* Represents a contract for the second next calendar year, for example in December 2024 the 11<sup>th</sup> eligible contract is January 2026

Source: DBIQ

Table 7: Contract Eligibility Schedule for Wheat, Corn Optimum Yield Indices

Rebalancing Month	Current Contract	Eligible Contracts				
		1	2	3	4	5
Jan						
Feb	H	K	N	U	Z	H*
Mar						
Apr	K	N	U	Z	H*	K*
May						
Jun	N	U	Z	H*	K*	N*
Jul						
Aug	U	Z	H*	K*	N*	U*
Sep						
Oct						
Nov	Z	H*	K*	N*	U*	Z*
Dec						

\* Represents a contract for the next calendar year, for example in February 2024 the <sup>h</sup> last eligible contract is March 2025

Source: DBIQ

Table 8: Contract Eligibility Schedule for Sugar Optimum Yield Index

Rebalancing Month	Current Contract	Eligible Contracts			
		1	2	3	4
Jan					
Feb	H	K	N	V	H*
Mar					
Apr	K	N	V	H*	K*
May					
Jun	N	V	H*	K*	N*
Jul					
Aug					
Sep	V	H*	K*	N*	V*
Oct					
Nov					
Dec					

\* Represents a contract for the next calendar year, for example in February 2024 the <sup>h</sup> last eligible contract is March 2025

Source: DBIQ

Table 9: Contract Eligibility Schedule for Soybean Optimum Yield Index

Rebalancing Month	Current Contract	Eligible Contracts						
		1	2	3	4	5	6	7
Jan								
Feb	H	K	N	Q	U	X	F*	H*
Mar								
Apr	K	N	Q	U	X	F*	H*	K*
May								
Jun	N	Q	U	X	F*	H*	K*	N*
Jul	Q	U	X	F*	H*	K*	N*	Q*
Aug	U	X	F*	H*	K*	N*	Q*	U*
Sep								
Oct	X	F*	H*	K*	N*	Q*	U*	X*
Nov								
Dec	F*	H*	K*	N*	Q*	U*	X*	F**

\* Represents a contract for the next calendar year, for example in February 2024 the <sup>h</sup> last eligible contract is March 2025

\*\* Represents a contract for the second next calendar year, for example in December 2024 the 12<sup>th</sup> eligible contract is January 2026

Source: DBIQ

## 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 Salesperson 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.

The Index Administrator makes no express or implied representations or warranties as to (a) the advisability of purchasing or assuming any risk in connection with any transaction which references or is otherwise linked to this Index, (b) the levels at which the Index stands at any particular time on any particular date, (c) the results to be obtained by any party from the use of the Index or any data included in it for the purposes of issuing securities or carrying out any financial transaction or (d) any other matter. Calculations may be based on information obtained from various publicly available sources. The Index Administrator has relied on these sources and has not independently verified the information extracted from these sources and accepts no responsibility or liability in respect thereof. If there is a calculation error the Index Administrator may restate the Index Level.

Without prejudice to the Index Owner or Index Administrator's obligations under any regulatory system, and without limiting any of the foregoing, 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.

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, a joint stock corporation with limited liability incorporated in the Federal Republic of Germany with its principal office in Frankfurt am Main. Deutsche Bank AG is authorised under German Banking Law (competent authority: European Central Bank) and is subject to supervision by the European Central Bank and by BaFin, Germany's Federal Financial Supervisory Authority. In the United Kingdom, this report is approved and/or communicated by Deutsche Bank AG acting through its London Branch at 21 Moorfields, London EC2Y 9DB. Deutsche Bank AG in the United Kingdom is authorised by the Prudential Regulation Authority and is subject to limited regulation by the Prudential Regulation Authority and Financial Conduct Authority. Details about the extent of our authorisation and regulation by the Prudential Regulation Authority, and regulation by the Financial Conduct Authority are available from us on request. 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 considers 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 © 2024 Deutsche Bank AG