Deutsche Bank DBIQ Optimum Yield Commodity Basket Indices

Summary

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 Deutsche Bank Liquid Commodities Indices Optimum Yield (DBLCI-OY) employs a rule based approach 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.

For more information on DBLCI-OY indices please refer to the DBLCI-OY index description and index guide.

This guide covers various basket indices based on DBLCI OY commodity indices. The indices are DBLCI-OY, DBLCI-OY Broad, DBLCI-OY Balanced, and sector indices for Energy, Precious Metals, Industrial Metals, and Agriculture.

DBLCI-OY Broad is comprised of 14 commodities from the energy, precious metals, industrial metals and agriculture sectors. The sector weights are based on the DBLCI benchmark weights. DBLCI-OY Balanced is based on the same 14 commodities. The energy sector weight is reduced from 55% for the broad index to 35% for the balanced index. The other sectors weights are precious metals 17%, industrial metals 18% and agriculture 30%. The DBLCI-OY Balanced index is designed to be UCITS III compliant. Energy, precious metals, industrial metals and agriculture sector indices are also calculated. Further to this, custom indices based on customer defined weights can be calculated. The DBLCI-OY benchmark and sector index weights are detailed in Figure 1.

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Figure 1. DBLCI Optimum Yield Indices Weights and tickers

Commodity	Code	DBLCI-OY Weight	Broad Weight	Balanced Weight	Sector Weight	Excess Return	Total Return
DBLCI-OY	Overall					DBLCOYER	DBLCOYTR
DBLCI-OY Broad	Overall					DBLCBRER	DBLCBRTR
DBLCI-OY Balanced	Overall					DBLCBBER	DBLCBBTR
Energy							
DBLCI-OY Energy	Sector					DBCMYEEN	DBCMYTEN
Light Crude	CL	35%	12.375%	7.875%	22.50%	DBCMOCLE	DBCMOCLT
Heating Oil	HO	20%	12.375%	7.875%	22.50%	DBLCOHOE	DBLCOHOT
RBOB Gasoline	RB	0%	12.375%	7.875%	22.50%	DBLCYERB	DBLCYTRB
Natural Gas	NG	0%	5.500%	3.500%	10.00%	DBLCYENG	DBLCYTNG
Brent Crude	LCO	0%	12.375%	7.875%	22.50%	DBLCYECO	DBLCYTCO
Gasoil	LGO	0%	0.000%	0.000%	0.00%	DBLCYEGO	DBLCYTGO
Precious Metals							
DBLCI-OY Precious Metals	Sector					DBCMYEPM	DBCMYTPM
Gold	GC	10%	8.000%	13.600%	80.00%	DBCMOGCE	DBCMOGCT
Silver	SI	0%	2.000%	3.400%	20.00%	DBLCYESI	DBLCYTSI
Industrial Metals							
DBLCI-OY Industrial Metals	Sector					DBCMYEIM	DBCMYTIM
Aluminum	MAL	13%	4.167%	6.000%	33.33%	DBLCOALE	DBLCOALT
Zinc	MZN	0%	4.167%	6.000%	33.33%	DBLCYEZN	DBLCYTZN
Copper-Grade A	MCU	0%	4.167%	6.000%	33.33%	DBLCYECU	DBLCYTCU
Primary Nickel	MNI	0%	0.000%	0.000%	0.00%	DBLCYENI	DBLCYTNI
Standard Lead	MPB	0%	0.000%	0.000%	0.00%	DBLCYEPB	DBLCYTPB
Agriculture							
DBLCI-OY Agriculture	Sector					DBLCYEAG	DBLCYTAG
Corn	C	11%	5.625%	7.500%	25.00%	DBLCOCNE	DBLCOCNT
Wheat Basket[1]	n/a	11%	5.625%	7.500%	25.00%	DBLCOWUE	DBLCOWUT
Soybeans	S	0%	5.625%	7.500%	25.00%	DBLCYESS	DBLCYTSS
Sugar # 11	SB	0%	5.625%	7.500%	25.00%	DBLCYESB	DBLCYTSB
Coffee "C"	KC	0%	0.000%	0.000%	0.00%	DBLCYEKC	DBLCYTKC
Cotton #2	CT	0%	0.000%	0.000%	0.00%	DBLCYECE	DBLCYTCT
Cocoa	CC	0%	0.000%	0.000%	0.00%	DBLCYECC	DBLCYTCC
Kansas Wheat	KW	0%	0.000%	0.000%	0.00%	DBLCYEKW	DBLCYTKW
Minneapolis Wheat	MW	0%	0.000%	0.000%	0.00%	DBLCOMWE	DBLCOMWT
Livestock							
Live Cattle	LC	0%	0.000%	0.000%	0.00%	DBLCYELC	DBLCYTLC
Lean Hogs	LH	0%	0.000%	0.000%	0.00%	DBLCYELH	DBLCYTLH
Feeder Cattle	FC	0%	0.000%	0.000%	0.00%	DBLCYEFC	DBLCYTFC

Source : DBIQ

During February 2012 the Wheat[1] allocation was adjusted from Chicago Wheat to a basket of Chicago Wheat, Kansas Wheat and Minneapolis Wheat. Further to this the Total Return and currency adjusted indices calculation order was changed[2].

Index Calculation

DBLCI-OY Basket Index Calculation

The following indices are calculated using this method,

- DBLCI-OY USD ER Index
- DBLCI-OY Broad USD ER Index
- DBLCI-OY Balanced USD ER Index
- Deutsche Bank DBIQ Optimum Yield Energy Index Excess Return
- Deutsche Bank DBIQ Optimum Yield Industrial Metals Index Excess Return
- Deutsche Bank DBIQ Optimum Yield Precious Metals Index Excess Return
- DBLCI-OY Agriculture USD ER Index

[1] Prior to 16th February 2012, all the basket indices had DBLCI-OY Wheat index as underlying instead of wheat basket. The Bloomberg ticker for excess return is DBLCOWTE, while that for total return is DBLCOWTT.
[2] Prior to 29th February 2012, the Total return, FX Hedged and un-hedged indices are also calculated using the same methodology as excess return calculation. The underlying commodity sub index would similarly be Total return, FX Hedged and un-hedged index respectively.

The basket index is re-weighted on an annual basis on the 6th business day of November. The index is calculated on all valid DBLCI Business days[3], the excess return index level in USD is expressed as

$$ILB(t) = ILB(t-1) + \sum_i \left(ILa(t,i) - ILa(t-1,i)\right) * Ua(t,i)$$

Where:

ILB(t)	= Basket Excess Return Index level on day t
ILa(t,i)	= Commodity sub index i index level on day t
Ua(t,i)	= Commodity sub index i index holding on day t
t-1	= Previous business day

Based on the sub index weights the new holdings for each sub index are calculated on 6th business day of November

$$Ua(t+1,i) = \frac{ILB(t) * W(t,i)}{ILa(t,i)}$$

Where

W(t,i)	= Weight for sub index i on day t as per Figure 1.

For all other days the holding remains constant.

$$Ua(t+1,i) = Ua(t,i)$$

Total Return USD Calculation

The total return index level in USD is expressed as;

$$ILBtr(t) = \left(\frac{ILB(t)}{ILB(t-1)} + \left(1 + Rt(t)\right)^{d(t,t-1)} - 1\right) * ILBtr(t-1)$$

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

Where:

ILBtr(t)	= Total Return Index level on day t
ILBtr(t-1)	= Total Return Index level on index calculation 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 including day t
y(t-1)	= 3-month benchmark T-bill yield on index calculation day t-1

Hedged and Un-Hedged Index Calculation

The total return hedged and un-hedged index levels are calculated based on WM FX data. The return from the FX hedge is accrued over the month on an ACT/ACT basis. The hedged index is expressed as

$$ILh(t) = \left[1 + \mathrm{Ret}IL(t) + \mathrm{Ret}IL(t) * FXr(t) + FXhr(t)\right] * ILh(r)$$

The un-hedged index is expressed as

$$ILuh(t) = \left[1 + \mathrm{Ret}IL(t)) * (1 + FXr(t))\right] * ILuh(r)$$

[3] Prior to 1 January 2010, "**DBLCI Business Day**" means a day (other than a Saturday or Sunday) on which Commercial banks and foreign exchange markets settle payments and are open for general business in New York City. Since 1 January 2010, "**DBLCI Business Day**" means a day (other than a Saturday or Sunday) which is not a holiday in the CME Group New York Floor holiday calendar for the relevant year as published on the CME Group website.

Where:

ILh(t) = Hedged total return index level on day t

ILh(r) = Hedged total return index level on last business day of last month r

ILuh(t) = Un-hedged total return index level on day t

ILuh(r) = Un-hedged total return index level on last business day of last month r

$$\mathrm{Re}tIL(t) = \frac{ILBtr(t)}{ILBtr(r)} - 1$$

$$FXr(t) = \frac{FX(t)}{FX(r)} - 1$$

FX(t) = FX rate on day t quoted Index Currency: Hedge Currency

FX(r) = FX rate on last business day of last month r quoted Index Currency: Hedge Currency

$$FXhr(t) = \left(\frac{FXh(r)}{FX(r)} - 1\right) * \frac{dy(t)}{TD}$$

FXh(r) = One-month FX forward rate on last business day of last month r quoted Index Currency: Hedge Currency

dy(t) = Number of calendar days between t and last business day of last month r

TD = Number of calendar days from last business day of immediately preceding month up to but excluding last business day in current month

Excess return hedged index levels are calculated based on WM FX data. The excess return hedged index levels represent the returns of the USD excess returns converted into the target currency. Excess return un-hedged index levels are not calculated.

The hedged index is expressed as

$$ILher(t) = \left(1 + \mathrm{Re}tIL(t) + \mathrm{Re}tILer(t) * FXr(t)\right) * ILher(r)$$

Where:

ILher(t) = Hedged excess return index level on day t

ILher(r) = Hedged excess return index level on last business day of last month r

$$\mathrm{Re}tILer(t) = \frac{ILB(t)}{ILB(r)} - 1$$

ILler(t) = Local excess return index level on day t

ILler(r) = Local excess return index level on last business day of last month r

$$FXr(t) = \frac{FX(t)}{FX(r)} - 1$$

FX(t) = FX rate on day t quoted Index Currency: Hedge Currency

FX(r) = FX rate on last business day of last month r quoted Index Currency: Hedge Currency

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