

UBS Bloomberg CMCI (Constant Maturity Commodity Index)

Technical Document

H1-2013, Effective 1-February-2013

The UBS Bloomberg CMCI (Constant Maturity Commodity Index), for the purpose of this Technical Document "CMCI" or "Index", has been developed by UBS Investment Bank ("UBS IB") and Bloomberg L.P. ("Bloomberg" and together with UBS IB, the "Index Sponsors") to reference commodity markets on various segments of their forward curves.

A CMCI Data Appendix (the "CMCI Data Appendix") shall be published on a periodic basis, setting out updated information relating to the Index and its calculations.

The UBS Bloomberg CMCI

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Executive Summary

CMCI is diversified across a range of commodities and is international in its scope in order to try to reflect the global commodities market and includes derivative instruments traded in markets in various countries. In addition, the CMCI family includes indices with different tenor.

The CMCI Benchmark Index is designed to provide diversity across commodity maturities. A weighted average amount, calculated through the use of a weight function of relative curve liquidity, is deemed to be invested into each available Standard Constant Maturity (SCM) and those weightings are maintained by monthly rebalancing.

Summary of Index characteristics

The below is a summary of the characteristics of the CMCI Index, and is subject to the more detailed provisions set out herein.

- The CMCI Index is a commodity basket, subject to change from time to time, currently composed of 5 commodity groups with 28 components representing 24 commodities (as of February 1st, 2013), with the exposure diversified between a number of tenors, ranging from 3 Months to 3 Years, subject to liquidity,
- One composite index (the CMCI), one sub index per commodity group and as many single component indices as there are commodity components,
- Arithmetic averaging,
- Price Index (PI), Excess Return (ER) and Total Return (TR) indices are published daily,
- Each index is calculated in USD,
- Currency-hedged indices have been introduced to facilitate CMCI investment in currencies other than the US Dollar.

Tenors

- The CMCI is calculated for specified Standard Constant Maturities (SCM): 3 months (3M), 6 months (6M), 1 year (12M), 2 years (24M) and 3 years (36M) for each index series,
- CMCI is available as a single tenor index (i.e. CMCI 1 Year, CMCI 3 Months etc.) or as a Benchmark Index, weighted across all available CMCI tenors.

Weighting engine

- The weighting engine (which determines the composition and component weights of the CMCI) is based on a blending of Fundamental Weights and Liquidity Weights:
 - Fundamental Weights are derived from a combination of primary economic indicators such as CPI, PPI, and GDP, as well as commodity-level consumption data,
 - Liquidity Weights are obtained from a combination of Open Interest and Volume data, as reported on the relevant exchanges,
 - By basing on both Fundamental and Liquidity Weight, the Target Weights (TW) are designed to reflect the economic significance and market liquidity for each commodity in the Index,
 - Fundamental Weights are revised annually during the first half with changes effected during the July Maintenance Period, while Liquidity Weights are revised semi-annually and effected during the January and July Maintenance Periods. As a result, the Target Weights are potentially revised every six months.
- The CMCI Governance Committee meets semi-annually prior to the Index rebalancing. Changes, if any, are effected during the following January and July Maintenance Periods,
- The Index re-balances monthly over the last three CMCI Business Days of the month and according to the last defined Target and Tenor Weights,
- The Tenor Weights of the CMCI Benchmark Index are a function of relative liquidity along the respective forward curves,

Exceptional maintenance events

- In some circumstances, the CMCI Governance Committee may declare an event of Force Majeure or an Extraordinary Circumstance and can take any actions that it deems to be necessary or appropriate for the maintenance of the Index and the realisation of the objectives of the Index, even if such actions are not specifically provided for under the Index procedure. Any such actions might be taken with immediate effect,
- All changes to the Index are proposed by the members of the CMCI Governance Committee and approved by the CMCI Governance Committee.

Index composition

As of February 1st, 2013, the Index components are shown in Table I.

TABLE I. INDEX COMPONENTS

Commodity	Exchange/ platform	Contract Code (Bloomberg)	H2-2012	H2-2012	H1-2013	H1-2013
			Composite	Per Sector	Composite	Per Sector
			TW%	STW%	TW%	STW%
WTI Crude	NYMEX	CL	8.8310%	24.2690%	8.5432%	23.2995%
WTI Crude	ICE	EN	3.4457%	9.4693%	3.1229%	8.5169%
Brent Crude	ICE	CO	7.7234%	21.2251%	8.3339%	22.7287%
Heating oil #2	NYMEX	HO	3.4615%	9.5127%	3.6602%	9.9823%
Gasoil	ICE	QS	4.3452%	11.9414%	4.4915%	12.2495%
RBOB	NYMEX	XB	4.2128%	11.5776%	4.5525%	12.4158%
HHUB	NYMEX	NG	4.3684%	12.0050%	3.9627%	10.8073%
			36.3879%	100.0000%		100.0000%
Copper	LME	LP	9.1762%	36.8779%	9.1965%	37.1306%
High Grade	COMEX	HG	3.2394%	13.0185%	3.3452%	13.5061%
Zinc	LME	LX	2.1904%	8.8027%	2.1534%	8.6943%
Aluminium	LME	LA	6.7140%	26.9825%	6.6056%	26.6699%
Nickel	LME	LN	2.2717%	9.1297%	2.1485%	8.6745%
Lead	LME	LL	1.2911%	5.1886%	1.3188%	5.3246%
Tin	LME	LT	-	-	0.0000%	-
			24.8827%	100.0000%		100.0000%
Gold	COMEX	GC	4.9650%	79.4136%	4.8855%	79.6774%
Gold	EN	ZP	-	-	-	-
Silver	COMEX	SI	1.2871%	20.5864%	1.2461%	20.3226%
Platinum	NYMEX	PL	-	-	-	-
Palladium	NYMEX	PA	-	-	-	-
			6.2521%	100.0000%		100.0000%
SRW Wheat	CBOT	W_ (*)	2.3325%	8.2086%	2.2247%	7.8482%
HRW Wheat	KCBOT	KW	1.2044%	4.2387%	1.1125%	3.9247%
Corn	CBOT	C_ (*)	6.0594%	21.3247%	6.0594%	21.3763%
Soybeans	CBOT	S_ (*)	5.3662%	18.8850%	5.6965%	20.0961%
Soybean Meal	CBOT	SM	1.3287%	4.6762%	1.3600%	4.7979%
Soybean Oil	CBOT	BO	1.6340%	5.7506%	1.6698%	5.8907%
Canola	WCE	RS	-	-	-	-
Sugar #11	NYBOT	SB	4.6150%	16.2415%	4.6191%	16.2953%
Sugar #5	EN	QW	2.2338%	7.8614%	2.1642%	7.6350%
Cocoa	NYBOT	CC	-	-	-	-
Cocoa	EN	QC	0.6850%	2.4107%	0.6237%	2.2002%
Coffee	NYBOT	KC	1.3178%	4.6376%	1.2804%	4.5170%
Coffee	EN	DF	0.0000%	0.0000%	-	-
Cotton	NYBOT	CT	1.6381%	5.7651%	1.5360%	5.4186%
F.C. Orange	NYBOT	JO	-	-	-	-
Rapeseed	EN	IJ	-	-	-	-
Milling Wheat	EN	CA	-	-	-	-
Rice	CBOT	RR	-	-	-	-
			28.4150%	100.0000%		100.0000%
Live Cattle	CME	LC	2.3142%	56.9670%	2.3365%	57.1971%
Lean Hogs	CME	LH	1.7481%	43.0330%	1.7485%	42.8029%
			4.0623%	100.0000%		100.0000%

Source: UBS Investment Bank, Bloomberg

(*): The underscore "_" denotes a space.

TABLE II.A. INDIVIDUAL TENOR WEIGHTS OF CMCI BENCHMARK, AS % OF 100% FOR 1H 2013

Component/ Quoted SCM	Code	3M	6M	1Y	2Y	3Y	Total
WTI Crude Oil	CL	43.47%	19.52%	17.73%	11.97%	7.31%	100.00%
WTI Crude Oil	EN	42.87%	21.89%	16.61%	11.39%	7.23%	100.00%
Brent Crude Oil	CO	47.08%	21.19%	15.45%	9.62%	6.67%	100.00%
Heating oil	HO	57.72%	26.77%	15.51%	-	-	100.00%
Gasoil	QS	55.01%	26.47%	18.52%	-	-	100.00%
RBOB Gasoline	XB	68.20%	31.80%	-	-	-	100.00%
Natural Gas	NG	47.66%	23.36%	15.64%	7.69%	5.65%	100.00%
LME Copper	LP	31.79%	21.47%	22.20%	15.30%	9.23%	100.00%
High Grade Copper	HG	73.03%	26.97%	-	-	-	100.00%
LME Zinc	LX	48.37%	29.02%	22.61%	-	-	100.00%
LME Aluminium	LA	34.70%	22.35%	20.13%	14.00%	8.82%	100.00%
LME Nickel	LN	50.91%	26.96%	22.13%	-	-	100.00%
LME Lead	LL	51.32%	27.80%	20.88%	-	-	100.00%
Gold	GC	62.45%	17.28%	11.34%	8.94%	-	100.00%
Silver	SI	61.18%	16.53%	12.25%	10.04%	0.00%	100.00%
SRW Wheat	W	51.78%	30.28%	17.94%	-	-	100.00%
HRW Wheat	KW	60.77%	39.23%	0.00%	-	-	100.00%
Corn	C	48.74%	31.68%	19.58%	-	-	100.00%
Soybeans	S	51.55%	30.59%	17.86%	-	-	100.00%
Soybean Meal	SM	65.04%	34.96%	17.06%	-	-	100.00%
Soybean Oil	BO	64.88%	35.12%	-	-	-	100.00%
Sugar #11	SB	44.08%	33.87%	22.05%	-	-	100.00%
Sugar #5	QW	61.45%	38.55%	-	-	-	100.00%
Cocoa	QC	58.68%	41.32%	0.00%	-	-	100.00%
Coffee "C" Arabica	CT	57.94%	28.17%	13.89%	-	-	100.00%
Cotton	KC	58.55%	41.45%	0.00%	-	-	100.00%
Live Cattle	LC	62.52%	37.48%	-	-	-	100.00%
Lean Hogs	LH	61.96%	38.04%	-	-	-	100.00%

Source: UBS Investment Bank, CMCI Advisory Committee, CMCI Advisory Committee
 (*): The underscore "_" denotes a space.

TABLE II.B. INDIVIDUAL TENOR WEIGHTS OF CMCI BENCHMARK, AS % OF TARGET WEIGHTS FOR 1H 2013

Component/ Quoted SCM	Code (BBG)	3M	6M	1Y	2Y	3Y	Total (Target Weight %)
WTI Crude Oil	CL	3.7133%	1.6679%	1.5149%	1.0223%	0.6248%	8.5432%
WTI Crude Oil	EN	1.3387%	0.6837%	0.5188%	0.3558%	0.2258%	3.1229%
Brent Crude Oil	CO	3.9235%	1.7658%	1.2876%	0.8015%	0.5555%	8.3339%
Heating oil	HO	2.1126%	0.9797%	0.5679%	-	-	3.6602%
Gasoil	QS	2.4706%	1.1889%	0.8319%	-	-	4.4915%
RBOB Gasoline	XB	3.1046%	1.4479%	-	-	-	4.5525%
Natural Gas	NG	1.8885%	0.9257%	0.6198%	0.3047%	0.2241%	3.9627%
LME Copper	LP	2.9239%	1.9748%	2.0419%	1.4074%	0.8486%	9.1965%
High Grade Copper	HG	2.4429%	0.9023%	-	-	-	3.3452%
LME Zinc	LX	1.0415%	0.6249%	0.4870%	-	-	2.1534%
LME Aluminium	LA	2.2922%	1.4760%	1.3296%	0.9248%	0.5829%	6.6056%
LME Nickel	LN	1.0939%	0.5792%	0.4754%	-	-	2.1485%
LME Lead	LL	0.6768%	0.3666%	0.2754%	-	-	1.3188%
Gold	GC	3.0508%	0.8440%	0.5539%	0.4368%	-	4.8855%
Silver	SI	0.7623%	0.2059%	0.1527%	0.1252%	-	1.2461%
SRW Wheat	W	1.1519%	0.6737%	0.3991%	-	-	2.2247%
HRW Wheat	KW	0.6761%	0.4364%	-	-	-	1.1125%
Corn	C	2.9543%	1.9202%	1.1871%	-	-	6.0616%
Soybeans	S	2.9366%	1.7425%	1.0174%	-	-	5.6965%
Soybean Meal	SM	0.8846%	0.4755%	-	-	-	1.3600%
Soybean Oil	BO	1.0834%	0.5864%	-	-	-	1.6698%
Sugar #11	SB	2.0363%	1.5643%	1.0186%	-	-	4.6191%
Sugar #5	QW	1.3298%	0.8344%	-	-	-	2.1642%
Cocoa	QC	0.3660%	0.2577%	-	-	-	0.6237%
Coffee "C" Arabica	KC	0.7419%	0.3607%	0.1778%	-	-	1.2804%
Cotton	CT	0.8994%	0.6366%	-	-	-	1.5360%
Live Cattle	LC	1.4608%	0.8757%	-	-	-	2.3365%
Lean Hogs	LH	1.0835%	0.6650%	-	-	-	1.7485%

Source: UBS Investment Bank, CMCI Advisory Committee, CMCI Advisory Committee
 (*): The underscore "_" denotes a space.

Sourcing the CMCI

The CMCI website: the CMCI website is accessible via the following link: www.ubs.com/cmci.

UBS and Bloomberg are committed to very high standards of transparency for any of their benchmarks and the website is accessible for the general public with no restrictions. It provides comprehensive index information, technical document(s), presentation materials, and special announcements.

Bloomberg: Real time and settlement Index prices as well as important static data and related information are made available on Bloomberg page **CUBS <GO>**, **CMCX <GO>** and **CMCN <GO>**¹. Bloomberg Tickers for CMCI USD Indices are constructed as shown in Table III.

¹ Also see Reuters Pages UBSCMCI

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1.0 The Purpose of the CMCI Technical Document

This Technical Document provides further detail on the mechanisms that determine the structure of the CMCI.

The CMCI is designed as a tradable benchmark for global investment in the commodity markets. The weighting of the CMCI is built primarily on the basis of generic economic indicators such as GDP, CPI, PPI etc., but is also subject to a number of other secondary factors based on liquidity (such as market volume and open interest) as further described herein).

Further, the Index Sponsors are aware that no mechanisms can predict the changes that will most likely affect commodity markets in the future. The high international political focus, changing global demand combined with the volatility of supply and demand data make it impossible for any index sponsor to foresee all changes.

Therefore, the Index Sponsors use publicly available resources and research to allow this technical framework to evolve when market shifting events occur, with the aim of maintaining the CMCI's stability and accurate representation of commodity markets.

For the benefit of the Index and all market participants, UBS also uses its proprietary market knowledge via the CMCI Advisory Committee to advise any changes that it considers appropriate to the Index. The CMCI Advisory Committee has the mandate of providing advice to the Index Sponsors in order to promote the realization of the objectives of the Index as a tradable benchmark of the commodity market. Therefore, the Index Sponsors, as evenly represented on the CMCI Governance Committee, consider the recommendations made by the CMCI Advisory Committee and determine, in their reasonable judgment, whether such action is necessary or advisable in order to protect or advance the goals of the Index (see further detail below). Once the CMCI Governance Committee has reached a decision on proposals made by the CMCI Advisory Committee, it shall present its decisions to the Index Sponsors for ratification (see further detail below).

When deemed necessary by the Index Sponsors, the Technical Document and procedures therein may be modified. All modifications, decisions and rules affecting the CMCI, including those to be taken in periods of extraordinary circumstances such as market emergencies and events of Force Majeure, are to be taken by the CMCI Governance Committee. A Market Emergency or event of Force Majeure may be declared if the CMCI Governance Committee, on the advice of the CMCI Advisory Committee, determines that certain circumstances are likely to adversely affect the tradability of the Index or its ability to serve as a benchmark for the commodity market.

1.1. The CMCI Governance and Advisory Committees

In order to enhance the transparency and independence of the CMCI, the Index Sponsors established a committee (the CMCI Governance Committee), to oversee the validation, determinations, changes to the composition and communication regarding the CMCI. The Governance Committee is composed of representatives appointed by each of the Index Sponsors. Each Index Sponsor will, in turn, appoint a Chairman from the members of the CMCI Governance Committee. The Chairman will serve for a six month period at the expiry of which a new Chairman will be appointed. Each representative has a single vote with the Chairman, in the event of any tied votes, having an additional casting vote. There is also one non-voting member present on the Governance Committee, whose role it is to provide market colour as a result of in-depth commodity market knowledge.

The CMCI Governance Committee is currently composed of personnel appointed by the Index Sponsors, and the Index Sponsors reserve the right to amend the constitution, of their respective representatives, as they consider necessary, including the ability to appoint individuals or representatives of companies not affiliated with the Index Sponsors, such as academics, external counsels and market participants. The CMCI Governance Committee may include representatives of the research areas of the Index Sponsors knowledgeable in the commodities markets.

These individuals are not involved in the trading businesses of the Index Sponsors and are subject to information barriers designed to prevent the inappropriate disclosure of information between the research and trading businesses. As a result, they bring to the CMCI Governance Committee additional perspectives that are independent of the trading businesses of the Index Sponsors. Nevertheless, the involvement of the Index Sponsor's

personnel, including those in the research areas, in the CMCI Governance and Advisory Committees could potentially give rise to certain conflicts of interest.

The CMCI Governance Committee's role is to make decisions on matters related to the Index.

As a committee comprised of individuals with substantial experience and expertise in the relevant markets, the CMCI Governance Committee plays a significant role in the oversight and management of the Index. The CMCI Governance Committee holds Ordinary Meetings bi-annually at which it discusses and considers potential changes to the Index methodology, proposed by the CMCI Advisory Committee, in light of market conditions and changes. In addition to the Ordinary Meetings, the CMCI Governance Committee convenes for Extraordinary Meetings at the request of the CMCI Advisory Committee to discuss potential Market Emergency and Force Majeure events or any other situation, which makes an Extraordinary Meeting necessary.

The CMCI Governance Committee, acting via a simple majority of the votes of its members, may either adopt a recommendation made by the CMCI Advisory Committee or refuse to implement it. The CMCI Governance Committee will then present its decisions to the Index Sponsors for ratification. In this regard, the Index Sponsors will each be represented by an appointee who is a Board Member (or Managing Director) of the relevant Index Sponsor. When presented with a decision by the CMCI Governance Committee, a unanimous decision of the Index Sponsors is required for ratification. In the event that a unanimous decision of the Index Sponsors is not achieved, the decision of the CMCI Governance Committee shall be treated as rejected and any new or amended proposal will have to go through the normal approval process beginning with the CMCI Advisory Committee.

The CMCI Governance Committee is assisted and supported by an advisory committee (the CMCI Advisory Committee) whose role is to prepare the agenda for Ordinary and Extraordinary meetings, promote and maintain the communication between CMCI Governance Committee members, make proposals relating to the CMCI and manage all matters related to the external communication regarding the CMCI. The CMCI Advisory Committee has the mandate of providing advice to the Index Sponsors (as represented by the CMCI Governance Committee) in order to promote the realization of the objectives of the Index as a tradable benchmark of the commodity market.

1.2. Summary of Index Key Terms

1.2.1. Index calculation terms

AF	Adjusting Factor, the factor applied to either CTEW or ITW in the procedure leading to the calculation of the new TWAFs
ARR	For any CMCI Business Day, the Available Reference Rate is the rate of interest used to calculate the interest component of the TR index
ARRA & ARRS	Available Reference Rate Adjustment and Available Reference Rate Scalar, which represent the rate adjustment and the scalar factor, respectively, used in connection with the calculation of the TR index, - when applicable - to reflect any particular funding cost or rate differential applicable and associated with an ICR for an A+/A-1 (S&P) and/or Aa3/P-1 (Moody's) issuer. The ARRA and ARRS can change periodically to reflect market conditions
BV	Basket Value, the sum of Daily Component Values (DCV) of any combination of index components that comprise the CMCI Composite Index or any sub-index
BVF	Basket Value Final
BVI	Basket Value Initial
BVR	Basket Value Ratio, a ratio in use on the day prior to the first maintenance (re-weighting/re-balancing) periods and used in order to maintain continuity of the Index during those transition periods
caldays	Non CMCI business days between two consecutive Business Days, counted in calendar days. It is used to accrue the TR index on non CMCI Business Days
CCV	Component Curve Value, for a given component of the CMCI Benchmark Index, the sum for each eligible SCM of, the product of (1) the currency adjusted Daily Constant Maturity Forward Price (XDCMFP) with, (2) the Component Nominal Weight (CNW), with (3) the Tenor Weight Adjusting Factor (TWAF), with (4) the Index composition binary factor (IsIn)
CCYScalar	The adjusting factor used in connection with the foreign currency conversion into U.S. Dollars of non-U.S. Dollar denominated contracts
CMB	Constant Maturity Boundary, for each component in the CMCI, the maximum tenor of each SCM. The CMB will be the SCM when the SCM tenor extends out beyond tradable maturity
CMCI Business Day	A day on which at least 80% of the Daily Open Market Weight of the Index is available to trading
CMF	Constant Maturity Forwards
CNW	Component Nominal Weights, the nominal weights calculated on the business day preceding the start of the Maintenance Period prior to each Maintenance Period and such that on such day at close of business, the effective weights are equal to target weights for the following CMCI month

CP	Contract Proportion, used to determine the allocation of the index between two delivery months of the same contract in order to maintain a constant maturity exposure from the contracts included in the CMCI, and defined on a daily basis in reference to two Middle of Delivery Periods (MDP ₁ and MDP ₂) and a Daily Constant Maturity Date (DCMD). The CP represent the weighting scheme (cf. CP ₁ , CP ₂) for the contracts used to build the Daily Constant Maturity Forward Price (DCMFP)
CTEW	Component Tenor Effective Weights, the effective weighting invested on a given commodity component and eligible Standard Constant Maturity
CY	Carry Yield
CV	Curve Value, the sum of Curve Component Values (CCV) of any combination of index components that comprise the CMCI Benchmark Composite Index or any sub-index
CVF	Curve Value Final, see CV
CVI	Curve Value Initial, see CV
CVR	Curve Value Ratio, a ratio in use on the day prior to the first maintenance (re-weighting/re-balancing) period in order to maintain continuity of the Index during those transition periods
DCNP	Daily Contract Nearby Price, the daily contract reference price used in the calculation of the DCMFP, and defined for each component by the ENC list (cf. DCNP1, DCNP2)
DCV	Daily Component Value, the product, for a given component of the CMCI, of (1) the currency adjusted Daily Constant Maturity Forward Price (DCMFP) with, (2) the Component Nominal Weight (CNW)
DEW	Daily Effective Weight, the ratio of – for each component – (1) the Daily Component Value (DCV) and, (2) the Basket Value (BV)
DITRF	Daily Interest-Rate Total Return Formula (please see Section 3.4 for details), including Interest Rate Return (IRR) and Index Daily Return (IDR)
DOMW	Daily Open Market Weight, which reflects the weight of a contract in the CMCI on a given day, and is equal to the sum of, (1) Daily Effective Weight (DEW) multiplied by, (2) OPEN, the Open markets binary factors taking the value 1 when the market for the relevant index component is open for trading, and 0 when it is closed. When all markets are open for trading on a given CMCI Business Day, the DOMW is equal to 100%
DRR	For any CMCI Business Day, the product of (1) the ARRS and (2) the sum of the Available Reference Rate (ARR) and the Available Reference Rate Adjustment (ARRA)
DTOIQ	Daily Total Open Interest Quantity as reported by the exchange facility on which the component is traded and/or to which such component is associated, and measured as the Total number of Open interest on all traded contracts or maturities multiplied by the number of units of such commodity per contract
DTVQ	Daily Total Volume Quantity, which is measured as the number of contracts exchanged between buyers and sellers multiplied by the number of units of commodity per contract

EMEL	Exchange & Market Eligibility List
Eligible Tenor	See SCM
ENC	Eligible Nearby Contracts, the contracts on a particular commodity that are included in the calculation of a DCMFP for a given SCM
ER	Excess Return Index, measures for a given basket composition and Standard Constant Maturity, the uncollateralized returns of the CMCI basket components associated with the designated segment of forward curve
ETW	Equal Tenor Weights, for a given component, the weight obtained from the simple equal weight allocation process
FX	<p>FX is the Foreign Currency Rate used to convert a component 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 CCY factor defined for each CCY pair</p> <p>For the direct rate quotes, the price source is set to Bloomberg on page CCY F143 Crncy HP <GO> (Note the Location Time zone is set to "New-York"). This states that the Fixing prices are captured at 2:30pm EST</p>
ICR	Index Currency Reference, the currency in which the Index is quoted: USD, EUR
IDR	Index Daily Return, the daily composite basket return weighted appropriately by Rebalancing Proportions (RP) and CNWs to reflect assets held from one CMCI Business Day to the next
IRR	Interest Rate Return, the return reflecting the fixed income performance of the Index in its designated currency from one CMCI Business Day to the next. The IRR is expressed as a scalar factor and is compounded with the IDR to produce the Daily Index Total Return Factor (DITRF). The mathematical expression of IRR is a function of the rate type which is a function of ICR
MDP	Middle of Delivery Period, a fixed date associated, for each component, to each Futures/Forward contract allowing the calculation of DCMFP (please see Section 3 for details, cf MDP ₁ , MDP ₂)
MF	Maintenance Factor, a scalar factor used to maintain the continuity of the Price Index during Maintenance Periods (re-weighting, rebalancing)
Maintenance Period	Monthly period over the last three CMCI Business Days during which CMCI rebalances or rolls into new Target Weights. Please note that July Maintenance Period refers to last three CMCI Business Days of July, January Maintenance Period refers to last three CMCI Business Days of January
OPEN	Open markets binary factors taking the value 1 when a market is open, and 0 when it is closed
PI	Price Index, for a given basket composition and Standard Constant Maturity (SCM), the measure of the basket price level associated with the designated segment of the forward curve

PY	Price Yield
RP	Rebalancing Proportions (RP), the factors used in the calculation of the Index with function to weight each day in the Maintenance Period over which the Index goes from Old to New CNWs and MFs (cf RP ₁ , RP ₂)
RY	Roll Yield
SCM	Standard Constant Maturity, a maturity tenor for which the CMCI is calculated
Tenor	See SCM
TR	Total Return Index, measures the collateralized returns of the CMCI basket in each currency. Forward curves are equity like reflecting the sum of Excess Return slopes and Interest rate carry
TY	Total Yield
TW	Target Weights
TWAF	Tenor Weight Adjusting Factor, the factor used in the weighting each pair (Commodity Component, SCM) to their CTTW
VI	Volume Indicator. The Volume Indicator (VI) is obtained by compiling total annual consumption data (in volume/quantity terms) for the most recent calendar year. World consumption data were used in all cases, aside from the Agriculture sector, where US consumption data were used. VI is updated for the purpose of each regularly scheduled CMCI Governance Committee meeting or at the request of members of the CMCI Governance Committee
XDCMFP	A notation for the currency Converted value of the Daily Constant Maturity Forward Price
XY	Convexity yield
LRP	Liquidity Reference Period, is the period of time over which the various metrics are calculated, and is defined as the period of six months preceding the Calculation Reference Date (CRD)
LTW	Liquidity Tenor Weights, for a given component, the weight obtained from the liquidity function defined in Section 2.0. and reflecting the relative liquidity of eligible CMCI Benchmark Standard Constant Maturities or Tenors along the respective forward curves

1.2.2. Index Weighting Calculation Terms

Allocation Methodology	The method chosen in the weighting process for the purpose of aggregating Open Interest and Market Volume data to designated eligible SCM. The method chosen for this purpose is Linear Allocation
ACMVV	Average Component Market Volume Value, is the weighted average of the last four calculated CMLV at the time of calculation (please see Section 2. for details)
ACOIV	Average Component Open Interest Value, the weighted average of the last four calculated COIV at the time of calculation (please see Section 2. for details)
ATMVV	Average Tenor Market Volume Value, the weighted average of the last four calculated TMVV at the time of calculation (please see Section 2. for details)
ATOIV	Average Tenor Open Interest Value, the weighted average of the last four calculated TOIV at the time of calculation (please see Section 2. for details)
CCLV	Combined Component Liquidity Weight
CMVV	Component Market Volume Value, is the U.S. Dollar converted value of the average of the DTVQ over the specified Liquidity Reference Period (LRP)
COIV	Component Open Interest Value reflects the U.S. Dollar value of the open interest on a given commodity trading instrument or component over the relevant period of time and is defined as the U.S. Dollar value of the average of the daily reference contract open interest value over a specified Liquidity Reference Period (LRP)
CTMVV	Component Tenor Market Volume Weight, is the weight associated to a component c and given Standard Constant Maturity purely derived from Market Volume data
CTOIV	Component Tenor Open Interest Weight, is the weight associated to a component c and given Standard Constant Maturity purely derived from Open interest data
EW	Economic Weight (please see Section 2.3. for details)
LME Allocation Methodology	The method chosen in the weighting process for LME data, for the purpose of aggregating Open Interest data to designated prompt dates. The method chosen for this purpose is Simple Allocation (see Section 2.1.2.2 and 2.1.3.1. for further reference)
LRP	Liquidity Reference Period, is the period of time over which the various metrics are calculated, and is defined as the period of six months preceding the Calculation Reference Date (CRD)

MV	Market Value is obtained by multiplying, (1) the Volume Indicator (VI) for the calculation period of a full year of consumption and/or production for each commodity, by (2) the Price Indicator (PI5) defined for this purpose
MVRP	Market Value Reference Period is the period of time over which Market Value is determined for purposes of the various calculations and is defined as the period of one year preceding the Calculation Reference Date (CRD)
MVW	Market Value Weight (please see Section 2.3. for details)
PI5	Price Indicator is defined as the average of the prices over the most recent five calendar year periods measured using the first four nearby (resp. maturity pillars) delivery months of each futures strip (resp. the forward curve) during the last three CMCI Business Days of each month during each of the five years in the period, converted by the daily currency exchange rate between the component's currency and the U.S. Dollar
TTW	Temporary Target Weights.
SCLW	Sector Component Liquidity Weights
SMVW	Sector Market Volume Weight
SOIW	Sector Open Interest Weight (please see Section 2.3. for details)
STW	Sector Target Weight
T1, T2	Time boundaries used for the purpose of allocating Open Interest and Market Volume data to the respective Standard Constant Maturities with aim to measure real liquidity along the various commodity forward curves
TEW	Tradable Economic Weight
TMVV	Tenor Market Volume Value (TMVV) reflects the U.S. Dollar value of the Market Volume on a given commodity trading instrument or component over the relevant period of time and is defined as the U.S. Dollar value of the average of the daily reference contract Market Volume value over a specified Liquidity Reference Period (LRP) and for a specific Standard Constant Maturity (SCM)
TMVW	Tradable Market Value Weight are obtained by combining liquidity, open interest and market value calculations with Market Value Weight calculations by using one third Market Value Weight and two third Combined Component Liquidity Weight
TOIV	Tenor Open Interest Value (TOIV) reflects the U.S. Dollar value of the open interest on a given commodity trading instrument or component over the relevant period of time and is defined as the U.S. Dollar value of the average of the daily reference contract open interest value over a specified Liquidity Reference Period (LRP) and for a specific Standard Constant Maturity (SCM)
TW	Target Weight, the Percentage Index weight fixed for each component represented in the CMCI methodology as determined by the CMCI Weighing engine

1.2.3. Other abbreviations

Major Commodity Futures Exchanges

AFET	Agricultural Futures Exchange of Thailand For more information, please visit http://www.afet.or.th/thai/
BCE	Budapest Commodity Exchange For more information, please visit http://www.bce-bat.com
BM&F	Bolsa de Mercadorias & Futuros For more information, please visit http://www.bmf.com.br
BrCE	Bremen Cotton Exchange For more information, please visit http://www.baumwollboerse.de
BRdM	Bursa Romana de Marfuri For more information, please visit http://www.brm.ro/root/
CBOT	Chicago Board of Trade For more information, please visit www.cbot.com
CCO	Central Japan Commodity Exchange For more information, please visit http://www.c-com.or.jp
CME	Chicago Mercantile Exchange For more information, please visit www.cme.com
COMEX	See NYMEX
DCE	Dalian Commodity Exchange For more information, please visit http://www.dce.com.cn
EEX	European Energy Exchange For more information, please visit www.eex.com
ECX	European Climate Exchange For more information, please visit http://www.europeanclimateexchange.com
EURONEXT (EN)	Euronext.Liffe For more information, please visit www.euronext.com

ICE Futures (formerly IPE)	InterContinental Exchange For more information, please visit www.theice.com
ICE Futures US	Previously New York Board Of Trade (prior to September 2007), For more information, please visit www.theice.com
JADE	Joint Asian Derivatives Exchange (a joint venture between CBOT & SGX) For more information, please visit http://www.jadeexchange.com
KCE	Kansai Commodity Exchange For more information, please visit http://www.kanex.or.jp
KCBOT	Kansas City Board of Trade For more information, please visit www.kcbot.com
KFE	Korea Futures Exchange For more information, please visit www.kofex.com
LME	London Metal Exchange For more information, please visit www.lme.com
LMP	LME Plastics For more information, please visit www.lme.com
MATba	Mercado a Termino Buenos Aires S.A. For more information, please visit http://www.matba.com.ar
WCE	Winnipeg Commodity Exchange For more information, please visit www.wce.ca
MCI	Multi Commodity Exchange of India For more information, please visit http://www.mcxindia.com/
MDE	Malaysia Derivative Exchange For more information, please visit http://www.mdex.com.my/
MGEX	Minneapolis Grain Exchange For more information, please visit http://www.mgex.com
NCDEX	India National Commodity and Derivatives Exchange For more information, please visit http://www.ncdex.com/
NMCE	India National Multi-Commodity Exchange For more information, please visit http://www.nmce.com/
NYMEX (inc. COMEX, Clearport and Softs)	New York Mercantile Exchange For more information, please visit www.nymex.com
OME	Osaka Mercantile Exchange For more information, please visit http://www.osamex.com
PNC	Pakistan National Commodity Exchange For more information, please visit http://www.ncel.com.pk/
PNX	Powernext For more information, please visit http://www.powernext.fr
RMX	Risk Management Exchange See WTB

ROFEX	Mercado a Termino de Rosario For more information, please visit http://www.rofex.com.ar/
RTS	Russian Trading System For more information, please visit http://www.rts.ru/?tid=541
SAFEX	South Africa Futures Exchange For more information, please visit http://www.safex.co.za/
SCE	Sofia commodity Exchange For more information, please visit http://www.sce-bg.com/
SFE	Sydney Futures Exchange For more information, please visit http://www.sfe.com.au/
SGE	Shanghai Gold Exchange For more information, please visit http://www.sge.sh
SHFE	Shanghai Futures Exchange For more information, please visit http://www.shfe.com.cn
SHME	Shanghai Metal Exchange For more information, please visit http://www.shme.com/exchange/shme/shme.htm
SICOM	Singapore Commodity Exchange For more information, please visit http://www.sicom.com.sg/
SGX	Singapore Exchange For more information, please visit http://www.ses.com.sg/
TDE	Turkish Derivatives Exchange For more information, please visit http://www.turkdex.org.tr
TGE	Tokyo Grain Exchange For more information, please visit http://www.tge.or.jp
TOCOM	Tokyo Commodity Exchange For more information, please visit http://www.tocom.or.jp/
WTB (also called RMX)	Hanover Commodity Exchange For more information, please visit http://www.wtb-hannover.de/
ZCE	Zhengzhou Commodity Exchange For more information, please visit http://english.czce.com.cn/

2. The CMCI Calculation Methodology

2.1.1. Definition of Constant Maturity Forwards for the CMCI

The CMCI is calculated on the basis of specified tenors or maturities that remain constant. For example, the three month constant maturity forward is at all times based on a combination of contracts with the middle of their delivery periods approximately three months from the date of calculation.

We provide a mathematical definition of the constant maturity forward on a commodity curve in the context of the CMCI.

Using Eligible Nearby Contracts (ENC), defined below as the most liquid contract expirations for each Standard Constant Maturity (SCM), we provide:

- a definition of Daily Constant Maturity Date (DCMD),
- a definition of the Middle Delivery Period (MDP), and
- the calculation of the Daily Constant Maturity Forward Price (DCMFP), as a function of the two above notions.

The eligible SCM for each Commodity Component are defined by CMCI Governance Committee, in conjunction with CMCI Advisory Committee, and, as of January 1st, 2010, are specified in Table II.A. below.

TABLE A.I. CMCI BENCHMARK INDEX AVAILABLE STANDARD CONSTANT MATURITIES

Component/Available SCM	Code	3M	6M	1Y	2Y	3Y
WTI Crude Oil 1	CL	Yes	Yes	Yes	Yes	Yes
WTI Crude Oil 2	EN	Yes	Yes	Yes	Yes	Yes
Brent Crude Oil	CO	Yes	Yes	Yes	Yes	Yes
Heating oil	HO	Yes	Yes	Yes	-	-
Gasoil	QS	Yes	Yes	Yes	-	-
RBOB Gasoline	XB	Yes	Yes	-	-	-
Natural Gas	NG	Yes	Yes	Yes	Yes	Yes
LME Copper	LP	Yes	Yes	Yes	Yes	Yes
High Grade Copper	HG	Yes	Yes	-	-	-
LME Zinc	LX	Yes	Yes	Yes	-	-
LME Aluminium	LA	Yes	Yes	Yes	Yes	Yes
LME Nickel	LN	Yes	Yes	Yes	-	-
LME Lead	LL	Yes	Yes	Yes	-	-
Gold	GC	Yes	Yes	Yes	Yes	-
Silver	SI	Yes	Yes	Yes	Yes	-
SRW Wheat	W ^(*)	Yes	Yes	Yes	-	-
Corn	C ^(*)	Yes	Yes	Yes	-	-
Soybeans	S ₋ ^(*)	Yes	Yes	Yes	-	-
Soybean Meal	SM	Yes	Yes	-	-	-
Soybean Oil	BO	Yes	Yes	-	-	-
Sugar #11	SB	Yes	Yes	Yes	-	-
Sugar #5	QW	Yes	Yes	-	-	-
Cocoa	QC	Yes	Yes	-	-	-
Coffee "C" Arabica	KC	Yes	Yes	Yes	-	-
Cotton	CT	Yes	Yes	-	-	-
Live Cattle	LC	Yes	Yes	-	-	-
Lean Hogs	LH	Yes	Yes	-	-	-

Source: UBS Investment Bank, CMCI Advisory Committee, CMCI Advisory Committee.
 (*): The underscore "_" denotes a space.

2.1.1.1. Standard Constant Maturity (SCM) and Constant Maturity Boundaries (CMB)

A Standard Constant Maturity is a Tenor for which the CMCI is calculated. Each Tenor being independent of each other, it allows the calculation of returns associated with specific segments of the forward curves, making the CMCI a family of commodity instruments calculated for designated maturities.

The CMCI, its sectors and its component indices are calculated for the following Standard Constant Maturities (SCM):

- 3 Months (3M),
- 6 Months (6M),
- 1 Year (12M),
- 2 Years (24M),
- 3 Years (36M).

We also provide single component indices for the following Standard Constant Maturities for specific commodities only:

- 4 Years (48M),
- 5 Years (60M).

When, for a specific component, the Standard Constant Maturity extends to an illiquid region of the curve, as determined by the CMCI Governance Committee, in such a way that the CMCI cannot be calculated by means of simple price observation, a Constant Maturity boundary (CMB) replaces the SCM in the calculation and the particular SCM will have a tenor equal to the applicable CMB.

2.1.1.2. Determination of Daily Constant Maturity Dates (DCMD)

In order to calculate the CMCI with the appropriate SCM tenors, it is first necessary to identify the relevant forward date for which, on any given day and for each tenor, UBS will identify the applicable futures contracts and price. This date is referred to as the Daily Constant Maturity Date (DCMD) and is not necessarily a CMCI Business Day.

For example, on a given date on which the calculation is made, the appropriate forward date for the three month constant maturity is exactly 91 days from the date of calculation, which is equivalent to approximately three months.

Please refer to Appendix B.1. for detailed calculations of DCMD.

2.1.1.3. Middle of Delivery Periods (MDP)

With respect to commodities futures contracts, the contract month name (i.e. JUN10 or M10) usually indicates the month in which the delivery period associated with that contract occurs. However, the exact time period in that month during which the commodity is to be delivered can vary significantly across contracts as each physical commodity market carries its own unique characteristics, delivery cycles and conventions².

To address this issue, UBS designates a theoretical date within the delivery period, referred to as the Middle of Delivery Period (MDP). The date is sought to represent the mid-point between the first and last day of the delivery period for the relevant contract as defined by the rules of the applicable exchange. As delivery periods are well defined and enforced by exchanges on which futures contracts trade, the date is a direct function of the effective delivery period attached to each Futures contract. The MDP for each contract is then used to determine the Contract Proportions, discussed below, that are used to calculate the portion of the CMCI attributable to a given maturity along the curve for a given SCM.

The MDP for each commodity futures contract is defined in table II.C.1 below. The MDPs are determined by the CMCI Governance Committee, which also reviews and approves all changes in methodology affecting such determination.

² For example, on the NYMEX WTI Light sweet crude oil, the JUN07 contract expires the 23rd of May, and delivery can take place at any time from the first to the last calendar day of the month, but for other commodities, it is not unusual to see delivery periods extend beyond that period, or even overlap with a few of the last trading days of the contract.

2.1.1.4. The calculation of Daily Constant Maturity Forward Prices (DCMFP)

For the purpose of calculating Constant maturity forwards, UBS defines Eligible Nearby Contracts (ENC), which are defined, for each Standard Constant Maturity (SCM), as economically significant and liquid futures contract expirations, as determined by the CMCI Governance Committee.

As with most asset classes, liquidity reduces as time to maturity increases. Therefore, with respect to commodity markets, exchanges limit the tenor of Futures expiries to prevent unnecessary dilution of liquidity.

When such long dated contracts are listed, market participants usually concentrate on the most liquid ones gradually taking positions on all segments of the forward curves. The CMCI methodology aims to reflect this practice while maintaining the objective of transparency and avoiding potential price manipulation to which less traded contracts are prone.

Eligible Nearby Contracts (ENC) are therefore defined, for each Standard Constant Maturity (SCM), as economically significant and liquid futures contract, as determined by the CMCI Governance Committee. and are set forth in Tables II.A.1. and Table II.A.2. below.

TABLE II.A.1. DEFINITION OF CMCI ELIGIBLE NEARBY CONTRACTS (ENC)

Contract/ SCM (or CMB)	BBG							
	Code	3M	6M	1Y	2Y	3Y	4Y	5Y
WTI Crude Oil 1	CL	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	M,Z	Z	Z	Z
WTI Crude Oil 2	EN	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	M,Z	Z	Z	Z
Brent Crude Oil	CO	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	M,Z	Z	Z	Z
Heating oil	HO	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	-	-	-	-
Gasoil	QS	F,G,H,..Z	F,G,H,..Z	H,M,U,Z	-	-	-	-
RBOB Gasoline	XB	F,G,H,..Z	F,G,H,..Z	-	-	-	-	-
Natural Gas	NG	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	Z	Z	-	-
LME Copper	LP	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	M,Z	M,Z	M,Z	-
High Grade Copper	HG	H, K, N, U, Z	H, K, N, U, Z	-	-	-	-	-
LME Zinc	LX	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	-	-	-	-
LME Aluminium	LA	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	M,Z	M,Z	M,Z	-
LME Nickel	LN	F,G,H,..Z	F,G,H,..Z	M,Z	-	-	-	-
LME Lead	LL	F,G,H,..Z	F,G,H,..Z	F,G,H,..Z	-	-	-	-
Gold	GC	G,J,M,Q,Z	G,J,M,Q,Z	M,Z	Z	-	-	-
Silver	SI	H,K,N,U,Z	H,K,N,U,Z	N,Z	Z	-	-	-
SRW Wheat	W	H,K,N,U,Z	H,K,N,U,Z	N,Z	-	-	-	-
Corn	C	H,K,N,U,Z	H,K,N,U,Z	H,K,N,U,Z	-	-	-	-
Soybeans	S	F,H,K,N,X	F,H,K,N,X	H,N,X	-	-	-	-
Soybean Meal	SM	F,H,K,N,Q,U,Z	F,K,N,Z	-	-	-	-	-
Soybean Oil	BO	F,H,K,N,Q,U,Z	F,K,N,Z	-	-	-	-	-
Sugar #11	SB	H,K,N,V	H,K,N,V	H,K,N,V	-	-	-	-
Sugar #5	QW	H,K,Q,V,Z	H,K,Q,V,Z	-	-	-	-	-
Cocoa	QC	H,K,N,U,Z	H,K,U,Z	H,K,U,Z	-	-	-	-
Coffee "C" Arabica	KC	H,K,N,U,Z	H,K,N,U,Z	H,K,N,U,Z	-	-	-	-
Cotton	CT	H,K,N,Z	H,K,N,Z	-	-	-	-	-
Live Cattle	LC	G,J,M,Q,V,Z	G,J,M,Q,V,Z	-	-	-	-	-
Lean Hogs	LH	G,J,M,Q,V,Z	G,J,M,Q,V,Z	-	-	-	-	-

Source: UBS Investment Bank, CMCI Advisory Committee, CMCI Advisory Committee.

TABLE II.A.2 DEFINITION OF ELIGIBLE NEARBY CONTRACTS (ENC) FOR NON-CMCI INDICES

Contract/ SCM (or CMB)	BBG Code	3M	6M	1Y	2Y	3Y	4Y	5Y
Canola	RS	F,H,K,N,X	-	-	-	-	-	-
Barley	WA	H,K,N,V,Z	-	-	-	-	-	-
Lumber (Random Lgth.)	LB	F,H,K,N,U,X	-	-	-	-	-	-
Rough Rice	RR	F,H,K,N,U,X	-	-	-	-	-	-
Rapeseed (Colza)	IJ	G,K,Q,X	-	-	-	-	-	-
Platinum*	PL	F,J,N,V	-	-	-	-	-	-
F.C. Orange Juice (A)	JO	F,H,K,N,U,X	-	-	-	-	-	-
HRW Wheat	KW	H,K,N,U,Z	H,K,N,U,Z	N,Z				

* As of H1-2013 the eligible contracts and rolling period for the Platinum 3M Index were adjusted for liquidity and open interest. The roll period was shortened from six months to four months. As a result, the contract roll is completed over the course of the first calendar month of the rolling period; during the following two months, the exposure remains unchanged. During the final month of the rolling period, the Platinum 3M Index rolls into the next eligible contract.

This change is equivalent to the introduction of the following months in the CMCI Platinum 3M rolling schedule: Liquidity Adjusted Contracts F,F,J,J,N,N,V,V; where each contract has two different MDPs. The first MDP corresponds to the non adjusted CMCI MDP. The second MDP is equal to the first one + 2 calendar months.

Source: UBS Investment Bank, CMCI Advisory Committee, CMCI Advisory Committee.

Legend: -: Standard Constant Maturity (SCM) for which the Component is not quoted.

F: Jan, G: Feb, H: Mar, J: Apr, K: May, M: Jun, N: Jul, Q: Aug, U: Sep, V: Oct, X: Nov, Z: Dec.

Constant Maturity Boundaries (CMB) are listed in Table II.B.1. and II.B.2. below (the sign “-” denotes that no boundary is applied to the component for an SCM).

TABLE II.B.1. DEFINITION OF CMCI CONSTANT MATURITY BOUNDARIES

Contract/ SCM (or CMB)	BBG Code	3M	6M	1Y	2Y	3Y	4Y	5Y
WTI Crude Oil 1	CL	-	-	-	-	-	-	-
WTI Crude Oil 2	EN	-	-	-	-	-	-	-
Brent Crude Oil	CO	-	-	-	-	-	-	-
Heating oil	HO	-	-	-	1Y	1Y	1Y	1Y
Gasoil	QS	-	-	-	1Y	1Y	1Y	1Y
RBOB Gasoline	XB	-	-	6M	6M	6M	6M	6M
Natural Gas	NG	-	-	-	-	-	3Y	3Y
LME Copper	LP	-	-	-	-	-	-	4Y
High Grade Copper	HG	-	-	6M	6M	6M	6M	6M
LME Zinc	LX	-	-	-	1Y	1Y	1Y	1Y
LME Aluminium	LA	-	-	-	-	-	-	4Y
LME Nickel	LN	-	-	-	1Y	1Y	1Y	1Y
LME Lead	LL	-	-	-	1Y	1Y	1Y	1Y
Gold	GC	-	-	-	-	2Y	2Y	2Y
Silver	SI	-	-	-	-	2Y	2Y	2Y
SRW Wheat	W	-	-	-	1Y	1Y	1Y	1Y
Corn	C	-	-	-	1Y	1Y	1Y	1Y
Soybeans	S	-	-	-	1Y	1Y	1Y	1Y
Soybean Meal	SM	-	-	6M	6M	6M	6M	6M
Soybean Oil	BO	-	-	6M	6M	6M	6M	6M
Sugar #11	SB	-	-	-	1Y	1Y	1Y	1Y
Sugar #5	QW	-	-	6M	6M	6M	6M	6M
Cocoa	QC	-	-	6M	6M	6M	6M	6M
Coffee “C” Arabica	KC	-	-	-	1Y	1Y	1Y	1Y
Cotton	CT	-	-	6M	6M	6M	6M	6M
Live Cattle	LC	-	-	6M	6M	6M	6M	6M
Lean Hogs	LH	-	-	6M	6M	6M	6M	6M

Source: UBS Investment Bank, CMCI Advisory Committee

Legend: -: No boundary; NQ: Not Quoted.

TABLE II.B.2. DEFINITION OF CONSTANT MATURITY BOUNDARIES FOR NON-CMCI INDICES

Contract	BBG Code	3M	6M	1Y	2Y	3Y	4Y	5Y
Canola	RS	-	3M	3M	3M	3M	3M	3M
Barley	WA	-	3M	3M	3M	3M	3M	3M
Lumber (Random Length)	LB	-	3M	3M	3M	3M	3M	3M
Rough Rice	RR	-	3M	3M	3M	3M	3M	3M
Rapeseed (Colza)	IJ	-	3M	3M	3M	3M	3M	3M
Platinum	PL	-	3M	3M	3M	3M	3M	3M
F.C. Orange Juice (A)	JO	-	3M	3M	3M	3M	3M	3M
HRW Wheat	KW	-	-	-	1Y	1Y	1Y	1Y

Source: UBS Investment Bank, CMCI Advisory Committee

Legend: -: No boundary; NQ: Not Quoted.

Middle of Delivery Periods (MDPs) are listed in Tables II.C.1. and II.C.2. below.

TABLE II.C.1. DEFINITION OF CMCI NON ADJUSTED MIDDLE OF DELIVERY PERIODS (NAMDP)

Contract	Exch.	BBG Code	Delivery Period or Cash settlement date
WTI Crude Oil 1	NYMEX	CL	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
WTI Crude Oil2	ICE	EN	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Brent Crude Oil	ICE	CO	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Heating oil	NYMEX	HO	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Gasoil	ICE	QS	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
RBOB Gasoline	NYMEX	XB	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Natural Gas	NYMEX	NG	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
LME Copper	LME	LP	2 trading days prior to last trade date
High Grade Copper	COMEX	HG	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
LME Zinc	LME	LX	2 trading days prior to last trade date
LME Aluminium	LME	LA	2 trading days prior to last trade date
LME Nickel	LME	LN	2 trading days prior to last trade date
LME Lead	LME	LL	2 trading days prior to last trade date
Gold	COMEX	GC	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Silver	COMEX	SI	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
SRW Wheat	CBOT	W	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Corn	CBOT	C	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Soybeans	CBOT	S	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Soybean Meal	CBOT	SM	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Soybean Oil	CBOT	BO	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Sugar #11	NYBOT	SB	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Sugar #5	EN	QW	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Cocoa	EN	QC	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Coffee "C" Arabica	NYBOT	KC	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Cotton	INYBOT	CT	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Live Cattle	CME	LC	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Lean Hogs	CME	LH	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date

Source: UBS Investment Bank, CMCI Advisory Committee

TABLE II.C.2. DEFINITION OF NON ADJUSTED MIDDLE OF DELIVERY PERIODS (NAMDP) FOR NON-CMCI INDICES

Contract	Exch.	BBG Code	Delivery Period or Cash settlement date
Canola	WCE	RS	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Barley	WCE	WA	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Lumber (Rand. Lgth.)	CME	LB	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Rough Rice	CME	RR	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Rapeseed (Colza)	EN	IJ	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
Platinum	NYMEX	PL	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
F.C. Orange Juice (A)	NYBOT	JO	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date
HRW Wheat	KCBOT	KW	Earlier of 1 trading day prior to last trade date or 2 trading days prior to first notice date

Source: UBS Investment Bank, CMCI Advisory Committee

2.1.1.5. Adjustments to the MDP for the calculation of the CMCI-3M

In the case where a component instrument is composed of four Eligible Nearby Contacts (ENC) per calendar year, the calculation of the CMCI-3M can be problematic if two consecutive contract are spaced by more than three months. In such case, the number of days between the DCMD and the reference calculation date is less than the difference in days between the two consecutive MDPs used in the calculation of the DCMFP. We resolve this technical issue by adjusting the MDP backwards to prevent:

- an expired contract to continue to be referenced by the CMCI calculation engine,
- the CMCI referencing contracts in their Notice Period.

The only SCM for which an adjustment to the MDP is necessary is the 3M.

TABLE II.D.1.1. ADJUSTMENT OF MDP FOR FIRST NOTICE DAYS AND EXPIRIES, FOR THE CMCI 3M

Contract	BBG Code	MDPa
WTI Crude Oil 1	CL	- , - , - , -
WTI Crude Oil 2	EN	- , - , - , -
Brent Crude Oil	CO	- , - , - , -
Heating oil	HO	- , - , - , -
Gasoil	QS	- , - , - , -
RBOB Gasoline	XB	- , - , - , -
Natural Gas	NG	- , - , - , -
LME Copper	LP	- , - , - , -
High Grade Copper	HG	- , - , - , -
LME Zinc	LX	- , - , - , -
LME Aluminium	LA	- , - , - , -
LME Nickel	LN	- , - , - , -
LME Lead	LL	- , - , - , -
Gold	GC	- , - , - , - , -1m
Silver	SI	- , - , - , - , -
SRW Wheat	W	- , - , - , - , -
Corn	C	- , - , - , - , -
Soybeans	S	- , - , - , - , -1m
Soybean Meal	SM	- , - , - , - , - , - , -
Soybean Oil	BO	- , - , - , - , - , - , -
Sugar #11	SB	-3m, -2m, -1m, -1m
Sugar #5	QW	-2m, -2m, -2m, -2m, -2m
Cocoa	QC	-1m, - , - , - , -
Coffee "C" Arabica	KC	-1m, - , - , - , -1m
Cotton	CT	-1m, -1m, - , -2m
Live Cattle	LC	- , - , - , - , - , -
Lean Hogs	LH	- , - , - , - , - , -

Legend: - : No adjustment

Source: UBS Investment Bank, CMCI Advisory Committee

TABLE II.D.1.2. ADJUSTMENT OF MDP FOR FIRST NOTICE DAYS AND EXPIRIES, FOR THE NON-CMCI 3M

Contract	BBG Code	MDPa
Canola	RS	-1m, -1m, -1m, -1m
Barley	WA	-1m, -1m, -1m, -1m
Lumber (Rand. Lgth.)	LB	-1m, -1m, -1m, -1m
Rough Rice	RR	-1m, -1m, -1m, -1m
Rapeseed (Colza)	IJ	-1m, -1m, -1m, -1m
Platinum*	PL	- , - , - , - , - , -
F.C. Orange Juice (A)	JO	- , - , - , - , - , -
HRW Wheat	KW	- , - , - , - , - , -

Legend: - : No adjustment

Source: UBS Investment Bank, CMCI Advisory Committee

*As of H1-2013 the Platinum MDP adjustment was removed for liquidity and open interest reasons

The matrix above shows the adjustment that must be made to the MDP date to obtain the MDP used in the calculation of the Daily Contract Proportions (CP). For example, "-1m" means that the naMDP date is adjusted backwards by one calendar month.

The following table proposes a few examples of calculations:

TABLE II.D.2. EXAMPLES OF ADJUSTMENT OF MDP FOR FIRST NOTICE DAYS AND EXPIRIES

Contract	Code	ENC	naMDP	MDPa	Adjusted contracts
WTI Crude Oil	CL	F,G,H,..Z	15(m)	- , - , - , -	-
Gold	GC	G,J,M,V,Z	E(b+0) -10bd	- , - , - , -1m, -	V
Soybeans	S	F,H,K,N,X	EOM(m-1)	- , - , - , - , -1m	X
Sugar #11	SB	H,K,N,V	21(m)	-1m, - , - , -	H
Sugar #5	QW	H,K,Q,V,Z	1(m+1)	-2m,-2m,-2m,-2m,-2m	H,K,Q,V,Z

Legend: 0 : No adjustment / F: Jan, G: Feb, H: Mar, J: Apr, K: May, M:Jun, N:Jul, Q:Aug, U:Sep, V:Oct, X:Nov, Z:Dec.

The following table proposes a few examples of calculations:

TABLE II.D.2.2 EXAMPLES OF ADJUSTMENT OF MDP FOR FIRST NOTICE DAYS AND EXPIRIES

Contract Expiry	naMDP	MDP	Comment
CLH07	15-Mar-07	15-Mar-07	No Adjustment
GCG07	16-Feb-07	16-Feb-07	No Adjustment
GCV07	15-Oct-07	15-Sep-07	October 2007 MDP is adjusted by 1 month backwards
SX07	30-Sep-07	31-Aug-07	November 2007 MDP is adjusted by 1 month backwards
SBV07	21-Oct-07	21-Oct-07	No Adjustment
SBH07	21-Mar-07	21-Feb-07	March 2007 MDP is adjusted by 1 month backwards
LSUH7	01-Apr-07	01-Feb-07	March 2007 MDP is adjusted by 2 month backwards

Source: UBS Investment Bank, CMCI Advisory Committee

TABLE II.E.1. MIDDLE OF DELIVERY PERIODS REFERENCES

Contract	Exch.	BBG Ticker	Delivery Period or Cash settlement Date Reference
WTI Crude Oil 1	NYMEX	CL	http://www.cmegroup.com/trading/energy/crude-oil/light-sweet-crude_contract_specifications.html & http://www.cmegroup.com/rulebook/NYMEX/2/200.pdf
WTI Crude Oil 2	ICE	EN	https://www.theice.com/productguide/ProductDetails.shtml?specId=213
Brent Crude Oil	ICE	CO	https://www.theice.com/productguide/ProductDetails.shtml?specId=219
Heating oil	NYMEX	HO	http://www.cmegroup.com/trading/energy/refined-products/heating-oil_contract_specifications.html & http://www.cmegroup.com/rulebook/NYMEX/1a/150.pdf
Gasoil	ICE	QS	https://www.theice.com/productguide/ProductDetails.shtml?specId=909
RBOB Gasoline	NYMEX	XB	http://www.cmegroup.com/trading/energy/refined-products/rbob-gasoline_contract_specifications.html & http://www.cmegroup.com/rulebook/NYMEX/1a/191.pdf
Natural Gas	NYMEX	NG	http://www.cmegroup.com/trading/energy/natural-gas/natural-gas_contract_specifications.html & http://www.cmegroup.com/rulebook/NYMEX/2/220.pdf
LME Copper	LME	LP	http://www.lme.com/copper.asp
High Grade Copper	COMEX	HG	http://www.cmegroup.com/trading/metals/base/copper_contract_specifications.html
LME Zinc	LME	LX	http://www.lme.com/zinc.asp
LME Aluminium	LME	LA	http://www.lme.com/aluminium.asp
LME Nickel	LME	LN	http://www.lme.com/nickel.asp
LME Lead	LME	LL	http://www.lme.com/lead.asp
Gold	COMEX	GC	http://www.cmegroup.com/trading/metals/precious/gold_contract_specifications.html & http://www.cmegroup.com/rulebook/NYMEX/1a/113.pdf
Silver	COMEX		http://www.cmegroup.com/trading/metals/precious/silver_contract_specifications.html & http://www.cmegroup.com/rulebook/NYMEX/1a/112.pdf
SRW Wheat	CBOT	W	http://www.cmegroup.com/trading/commodities/grain-and-oilseed/wheat_contract_specifications.html
Corn	CBOT	C	http://www.cmegroup.com/trading/commodities/grain-and-oilseed/corn_contract_specifications.html
Soybeans	CBOT	S	http://www.cmegroup.com/trading/commodities/grain-and-oilseed/soybean_contract_specifications.html
Soybean Meal	CBOT	SM	http://www.cmegroup.com/trading/commodities/grain-and-oilseed/soybean-meal_contract_specifications.html
Soybean Oil	CBOT	BO	http://www.cmegroup.com/trading/commodities/grain-and-oilseed/soybean-oil_contract_specifications.html
Sugar #11	NYBOT	SB	https://www.theice.com/productguide/ProductDetails.shtml?specId=23
Sugar #5	EN	QW	http://www.euronext.com/trader/contracts/specifications/derivative/wide/contracts/specifications-2864-EN.html?euronextCode=W-LON-FUT
Cocoa	EN	QC	http://www.euronext.com/trader/contracts/specifications/derivative/wide/contracts/specifications-2864-EN.html?euronextCode=C-LON-FUT
Coffee "C" Arabica	NYBOT	KC	https://www.theice.com/productguide/ProductDetails.shtml?specId=15
Cotton	INYBOT	CT	https://www.theice.com/productguide/ProductDetails.shtml?specId=254

Live Cattle	CME	LC	http://www.cmegroup.com/trading/commodities/livestock/live-cattle_contract_specifications.html
Lean Hogs	CME	LH	http://www.cmegroup.com/trading/commodities/livestock/lean-hogs_contract_specifications.html

Source: UBS Investment Bank, CMCI Advisory Committee

TABLE II.E.2. MIDDLE OF DELIVERY PERIODS REFERENCES

Contract	Exch.	BBG Ticker	Delivery Period or Cash settlement Date Reference
Canola	WCE	RS	https://www.theice.com/productguide/ProductDetails.shtml?specId=251
Barley	WCE	WA	https://www.theice.com/productguide/ProductDetails.shtml?specId=5
Lumber (Random Lgth.)	CME	LB	http://www.cmegroup.com/trading/commodities/lumber-and-pulp/random-length-lumber_contract_specifications.html
Rough Rice	CME	RR	http://www.cmegroup.com/trading/commodities/grain-and-oilseed/rough-rice_contract_specifications.html
Rapeseed (Colza)	EN	IJ	http://www.euronext.com/trader/contracts/derivatives/wide/contracts/specifications-2864-EN.html?euronextCode=OCO-PAR-OPT
Platinum	NYMEX	PL	http://www.cmegroup.com/trading/metals/precious/platinum_contract_specifications.html
F.C. Orange Juice (A)	NYBOT	JO	https://www.theice.com/productguide/ProductDetails.shtml?specId=30
HRW Wheat	KCBOT	KW	http://www.kcbot.com/contract_wheat.html & http://www.kcbot.com/histdata/rule_book/CH12.pdf

Source: UBS Investment Bank, CMCI Advisory Committee

2.1.1.5.1. Daily Contract Proportions (CP)

As noted above, it is necessary to determine the portion of the CMCI attributable to a given component that is allocated to contracts or maturities along the curve for a given SCM. This is accomplished through the use of contract proportions (CP), which are in turn based on the relevant MDPs and DCMDs. The contract proportions are obtained by simple linear interpolation on middle delivery period dates. For a specific component c and SCM, we have:

$$CP1_{c,SCM,d} = \frac{(MDP_{2,d} - DCMD_{SCM,d})}{(MDP_{2,d} - MDP_{1,d})} \quad (2a)$$

$$CP2_{c,SCM,d} = 1 - CP1_{c,SCM,d} = \frac{(DCMD_{SCM,d} - MDP_{1,d})}{(MDP_{2,d} - MDP_{1,d})} \quad (2b)$$

where:

- $DCMD_{SCM,t}$ the Daily Constant Maturity Date, associated to a Standard Constant Maturity.
- $MDP_{1,d}$ the MDP date for the futures contract which MDP date is immediately preceding the Daily Constant Maturity Date for time t . If such contract doesn't exist, then CP_1 is equal to 0.00 and by definition CP_2 is equal 1.00.
- $MDP_{2,d}$ the MDP date for the futures contract which MDP date is equal or immediately following the Daily Constant Maturity Date for time t .

CP_1 and CP_2 depend explicitly on the date t chosen for the calculation. For the Price Index, $MDP_{1,d}$ and $MDP_{2,d}$ refer to the Middle Delivery Period corresponding to the calculation time t . For the Excess Return Index however, the $MDP_{1,d}$ and $MDP_{2,d}$ refer to the Middle Delivery Period corresponding to the calculation time $t-1$, explicit in the excess return index formulas. This is why we propose our notation with the date d , and not t .

When, for a specific component, the Standard Constant Maturity tenor is limited by a Constant Maturity boundary (CMB), the definition of Contract proportions uses the associated CMB and becomes:

$$CPI_{c,CMB,d} = \frac{(MDP_{2,d} - DCMD_{CMB,d})}{(MDP_{2,d} - MDP_{1,d})} \quad (2c)$$

$$CP2_{c,CMB,d} = 1 - CPI_{c,CMB,d} = \frac{(DCMD_{CMB,d} - MDP_{1,d})}{(MDP_{2,d} - MDP_{1,d})} \quad (2d)$$

When an exchange facility amends the delivery mechanism on a component, the CMCI Governance Committee decides if new MDPs have to be determined for the amended contracts. CMCI calculations, and in particular the transition to new MDPs, are then performed according to the procedure described in Appendix B.3.

2.1.1.5.2. Daily Constant Maturity Forward Price (DCMFP)

For a given SCM, the Daily Constant Maturity Forward Price of a specific component is the price used to calculate relevant components of the CMCI for that tenor. The Daily Constant Maturity Forward Price of a component c , takes the following expression:

$$DCMFP_{c,SCM,t,d} = DCNPI_{c,t,d} \times CPI_{c,SCM,d} + DCNP2_{c,t,d} \times CP2_{c,SCM,d} \quad (3)$$

where:

- c denotes component commodity c ,
- t is the calculation date (by definition, a CMCI Business Day),
- d is the reference date for which contract proportions are calculated (please refer to Appendix B.2 and Section 2.1.1.4 above for further details); and, for a component c , a Standard Constant Maturity SCM and a calculation date t :
- $DCNPI_{c,t,d}$ is the Daily Contract Nearby Price at date t , that is to say the Forward or Futures Contract price associated with the futures contract whose MDP date is equal or immediately preceding the Daily Constant Maturity Date associated with the reference date d , (related to the specified Standard Constant Maturity or Constant Maturity Boundary), as defined by the Eligible Nearby Contract table,
- $DCNP2_{c,t,d}$ is the Daily Contract Nearby Price at date t , that is to say the Forward or Futures Contract price associated with the futures contract whose MDP date is immediately following the Daily Constant Maturity Date associated with the reference date d (related to the specified Standard Constant Maturity or Constant Maturity Boundary), as defined by the Eligible Nearby Contract table.

When, for a specific component, the Standard Constant Maturity tenor is limited by a Constant Maturity boundary (CMB), the definition of the Constant Maturity Forward Price is simply amended using CMB instead of SCM.

$$DCMFP_{c,CMB,t,d} = DCNPI_{c,t,d} \times CPI_{c,CMB,d} + DCNP2_{c,t,d} \times CP2_{c,CMB,d} \quad (3b)$$

2.1.2. The use of Constant Maturity Forwards in the CMCI

For each Index, UBS Investment Bank calculates and publishes three indices:

- The Price Index (CMCI-PI),
- The Excess Return (CMCI-ER),
- The Total Return (CMCI-TR).

All three series are calculated for the following maturities:

- 3 Months (3M),
- 6 Months (6M),
- 1 Year (12M),
- 2 Years (24M).
- 3 Years (36M).

2.2. The CMCI-Price Index (CMCI-PI)

For the purpose of the calculation of the CMCI, we differentiate the calculations taking place during rebalancing periods, or Maintenance Periods, and those performed during non-rebalancing periods, or non-Maintenance Periods. These distinctions apply equally to the Price Index (PI), the Excess Return (ER) and Total Return (TR) indices. Rebalancing periods take place each month and are used to rebalance the components of the CMCI to their Target Weights, as discussed below in Section 3.2.3. Maintenance Periods, which occur twice annually, involve rebalancing but also a re-weighting of the Index components to take into account new Target Weights. Non-rebalancing periods and non-Maintenance Periods refer to periods other than those in which a rebalancing or re-weighting takes place.

2.2.1. The Price Index during non-Maintenance Periods

The CMCI Price Index (CMCI-PI) is a representation of commodity price levels for a designated part of the forward curve and calculated on the basis of the prices of the CMCI Constant Maturity Forwards on the relevant commodities for the appropriate tenors.

During a non-Maintenance Period, the CMCI-PI calculated for a family of defined Standard Constant Maturities (SCM) is obtained by the multiplication of the Basket Value (BV) (which represents the value of a component or group of components of the CMCI) by the Maintenance Factor (MF). The Maintenance Factor is used to prevent any discontinuity of the price index associated with changes in nominal weights over time. For any non-maintenance days, BV is calculated for each component as the Sum of Daily Constant Maturity Forward Price (DCMFP) of each basket component multiplied by the respective Component Nominal Weight (CNW). The DCMFP are adjusted by price scalars reflecting reference foreign currency exchange rates versus, for example, the U.S. Dollar, such that all DCMFP are expressed in the same currency.

For non-maintenance days and, for example, on the USD index, we have:

$$CMCI - PI_{USD,SCM,t} = MF_{SCM,USD} \times \sum_{c=1,N} DCV_{c,USD,SCM,t,t} = MF_{SCM,USD} \times BV_{USD,SCM,t,t} \quad (4)$$

and

$$DCV_{c,USD,SCM,t,t} = IsIn_{c,Index} \times DCMFP_{c,SCM,t,t} \times CNW_{c,SCM} \times [FX_{USD,c,t}]^{CCYScalar_{USD,CCY}} \quad (5)$$

where:

$BV_{USD,SCM,t,t}$	is the Basket Value (i.e for any given index, the sum of Daily Component Value),
$DCV_{c,USD,SCM,t,t}$	is the Daily Component Value calculated at time t,
$CNW_{c,SCM,t}$	is the Component Nominal Weight for a component c and for a specific Standard Constant Maturity (SCM),
$DCMFP_{c,SCM,t,t}$	is the Daily Constant Maturity Forward Price, for a component c and for a specific SCM, calculated at time t and with Contract Proportions taken at time t.
$FX_{USD,c,t}$	is the Currency exchange rate between the quotation currency of the component instrument and the Index currency reference (ICR) in which the Index is expressed (here USD). For official settlement prices, the CMCI uses a direct or USD cross fixing price.

For the USD direct rate quotes, the price source is set to Bloomberg on page CCY F143 Crncy HP <GO> (Note the Location Time zone is set to "New-York"). Cross rates are calculated (please see Appendix A) so that the foreign exchange adjustment within the Index features no possible arbitrage.

$IsIn_{c,Index}$ a scalar factor with positive value, which allows to control the component c's effective weight in the calculated index.

$CCYScalar_{USD,CCY}$ is +1 or -1 (please see Table III below)

CMCI Price Indices are set equal to 1000 on January 29th, 2007.

The reader will note that we use Spot currency rates in all cases. It is our opinion that the use of forward currency rates would alter significantly both the transparency and simplicity of the Index definitions without providing substantial benefit to the Index, as we see that returns on forward currency rates as being highly correlated with their spot rates.

Indices for each SCM are calculated in U.S. Dollars (USD) and Euro (EUR). Table III below features the CMCI FX price/rate sources (please see Appendix A for further details).

TABLE III. DEFINITION CCY EXCHANGE RATES, CCY SCALARS DEFINITIONS, AND CROSS RATES CALCULATIONS

CCY	CCY Pair	Quotation	USD:		Rate Source
			CCY	Scalar	
USD			1		
JPY	USD-JPY	JPY per USD	1		BB: JPY F143 Crncy HP <GO>
AUD	AUD-USD	USD per AUD	-1		BB: AUD F143 Crncy HP <GO>
EUR	EUR-USD	USD per EUR	-1		BB: EUR F143 Crncy HP <GO>
GBP	GBP-USD	USD per GBP	1		BB: GBP F143 Crncy HP <GO>
CAD	USD-CAD	CAD per USD	1		BB: CAD F143 Crncy HP <GO>
CHF	USD-CHF	CHF per USD	1		BB: CHF F143 Crncy HP <GO>

Source: UBS Investment Bank, CMCI Advisory Committee

The generic expression for any Index Currency Reference (ICR) is:

$$CMCI - PI_{ICR,SCM,t} = MF_{SCM,ICR} \times \sum_{c=1,N} DCV_{c,ICR,SCM,t} = MF_{SCM,ICR} \times BV_{ICR,SCM,t} \quad (6)$$

where:

$$DCV_{c,ICR,SCM,t} = IsIn_{c,Index} \times DCMFP_{c,SCM,t} \times CNW_{c,SCM} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,cy}} \quad (7)$$

The standard specifications for the components included in the Index are provided in Appendix D.

2.2.2. Index continuity maintenance

As noted, the CMCI rebalances monthly which implies new Component Nominal Weights (CNWs) and Maintenance Factors (MFs) for each month. In January and July, the CMCI also rolls into new Target Weights (TWs) following the decisions of the CMCI Governance Committee.

On the day before the start of the rebalancing period, the CMCI is calculated based on the old CNWs (reflecting old TWs) and MFs used so far in the calculation.

The first part of the formula is then adjusted for the Maintenance Factor changes, and multiplied by the Basket Value Ratio (BVR) which reflects the change in the Basket Value resulting from the shift from the Old to the New TWs and therefore also to the new CNWs.

The process also applies to all monthly rebalancing, as well as January and July Maintenance Periods. During Maintenance Periods, the calculation formula for BV is:

$$BV_{ICR,SCM,t} = MF_{ICR,old} / MF_{ICR,new} \times \left[\sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,old} \times RP1_{c,t} \times DCMFP_{c,SCM,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,cy}} \right] + \sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,new} \times RP2_{c,t} \times DCMFP_{c,SCM,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,cy}} \quad (8)$$

where:

RP1_{c,t} and RP2_{c,t} the rebalancing proportions for component c, at calculation date t (as defined in Section 1.2).

New Maintenance Factors are calculated at the close of business on the CMCI Business Day immediately pre-ceding the first maintenance day, and their values used for subsequent calculations:

$$BVR_{ICR,SCM,t,t} = \frac{\sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,SCM,new} \times DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}}}{\sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,SCM,old} \times DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}}}, \quad (9)$$

Where BVR is the Basket Value Ratio. We then obtain:

$$MF_{ICRSCMnew} = \frac{MF_{ICRSCMold}}{BVR_{ICRSCM,t}}, \quad (10)$$

In order to account for market disruption events during the rebalancing period, Rebalancing Proportions (RP) are introduced as a functions of each component and are noted $RP1_{c,t}$ and $RP2_{c,t}$.

If a Market Disruption Event occurs during the rebalancing period, the percentage amount being rebalanced on such a day is deemed to be rebalanced on the following CMCI Business Day. If there is a disruption event on or beyond the last business day of the month, the amount to be rebalanced will be carried forward until the next CMCI Business Day.

The following Table V shows an example of values taken by RP1 and RP2 for a single specific component, for both the PI and the ER index over the March 2006 rebalancing period.

TABLE V. STANDARD REBALANCING PERIOD, CALCULATION OF REBALANCING PROPORTIONS

Theoretical Schedule		1 st day		2 nd day		Last day				
Index	\ bday	Feb 22	Feb 23	Feb 24	Feb 27	Feb 28	Mar 01	Mar 02	Mar 03	Mar 06
PI	RP1	1.00	1.00	0.666	0.333	0.00	1.00	1.00	1.00	1.00
	RP2	0.00	0.00	0.333	0.666	1.00	0.00	0.00	0.00	0.00
ER	RP1	1.00	1.00	1.00	0.666	0.333	0.00	1.00	1.00	1.00
	RP2	0.00	0.00	0.00	0.333	0.666	1.00	0.00	0.00	0.00

Source: UBS Investment Bank, CMCI Advisory Committee

2.2.3. The Index rebalancing mechanism and the calculation of the CNWs

As noted above, the CMCI is rebalanced monthly in order to bring the components back into line with their Target Weights. This rebalancing is necessitated by the fact that the CMCI weightings are in part based on the prices of each of the constituent constant maturity forward prices and naturally over-weights the best performing assets and under-weights the worst performing assets. As market prices fluctuate, therefore, the effective weights of the constituent components drift from their initial Target Weights. As a result, it is necessary to re-balance the Index periodically to maintain its original weighting.

This is accomplished by rebalancing the components weights during each Maintenance Period. The process is automatic and is implemented via a pre-defined algorithm.

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

On that day, the new CNWs are calculated such that the effective weights match the Component Target Weights (TW), defined for the next period. At the close of business on the day prior to the first maintenance day, using known settlement prices, we solve for CNWs.

Without loss of generality, we define $CNW_{N,SCM,new} = x$ as an arbitrary constant.

For all components in the composite index, we then solve for:

$$\frac{CNW_{c,SCM,new} \times DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}}}{\sum_{c=1,N} CNW_{c,SCM,new} \times DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}}} - TW_{c,\%} = 0 \quad (11)$$

Also note that:

$$TW_1 + \dots + TW_N = 1$$

For notation purposes, one introduces currency denominated quantities:

$$XDCMFP_{ICR,c,SCM,t,t} = DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}}$$

$$XDCMFP_c = XDCMFP_{ICR,c,SCM,t,t}$$

As shown in Appendix C, this system has the following analytic solution:

$$\begin{aligned} CNW_{ICR,1,SCM,new} &= \frac{TW_1 \cdot XDCMFP_N}{TW_N \cdot XDCMFP_1} x \\ CNW_{ICR,2,SCM,new} &= \frac{TW_2 \cdot XDCMFP_N}{TW_N \cdot XDCMFP_2} x \\ CNW_{ICR,3,SCM,new} &= \frac{TW_3 \cdot XDCMFP_N}{TW_N \cdot XDCMFP_3} x \\ &\vdots \\ CNW_{ICR,N,SCM,new} &= x \end{aligned} \quad (12)$$

Once new CNWs are calibrated for each SCM, the new Maintenance Factors (MF) for each index are calculated as per (10) above, and the CNWs are made available for the calculation of the composite index (CMCI) as well as all commodity group (or sector) and single component indices.

2.3. The CMCI Excess Return (CMCI-ER)

2.3.1. Calculation during non Maintenance Periods

The CMCI Excess Return Index is calculated on each CMCI Business Day and represents the uncollateralized return of the CMCI basket over time, and for one specific SCM. The Index has the following expression:

$$CMCI - ER_{ICR,SCM,t} = CMCI - ER_{ICR,SCM,t-1} \times (1 + IDR_{ICR,SCM,t}) \quad (13)$$

with:

$$IDR_{ICR,SCM,t} = \frac{BVF}{BVI} - 1 = \frac{BV_{ICR,SCM,t,t-1}}{BV_{ICR,SCM,t-1,t-1}} - 1 \quad (14)$$

$$BVI = BV_{ICR,SCM,t-1,t-1} = \sum_{c=1,N} XDCMFP_{ICR,c,SCM,t-1,t-1} \times CNW_{c,SCM} \times IsIn_{c,Index}$$

$$BVF = BV_{ICR,SCM,t,t-1} = \sum_{c=1,N} XDCMFP_{ICR,c,SCM,t,t-1} \times CNW_{c,SCM} \times IsIn_{c,Index}$$

where:

$IDR_{ICR,SCM,t}$	is the Index Daily Return, for a specified Currency Reference (ICR) and Standard Constant Maturity at time t.
BVF	is the Basket Value Final, calculated for an Index currency reference ICR, a Standard Constant Maturity SCM, and for a reference calculation date t, with Contract Proportions (CPs) taken at reference calculation time t-1,
BVI	is the Basket Value Initial, calculated for an Index currency reference ICR, a Standard Constant Maturity SCM, and for a reference calculation date t, with Contract Proportions (CPs) taken at reference calculation time t-1,
$XDCMFP_{ICR,c,SCM,t,t-1}$	is the Currency translated Daily Constant Maturity Forward Price, calculated for an Index currency reference ICR, a Standard Constant Maturity SCM, for a reference calculation date t, with Contract Proportions (CPs) taken at reference calculation time t-1 (as defined in Section 2.1.1.5.2.).
$IsIn_{c,Index}$	a scalar factor with positive value, which allows to control the component c's effective weight in the calculated index.

CMCI Excess Return Indices are set equal to 1000 on January 29th, 2007.

2.3.2. Calculation during Maintenance Periods

The Index Daily Return is defined as the percentage change in the BV of the CMCI from one CMCI Business Day to the next. It reflects the return that would have been realised by holding positions in the DCMF to reflect the CNWs (TWs), from the closing of the trading platform on the prior CMCI Business Day to the closing of the trading platform on the next CMCI Business Day.

The daily Rebalancing Proportions (RP) used to calculate BVI and BVF are identical to those used to calculate the CMCI Price Index on the CMCI Business Day immediately preceding the calculation date. During a standard rebalancing period from the first to the last CMCI Business Day of the rebalancing period we have:

$$BVI_{ICR,SCM,t-1,t-1} = MF_{ICR,SCM,old} / MF_{ICR,SCM,new} \times \left[\sum_{c=1,N} IsIn_{c,Index} \times CNW_{SCM,c,old} \times RP1_{c,t-1} \times XDCMFP_{ICR,SCM,c,t-1,t-1} \right] + \sum_{c=1,N} IsIn_{c,Index} \times CNW_{SCM,c,new} \times RP2_{c,t-1} \times XDCMFP_{ICR,SCM,c,t-1,t-1} \quad (13)$$

and

$$BVF_{ICR,SCM,t,t-1} = MF_{ICR,SCM,old} / MF_{ICR,SCM,new} \times \left[\sum_{c=1,N} IsIn_{c,Index} \times CNW_{SCM,c,old} \times RP1_{c,t-1} \times XDCMFP_{ICR,SCM,c,t,t-1} \right] + \sum_{c=1,N} IsIn_{c,Index} \times CNW_{SCM,c,new} \times RP2_{c,t-1} \times XDCMFP_{ICR,SCM,c,t,t-1} \quad (14)$$

where RP1 and RP2 can take the following values

$$RP1_{c,t} = \{1.0, 2/3, 1/3, 0.0\} \quad , \quad RP2_{c,t} = 1 - RP1_{c,t} = \{0.0, 1/3, 2/3, 1.0\}$$

2.4. The CMCI Total Return (CMCI-TR)

2.4.1. Calculation of the Total Return Index

CMCI-TR is derived from the CMCI Excess Return Index. In addition to uncollateralized returns generated from the CMCI basket, a daily fixed income return is added and the Index value takes the following expression:

$$CMCI - TR_{ICR,SCM,t} = CMCI - TR_{ICR,SCM,t-1} \times DITRF_{ICR,SCM,t} \quad (15)$$

Where

$$DITRF_{ICR,SCM,t} = (1 + IDR_{ICR,SCM,t} + IRR_{ICR,t}) \quad (15b)$$

IRR **Interest Rate Return** is the compounding factor calculated for each Index Currency reference,

IDR_{ICR,SCM,t} is the Index Daily Return, for a specified Index Currency Reference (ICR) and Standard Constant Maturity at time t.

The fixed income return component of the Total Return Index reflects the interest earned on securities theoretically deposited as margin for hypothetical positions in the contracts comprising the Index.

In order to determine the Interest Rate Return (IRR) component of the TR indices, Daily Reference Rate (DRR) for the currency in which the index is quotes (ICR) needs to be determined (see Section 2.4.2. for details on each available currency).

DRR **Daily Reference Rate** is a function of the rate available on the immediately preceding CMCI Business Day (ARR), the ARRA and ARRS. The form of the compounding expression is a function of the Index Currency Reference (ICR) defined below, and DRR takes the following form:

$$DRR_{ICR,t} = ARRS_{ICR,t} \times ARR_{ICR,t} + ARRA_{ICR,t} \quad (16)$$

ARRA & ARRS **Available Reference Rate Adjustment** and **Available Reference Rate Scalar** are respectively the rate adjustment and scalar factor used - when applicable - to reflect any particular funding cost or rate differential applicable and associated to an ICR for an A+/A-1 (S&P) and/or Aa3/P-1 (Moody's) issuer. The ARRA and ARRS can change periodically to reflect market conditions and are ratified by the CMCI Governance Committee.

Please note that the level of the Total Return Index can never fall below the level of the Excess Return Index and hence, the ARRA may be over-written to be lower than the one specified in Section 2.4.2. below in case ARR falls below the ARRA level.

caldays is the integer number of Calendar days from the previous CMCI Business Day to the CMCI Business Day on which the calculation is made.

CMCI Total Return Indices are set equal to 1000 on January 29th, 2007.

2.4.2. Available Reference Rates

Available Reference Rates used for the calculation of the respective CMCI Total Return indices are defined below.

USD ARR 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 currently available on the web site <http://www.publicdebt.treas.gov/of/ofaucrt.htm> and <http://www.publicdebt.treas.gov/AI/OFBills> or Bloomberg USB3MTA Index <GO> or Reuters USAUCTION9. The rate is generally published once per week on Monday and effected on the CMCI Business Day immediately following.

ARRA 0.0%

ARRS 1.0

$$IRR_{USD,t} = \left[\frac{1}{1 - \frac{91}{360} \times DRR_{USD,t-1}} \right]^{\frac{caldays}{91}} - 1, \quad (17a)$$

EUR ARR The overnight Euro rate, determined from the Euro Overnight Index (BBG Code: EONIA Index <GO>; Reuters: EONIA Page, EONIA= for history), which is the weighted average rate of all unsecured Euro overnight cash transactions brokered in London between midnight and 4.00pm London time. EONIA is calculated from details supplied by Wholesale Market Brokers Association "WMBA".

The ECB shall aim to make the computed rate available to Reuters for publication as soon as possible so that Eonia® be published between 6.45 p.m. and 7.00 p.m. (CET) on the same evening. The rate would be and effected on the CMCI Business Day immediately following.

ARRA -0.10%³

ARRS 1.0

$$IRR_{EUR,t} = \left[\frac{1}{1 - \frac{90}{360} \times DRR_{EUR,t-1}} \right]^{\frac{caldays}{90}} - 1 \quad (17e)$$

³ Please note that the level of the Total Return Index can never fall below the level of the Excess Return Index and hence, the ARRA may be over-written to be lower than the one specified in case ARR falls below the ARRA level.

CHF

ARR

The overnight Swiss Franc rate determined from TOIS (BBG Code: TOISTOIS Index <GO>; Reuters: TOISFIX1 Page, CHFTOIS= for history), which is the fixing rate of CHF Tom/Nexy Offred Indexed Swaps. Source is Cosmorex Zurich AG. Quotation provided by a number of prime banks (at least 20) at 10.45am Zurich Time.

The rate is published daily at 11:00 AM Zurich time and effected on the CMCI Business Day immediately following.

ARRA -0.10%⁴

ARRS 1.0

IRR

$$IRR_{CHF,t} = \left[\frac{1}{1 - \frac{90}{360} \times DRR_{CHF,t-1}} \right]^{\frac{\text{caldays}}{90}} - 1 \quad (17e)$$

JPY

ARR

The overnight Yen rate, derived from the Mutan Overnight Average Call Rate (BBG Code: MUTKCALM Index <GO>; Reuters: TANSHK, JPONMU=RR FOR HISTORICAL), as published daily by Bank of Japan

The rate is published daily 8:00 AM London time and effected on the CMCI Business Day immediately following.

ARRA -0.15%³⁶

ARRS 1.0

IRR

$$IRR_{JPY,t} = \left[\frac{1}{1 - \frac{90}{360} \times DRR_{JPY,t-1}} \right]^{\frac{\text{caldays}}{90}} - 1 \quad (17e)$$

GBP

ARR

The Sterling overnight rate, represented by SONIA (BBG Code: SONIO/N Index <GO>; Reuters: SONIA Page, SONIAOSR= for history), which is the weighted average of all unsecured Sterling overnight cash transactions brokered in London between Midnight and 4.15pm. (WMBA).

The rate is published daily 5:00 PM London time and effected on the CMCI Business Day immediately following.

ARRA -0.10%³⁶

ARRS 1.0

IRR

$$IRR_{GBP,t} = \left[\frac{1}{1 - \frac{91}{365} \times DRR_{GBP,t-1}} \right]^{\frac{\text{caldays}}{365}} - 1 \quad (17e)$$

⁴ Please note that the level of the Total Return Index can never fall below the level of the Excess Return Index and hence, the ARRA may be over-written to be lower than the one specified in case ARR falls below the ARRA level.

AUD ARR The overnight Australian Dollar rate (BBG Code: RBACOR Index <GO>; Reuters: RBA30 PAGE, AUCASH=RBAA), determined from the Reserve Bank of Australia Cash Rate Overnight. Source is Australian Bureau of Statistics.

The rate is published on any Australian business and banking days at approximately 8:30 PM Sydney time and effected on the CMCI Business Day immediately following.

ARRA -0.20%⁵

ARRS 1.0

IRR

$$IRR_{AUD,t} = \left[\frac{1}{1 - \frac{91}{365} \times DRR_{AUD,t-1}} \right]^{\frac{\text{calcdays}}{91}} - 1 \quad (17e)$$

CAD ARR The Canadian Dollar overnight rate, represented by Canadian Overnight Repo Rate Average ("CORRA") (BBG Code: CAONREPO Index <GO>; Reuters: BOCWATCH, CORRA= FOR HISTORICAL), published by the Bank of Canada

The rate is published daily at 2:00 PM London time and effected on the CMCI Business Day immediately following.

ARRA -0.15%³⁷

ARRS 1.0

IRR

$$IRR_{CAD,t} = \left[\frac{1}{1 - \frac{91}{365} \times DRR_{CAD,t-1}} \right]^{\frac{\text{calcdays}}{91}} - 1 \quad (17e)$$

SGD ARR Singapore Domestic Interbank Overnight Rate Average, published by the Monetary Authority of Singapore (BBG Code: SIBCSORA Index <GO>)

The rate is published daily and effected on the CMCI Business Day immediately following.

ARRA -0.15%³⁷

ARRS 1.0

IRR

$$IRR_{SGD,t} = \left[\frac{1}{1 - \frac{1}{365} \times DRR_{SGD,t-1}} \right]^{\frac{\text{calcdays}}{365}} - 1 \quad (17e)$$

Also please see Section 2.6.4. for the definition of Interest Rate Disruption Events.

⁵ Please note that the level of the Total Return Index can never fall below the level of the Excess Return Index and hence, the ARRA may be over-written to be lower than the one specified in case ARR falls below the ARRA level.

2.5. The CMCI Currency Hedged Indices (XMCI)

CMCI Currency Hedged indices aim to facilitate CMCI investment in currencies other than the US Dollar.

All Currency Hedged indices are prefixed by the letter X.

2.5.1. Currency Hedged Excess Return Indices

Currency Hedged Excess Return Indices are calculated as per the following formula:

$$XMCI - ER_{ICR,SCM,t} = XMCI - ER_{ICR,SCM,t-1} \times \left[1 + \left(\frac{CMCI - ER_{USD,SCM,t}}{CMCI - ER_{USD,SCM,t-1}} - 1 \right) \times \frac{(FX_{IR,t-1})^{CCYScalar_{ICR,USD}}}{(FX_{IR,t})^{CCYScalar_{ICR,USD}}} \right]$$

where:

CMCI-ER	the underlying USD CMCI Excess Return Index (or Sub index) taken as a reference for the calculation of the uncollateralized commodity return
$FX_{ICR,t}$	is the Currency exchange rate between the USD and the Index currency reference (ICR) for a given date t. Price source is CCY F143 Crncy HP <GO>
t	is the CMCI Business Day on which the calculation is made
$CCYScalar_{USD,CCY}$	is +1 or -1 (please see Table III in Section 2.2.1.)

XMCI Excess Return Indices are set equal to 1000 on January 29th, 2007.

2.5.2. Currency Hedged Total Return Indices

Currency Hedged Total Return Indices are calculated as per the following formula:

$$XMCI - TR_{ICR,SCM,t} = XMCI - TR_{ICR,SCM,t-1} \times \left[1 + \left(\frac{CMCI - ER_{USD,SCM,t}}{CMCI - ER_{USD,SCM,t-1}} - 1 \right) \times \frac{(FX_{ICR,t-1})^{CCYScalar_{ICR,USD}}}{(FX_{ICR,t})^{CCYScalar_{ICR,USD}}} + IRR_{ICR,t} \right] \quad (21)$$

where:

IRR	Interest Rate Return, is the compounding factor calculated for each Index Currency reference as defined in Section 1.2.1.
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XMCI Total Return Indices are set equal to 1000 on January 29th, 2007.

2.6. CMCI Business Day Conventions

2.6.1. Daily Open Market Weight

For each Index Currency Reference (ICR), a CMCI Business Day is a day for which at least the 80% Daily Open Market Weight (DOWM) criteria is met for the composite Index with the shortest available constant maturity (3M). The DOWM, calculated in order to determine whether the CMCI is open, takes the following value:

$$DOMW_{ICR} = \sum_{c=1,N} TW_{OLD,c} \times OPEN_{c,t} \quad (22)$$

$OPEN_{c,t}$ is equal to 0 when the Exchange facility or the trading platform associated to component c is closed for trading, as a result of a normal and foreseeable closing schedule published publicly by such facility (holidays, bank holidays, etc.).

$TW_{OLD,c}$ is the set of Target Weights (TWs) for current the CMCI period. To clarify, OLD refers to the period from and excluding the end of the previous Maintenance Period at the date of calculation, to and including the end of the next Maintenance Period.

A day is deemed an open CMCI Business Day if the minimum daily Open Weight Market calculated across all Index Currency reference and with SCM=3M, is equal to or greater than 80%.

$$1_{CMCI - Business Day, t} / \min_{ICR=1,K} [DOWM_{ICR,t}] \geq 0.8 \quad (23)$$

2.6.2. Adjustments for Market Disruption Event Day

When an exchange fails to publish a settlement price for components involved in any of the CMCI maintenance procedures (rebalancing or re-weighting), the CMCI Business Day is deemed a Market Disruption Event Day.

The CMCI mechanism foresees that the components involved are not rolled or rebalanced on that day. For those contracts or components, the RPs remain identical to the value they had on the CMCI Business Day immediately preceding the Market Disruption Event Day in such a way that the Maintenance Period is extended for as long as no settlement price is made available by the exchange.

The following Table VI shows an example of values taken by RP1 and RP2 for a single specific component, for both the PI and the ER index over the March 2006 Maintenance Period if February 26th is deemed a market disruption event.

TABLE VI. REBALANCING PERIOD, CALCULATION OF REBALANCING PROPORTIONS AND MARKET DISRUPTION EVENT DAYS

Theoretical Maintenance Schedule		1 st day		2 nd day		Last day				
Effective Maintenance Schedule				1 st and 2 nd day		Last day				
Index	\ bday	Feb 22	Feb 23	Feb 24	Feb 27	Feb 28	Mar 01	Mar 02	Mar 03	Mar 06
PI	RP1	1.00	1.00	1.00	0.333	0.00	1.00	1.00	1.00	1.00
	RP2	0.00	0.00	0.00	0.666	1.00	0.00	0.00	0.00	0.00
ER	RP1	1.00	1.00	1.00	1.00	0.333	0.00	1.00	1.00	1.00
	RP2	0.00	0.00	0.00	0.00	0.666	1.00	0.00	0.00	0.00

Source: UBS Investment Bank, CMCI Advisory Committee

If, after a period of five standard business days, no settlement price has been made available by the affected exchange or trading platform, the Index Sponsors will determine, in good faith, taking into account the objectives of the Index and the interests of market participants, the one or more exchange settlement or official closing prices necessary for the maintenance of the component and the calculation of the Index.

When a Market Disruption Event Date falls during a non Maintenance Period, the Index is calculated using the last available trading price available on the exchange, obtained by the index Sponsors from commercially reasonable sources in the market, or determined in good faith by the index Sponsors.

2.6.3. Adjustments for FX Market Disruption Event Day

In the event of a reference price source failing to publish a valid fixing rate for a referenced currency exchange rate, the CMCI Business Day is deemed an FX Market Disruption Event Day.

If no fixing price has been made available by the affected price source, the one or more foreign exchange currency rates fixing prices necessary for the calculation of the Index will be obtained by the index Sponsors from commercially reasonable sources in the market, or determined in good faith, bearing in mind both the interests of investors and market participants, and with the aim of maintaining and enhancing the CMCI as a tradable commodity investment benchmark.

A commercially reasonable method would be, for example, the averaging of three foreign exchange broker-dealer quotes at the approximate time when the fixing would have been determined by the price source.

In the event the rate source becomes permanently deficient, the CMCI Governance Committee, in consultation with the CMCI Advisory Committee, may characterize the event as a Force Majeure event and decide to replace it by a new source effective immediately thereafter.

2.6.4. Interest Rate Disruption Event

In the event of a holiday, a Market disruption event day affecting the release of an interest rate reference, or other disruption in treasury auction calendars, the last available rate is used until the next rate becomes available.

In the event of the interest rate source becoming permanently deficient, the CMCI Governance Committee, in consultation with the CMCI Advisory Committee, may characterize the event as a Force Majeure event and decide to replace it by a new source effective immediately thereafter.

2.7. Market Emergency and Force Majeure

In some extraordinary circumstances, the CMCI Governance Committee, in consultation with the CMCI Advisory Committee, may characterize the situation as a Market Emergency and Force Majeure event, if, in the judgment of the CMCI Governance Committee, in consultation with the CMCI Advisory Committee, the circumstances are reasonably likely to have a material adverse effect on the tradability of the CMCI or the ability of the Index to serve as a tradable benchmark for the commodities market.

Such circumstances include the following:

- The imposition of a currency control mechanism,
- The adoption or issuance of tax related rules, regulations, orders or other actions,
- an announcement or other public action regarding scientific discoveries or events relating to the commodities markets,
- a governmental, regulatory or other public announcement that is reasonably likely to affect the commodity markets generally,
- any climate or weather related emergencies,
- a war,
- a terrorist event,
- any event other than those specifically identified herein, making the calculation of the CMCI impossible or infeasible either on a technical basis or otherwise, or that makes the CMCI non representative of market prices or undermines the realization of the objectives of the Index,
- any event creating a situation of unfair advantage or disadvantage for any market participant, group of market participants or the Index Sponsors.

Whenever a Market Emergency and Force Majeure event has been identified or declared, the CMCI Governance Committee, in consultation with the CMCI Advisory Committee, can decide to take any appropriate action, including:

- the replacement of a Daily Contract Nearby Price (see formula (3), DCNP) when there is a manifest error in the officially settled price or when a market abuse (please see the U.K. Financial Services Authority, FSA, definitions) is likely to have taken place,
- the temporary or final revoking of the membership of a Component in the Index,
- the immediate change of an Index parameter,
- the suspension of the calculation of the Index, a sub Index, a Standard Constant Maturity series or a currency series, or,
- in general, any action necessary to preserve the reputation of the CMCI as fair and tradable commodity benchmark.

The CMCI Benchmark Index Calculation Methodology

2.7.1. Construction of the CMCI Benchmark Index

The CMCI Benchmark Index is built on the basis of the CMCI index. As such, the benchmark index strictly respects the original CMCI component weight distribution and allocates, for each component, portions of the weights defined by the CMCI Weighting engine to eligible Standard Constant Maturities (SCM). Like the CMCI, the benchmark index also rebalances on a monthly basis.

Another notable addition to the technical framework is the curve rebalancing mechanism, a procedure designed to provide additional weight control over the fluctuations of the structures of forward curves.

The following section provides a detailed explanation for the calculation of the CMCI Price Index, Excess Return and Total Return Benchmark Indices.

2.7.2. The CMCI Benchmark - Price Index (CMCIB-PI)

For the purpose of the calculation of the CMCI Benchmark Index, as well as the CMCI Index from which Benchmark is derived, we differentiate the calculations taking place during rebalancing periods, or Maintenance Periods, and those performed during non-rebalancing periods, or non-Maintenance Periods. These distinctions apply equally to the Benchmark Price Index (PI), the Excess Return (ER) and Total Return (TR) indices.

Rebalancing periods take place each month and are used to rebalance the components of the CMCI to their Target Weights, as discussed in Section 2.2.3 of this Technical Document. Curve Rebalancing periods take place each month and are used to rebalance Benchmark's exposure to the respective segments of the forward curve on each component of the CMCI to their respective Individual Tenor Weights (ITW), as discussed below in Section 2.7.2.3.

Maintenance Periods, which occur twice annually, involve rebalancing but also a possible re-weighting of the CMCI Index components to take into account new CMCI Target Weights. Non-rebalancing periods and non-Maintenance Periods refer to periods other than those in which a rebalancing or re-weighting takes place.

2.7.2.1. The Price Index during non-Maintenance Periods

The CMCI Benchmark Price Index (CMCIB-PI) is a representation of commodity price levels for the eligible segment forward curve and calculated on the basis of the prices of the CMCI Constant Maturity Forwards on the relevant commodities.

During non-Maintenance Periods, the CMCIB-PI is obtained by the multiplication of the Curve Value (CV) (which represents the value of the tradable forward curve for a component or group of components of the CMCI Benchmark Index) by the Maintenance Factor (MF). The Maintenance Factor, unique to each index (i.e. a function of

each basket composition), is used to prevent any discontinuity of the price index associated with changes in nominal weights over time.

For any non-maintenance days, CV is calculated for each component as the sum of Curve Component Values, which, in turn, is equal to the sum, for each Standard Constant Maturity (SCM), of Daily Constant Maturity Forward Price (DCMFP) multiplied by the respective Component Nominal Weight (CNW) and by the respective Tenor Weight Adjustment Factors (TWAF). The DCMFP are adjusted by price scalars reflecting reference foreign currency exchange rates versus the Reference Currency (ICR), such that all DCMFP are expressed in the same currency.

For non-maintenance days we have:

$$CMCIH - PI_{ICR,t} = MF_{ICR} \times CV_{ICR,t,t} = MF_{ICR} \times \sum_{c=1,N} CCV_{c,ICR,t,t} \quad (1)$$

and

$$CCV_{c,ICR,t,t} = \sum_{j=1,AT} IsIn_{c,j,Index} \times CNW_{c,j} \times TWAF_{c,j} \times DCMFP_{c,j,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}} \quad (2)$$

where:

- $CV_{ICR,t,t}$ is the Curve Value (i.e for any given index, the sum of Curve Component Value),
- $CCV_{c,ICR,t,t}$ is the Curve Component Value for a component c calculated at time t,
- $CNW_{c,j}$ is the Component Nominal Weight for a component c and a Standard Constant Maturity j,
- $TWAF_{c,j}$ is the Tenor Weight Adjusting Factor for a component c and a Standard Constant Maturity j,
- $DCMFP_{c,j,t,t}$ is the Daily Constant Maturity Forward Price, for a component c and for a SCM j calculated at time t and with Contract Proportions taken at time t.
- $FX_{ICR,c,t}$ is the Currency exchange rate between the quotation currency of the component instrument and the Index currency reference (ICR) in which the Index is expressed
- $IsIn_{c,j,Index}$ is a Binary constant with value 1 or 0 to indicate if the component c and SCM j is a member of the CMCI Index being calculated (note if $IsIn_{c,j,Index}=0$ then all $IsIn_{c,j,Index}=0$),
- AT is the number of Available Tenors for a component c,
- $CCYScalar_{ICR,CCY}$ is +1 or -1, with ICR the Index Currency Reference and ccy the quotation Currency of the underlying asset of futures contract.

Further, we simplify notations by introducing XDCMFP as the currency converted DCMFP:

$$XDCMFP_{ICR,c,j,t,t} = DCMFP_{c,j,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}} \quad (2b)$$

CMCI Benchmark Price Indices are set equal to 1000 on January 29th, 2007.

2.7.2.2. Index continuity maintenance

The CMCI re-weights every six months in January and July, and also rolls into new Target Weights (TWs) following the decisions of the CMCI Governance Committee. Maintenance events (re-weighting, rebalancing) trigger each month the recalculation of new Component Nominal Weights (CNWs) for each Standard Constant Maturity. Such CNWs are used in the calculation of the CMCI Benchmark Index. CMCI Benchmark inherits its CNWs from this process and maintains the original integrity of the weights defined at the component level for each SCM in the CMCI.

The CMCI Benchmark also rebalances its forward curve exposure every month. The curve rebalancing mechanism is independent from the Component rebalancing mechanism introduced in the CMCI.

On the day before the start of the Maintenance Period, the CMCI is calculated based on the old CNWs (reflecting old TWs), old TWAFs and old MFs used so far in the calculation.

The first part of the formula is then adjusted for the Maintenance Factor changes, and multiplied by the Curve Value Ratio (CVR) which reflects the change in the Curve Value resulting from the shift from the Old to the New CNWs and TWAFs.

The process also applies to all Maintenance Periods. During Maintenance Periods, the calculation formula for CV is:

$$CV_{ICR,SCM,t,t} = \frac{MF_{ICR,old}}{MF_{ICR,new}} \left[\sum_{c=1,N} RP1_{c,t} \left[\sum_{j=1,AT} IsIn_{c,j,Index,old} \times CNW_{c,j,old} \times TWAF_{c,j,old} \times XDCMFP_{ICR,c,j,t,t} \right] \right] + \left[\sum_{c=1,N} RP2_{c,t} \left[\sum_{j=1,AT} IsIn_{c,j,Index,new} \times CNW_{c,j,new} \times TWAF_{c,j,new} \times XDCMFP_{ICR,c,j,t,t} \right] \right], \quad (3)$$

Where

$RP1_{c,t}$ and $RP2_{c,t}$ the rebalancing proportions for component c , at calculation date t (as defined below)

New Maintenance Factors are calculated at the close of business on the CMCI Business Day immediately pre-ceding the first maintenance day, and their values used for subsequent calculations:

$$CVR_{ICR,t,t} = \frac{\sum_{c=1,N} \sum_{j=1,AT} IsIn_{c,j,Index,new} \times CNW_{c,j,new} \times TWAF_{c,j,new} \times XDCMFP_{ICR,c,SCM,t,t}}{\sum_{c=1,N} \sum_{j=1,AT} IsIn_{c,j,Index,old} \times CNW_{c,j,old} \times TWAF_{c,j,old} \times XDCMFP_{ICR,c,SCM,t,t}}, \quad (4)$$

where:

CVR is the Curve Value Ratio. We then obtain:

$$MF_{ICR,new} = \frac{MF_{ICR,old}}{CVR_{ICR,t,t}}, \quad (5)$$

Market Disruption Events are dealt with the procedures set forth in Section 2.6.2.

2.7.2.3. The Index Curve rebalancing mechanism and the calculation of TWAFs

The CMCI is rebalanced monthly in order to bring the components back into line with their Target Weights. This rebalancing is necessitated by the fact that the CMCI weightings are in part based on the prices of each of the constituent constant maturity forward prices and naturally over-weights the best performing assets and under-weights the worst performing ones. As market prices fluctuate, therefore, the effective weights of the constituent components "drift" from their initial Target Weights. As a result, it is necessary to re-balance the Index periodically to maintain its original weighting.

The same mechanism applies to CMCI Benchmark for the purpose of rebalancing the positions held on each of the respective Standard Constant Maturities or Tenors.

This is accomplished by rebalancing the Individual Tenor Weights (ITW) during each curve Maintenance Period. The process is automatic and is implemented via a pre-defined process. The calculation of the new TWAFs is effected monthly, at the close of business on the business day immediately preceding the first rebalancing day (i.e. the fourth to last business day of the month).

On that day, the new TWAFs are calculated such that the Effective Tenors Weights match the Individual Tenor Weights (ITW) defined for the next period (for curve rebalancing periods), or component Tenor Effective Weights (CTEW) for the current period (for non curve rebalancing periods).

2.7.2.4. Calculation of TWAFs for curve rebalancing periods

At the close of business on the day prior to the first maintenance day, using known settlement prices, we solve for TWAFs as the product of the Adjusting Factor (AF) and the Individual Tenor Weights (ITW).

$$TWAF_{ICR,c,j,new} = ITW_{ICR,c,j} \times AF_{ICR,c,j} \quad (9)$$

where:

AF as per below in (8)
 ITW_{c,j,new} the Individual Tenor Weights defined per component and Standard Constant Maturity.

2.7.2.5. Calculation of TWAFs for non curve rebalancing periods

In the case where the curve and price rebalancing frequencies do not remain identical (as a result of an adjustment made to either CMCI or CMCI Benchmark by the CMCI Governance Committee), the new TWAFs would be calculated as per the formula set forth below.

At the close of business on the day prior to the first maintenance day, using known settlement prices, we solve for TWAFs as the product of the Adjusting Factor (AF) and the Component Tenor Effective Weights (CTEW) for all eligible SCM and components in the CMCI Benchmark Composite Index. We have:

$$TWAF_{ICR,c,j,new} = CTEW_{ICR,c,j} \times AF_{ICR,c,j} \quad (6)$$

$$CTEW_{ICR,c,j} = \frac{CNW_{c,j,old} \times TWAF_{c,j,old} \times XDCMFP_{ICR,c,j,t,t}}{\sum_{j=1,AT} CNW_{c,j,old} \times TWAF_{c,j,old} \times XDCMFP_{ICR,c,j,t,t}}, \quad (7)$$

$$AF_{ICR,c,j} = \frac{CNW_{c,l,new} \times XDCMFP_{ICR,c,l,t,t}}{CNW_{c,j,new} \times XDCMFP_{ICR,c,j,t,t}}, \quad (8)$$

where:

CTEW is the Component Tenor Effective Weight,
 AF_{ICR,c,j} the Adjusting Factor for a given commodity Component c and SCM j.

The new TWAFs are solved for all commodity components in the CMCI Benchmark Composite index.

2.7.3. The CMCI Benchmark - Excess Return Index (CMCIB-ER)

2.7.3.1. Calculation during non Maintenance Periods

The CMCI Benchmark Excess Return Index is calculated on each CMCI Business Day and represents the uncollateralized return of the CMCI Benchmark basket over time. The Index has the following expression:

$$CMCIH - ER_{ICR,t} = CMCIH - ER_{ICR,t-1} \times (1 + IDR_{ICR,t}) \quad (10)$$

with:

$$IDR_{ICR,t} = \frac{CVF}{CVI} - 1 = \frac{CV_{ICR,t,t-1}}{CV_{ICR,t-1,t-1}} - 1 \quad (11)$$

$$CVI = CV_{ICR,t-1,t-1} = \sum_{c=1,N} \left[\sum_{j=1,AT} IsIn_{c,j,Index} \times CNW_{c,j,SCM} \times TWAF_{c,j} \times XDCMFP_{ICR,c,j,t-1,t-1} \right] \quad (12)$$

$$CVF = CV_{ICR,t,t-1} = \sum_{c=1,N} \left[\sum_{j=1,AT} IsIn_{c,j,Index} \times CNW_{c,j,SCM} \times TWAF_{c,j} \times XDCMFP_{ICR,c,j,t,t-1} \right] \quad (13)$$

where:

$IDR_{ICR,t}$	is the Index Daily Return, for a specified Currency reference (ICR) at time t.
CVF	is the Curve Value Final, calculated for an Index currency reference ICR, and for a reference calculation date t, with Contract Proportions (CPs) taken at reference calculation time t-1,
CVI	is the Curve Value Initial, calculated for an Index currency reference ICR, and for a reference calculation date t, with Contract Proportions (CPs) taken at reference calculation time t-1,
$XDCMFP_{ICR,c,j,t,t-1}$	is the Currency translated Daily Constant Maturity Forward Price, calculated for an Index currency reference ICR, for a reference calculation date t, with Contract Proportions (CPs) taken at reference calculation time t-1.
$IsIn_{c,j,Index}$	a Binary constant with value 1 or 0 to indicate if the component c and the SCM j is a member of the Index being calculated.

CMCI Benchmark Excess Return Indices are set equal to 1000 on January 29th, 2007.

2.7.3.2. Calculation during Maintenance Periods

The Index Daily Return is defined as the percentage change in the CV of the CMCI Benchmark from one CMCI Business Day to the next. It reflects the return that would have been realised by holding positions in the basket of Daily constant Maturity Forward Price (DCMFP) to reflect each CNWs and TWAFs (or TWs and ITWs), from the closing of the trading platform on the prior CMCI Business Day to the closing of the trading platform on the next CMCI Business Day.

The daily Rebalancing Proportions (RP) used to calculate CVI and CVF are identical to those used to calculate the CMCI Benchmark Price Index on the CMCI Business Day immediately preceding the calculation date.

During a standard rebalancing period from the first to the last CMCI Business Day of the rebalancing period we have:

$$\begin{aligned}
 CVI_{ICR,t-1,t-1} = & \frac{MF_{ICR,old}}{MF_{ICR,new}} \times \left[\sum_{c=1,N} RP1_{c,t-1} \left[\sum_{j=1,AT} IsIn_{c,j,Index,old} \times CNW_{c,j,old} \times TWAF_{c,j,old} \times XDCMFP_{ICR,j,c,t-1,t-1} \right] \right] \\
 & + \sum_{c=1,N} RP2_{c,t-1} \left[\sum_{j=1,AT} IsIn_{c,j,Index,new} \times CNW_{c,j,new} \times TWAF_{c,j,new} \times XDCMFP_{ICR,j,c,t-1,t-1} \right] \quad (14)
 \end{aligned}$$

and

$$\begin{aligned}
 CVF_{ICR,t-1,t-1} = & \frac{MF_{ICR,old}}{MF_{ICR,new}} \times \left[\sum_{c=1,N} RP1_{c,t-1} \left[\sum_{j=1,AT} IsIn_{c,j,Index,old} \times CNW_{c,j,old} \times TWAF_{c,j,old} \times XDCMFP_{ICR,j,c,t,t-1} \right] \right] \\
 & + \sum_{c=1,N} RP2_{c,t-1} \left[\sum_{j=1,AT} IsIn_{c,j,Index,new} \times CNW_{c,j,new} \times TWAF_{c,j,new} \times XDCMFP_{ICR,j,c,t,t-1} \right] \quad (15)
 \end{aligned}$$

where:

RP1 and RP2 are the rebalancing proportions for component c, at calculation date t (as defined in Section 1.2), and can take the following values

$$RP1_{c,t} = \{1.0, 2/3, 1/3, 0.0\}$$

$$RP2_{c,t} = 1 - RP1_{c,t} = \{0.0, 1/3, 2/3, 1.0\}$$

2.7.4. The CMCI Benchmark – Total Return Index (CMCIB-TR)

2.7.4.1. Calculation of the Total Return Index

The CMCI Benchmark Total Return Index is derived from the CMCI Benchmark Excess Return Index. In addition to uncollateralized returns generated from the CMCI Benchmark basket, a daily fixed income return is added and the Index value takes the following expression:

$$CMCIH-TR_{ICR,t} = CMCIH-TR_{ICR,t-1} \times DITRF_{ICR,t} \quad (16)$$

Where

$$DITRF_{ICR,t} = \left(1 + IDR_{ICR,t} + IRR_{ICR,t} \right) \quad (17)$$

IRR, DRR, ARRA & ARRS, and calcdays are defined in Section 2.4.1.

The fixed income return component of the Total Return Index reflects the interest earned on securities theoretically deposited as margin for hypothetical positions in the contracts comprising the Index.

CMCI Benchmark Total Return Indices are set equal to 1000 on January 29th, 2007.

Appendix

A. Foreign Exchange Conversion Methodology
B. Details of Calculations and Assumptions
C. Index re-balancing mechanism: detailed computations
D. Standard Contract specifications
E. Primary Eligibility Requirements of CMCI Component Candidates
F. Secondary Eligibility Requirements of CMCI Component Candidates
G. Reference on regulatory weight caps
H. List of calculated CMCI Indices
I. Details of Calculations and Assumptions for CMCI Benchmark Indices

A. Foreign Exchange Conversion Methodology

Table A below provides the CMCI Foreign Exchange price/rate sources as well as cross rate reference calculations.

The CCY Exchange Rate source is set to Bloomberg BFIX Rate on page **CCY F143 Crncy HP <GO>** (Note the Location Time zone is set to "New-York"). CCY F143 Currency HP <GO>, states that the Fixing Prices are captured at 2:30pm EST.

Bloomberg recommends that the preferred reference price used is the Bloomberg BFIX Fixing Rates (CCY F143) rather than the default closing price found on HP. This is for the following reasons:

- BFIX rates are available every 30 minutes on every major currency pair, so that the fixing time can be chosen to suit the index
- BFIX rates are published within 20 seconds of the fixing time, whereas closing prices can take up to several hours to be published on the system
- BFIX rates are fixed and not subject to post-publishing correction, again unlike closing prices
- BFIX rates are based on Bloomberg's highest-quality data source (the Bloomberg Generic, known as the 'BGN') which itself is a composite of Bloomberg's highest-quality contributor sources. Bloomberg does not publish which exact contributor prices are used in the BGN or their exact blending algorithm which makes the BGN impervious to manipulation by contributors
- The BFIX rates are constructed from a short-interval time-weighted average of several BGN price ticks, which further insulates the BFIX rate from any spurious ticks
- The BFIX rates can be very easily accessed in the HP function, in essentially the same way that a user could access closing prices

TABLE A. DEFINITION CCY EXCHANGE RATES, CCY SCALARS DEFINITIONS, AND CROSS RATES CALCULATIONS.

ICR	CCY	CCY Pair	Quotation	CCYScalar _{IC}	
				R _{CCY}	Rate Source
USD	USD			1	
	AUD ⁶	AUD-USD	USD per AUD	1	BB: AUD F143 Curney HP <GO>
	EUR	EUR-USD	USD per EUR	1	BB: EUR F143 Curney HP <GO>
	CAD ⁷	USD-CAD	CAD per USD	-1	BB: CAD F143 Curney HP <GO>
	CHF	USD-CHF	CHF per USD	-1	BB: CHF F143 Curney HP <GO>
	GBP	GBP-USD	USD per GBP	1	BB: GBP F143 Curney HP <GO>
	JPY	USD-JPY	JPY per USD	-1	BB: JPY F143 Curney HP <GO>
EUR	EUR			1	
	AUD	AUD-EUR	AUD per EUR	-1	EUR-USD / AUD-USD
	USD	EUR-USD	USD per EUR	-1	BB: EUR F143 Curney HP <GO>
	CAD	EUR-CAD	CAD per EUR	-1	USD-CAD x EUR-USD
	CHF	EUR-CHF	CHF per EUR	-1	USD-CHF x EUR-USD
	GBP	GBP-EUR	EUR per GBP	1	GBP-USD / EUR-USD
	JPY	EUR-JPY	JPY per EUR	1	USD-JPY x EUR-USD
GBP	GBP			1	
	AUD	AUD-GBP	AUD per GBP	-1	GBP-USD / AUD-USD
	USD	GBP-USD	USD per GBP	-1	BB: GBP F143 Curney HP <GO>
	CAD	GBP-CAD	CAD per GBP	-1	USD-CAD x GBP-USD
	CHF	GBP-CHF	CHF per GBP	-1	USD-CHF x GBP-USD
	EUR	GBP-EUR	EUR per GBP	1	GBP-USD / EUR-USD
	JPY	GBP-JPY	JPY per GBP	1	GBP-USD x USD-JPY
CHF	CHF			1	
	USD	USD-CHF	CHF per USD	1	BB: CHF F143 Curney HP <GO>
	AUD	AUD-CHF	CHF per AUD	1	USD-CHF x AUD-USD
	EUR	EUR-CHF	CHF per EUR	1	USD-CHF x EUR-USD
	CAD	CAD-CHF	CHF per CAD	1	USD-CHF / USD-CAD
	GBP	GBP-CHF	CHF per GBP	1	GBP-USD x USD-CHF
	JPY	CHF-JPY	JPY per CHF	1	USD-JPY / USD-CHF
CAD	CAD			1	
	USD	USD-CAD	CAD per USD	1	BB: CAD F143 Curney HP <GO>
	EUR	EUR-CAD	CAD per EUR	1	USD-CAD x EUR-USD
	CHF	CAD-CHF	CHF per CAD	-1	USD-CHF / USD-CAD
	GBP	GBP-CAD	CAD per GBP	1	GBP-USD x USD-CAD
	JPY	CAD-JPY	JPY per CAD	1	USD-JPY / USD-CAD
AUD	AUD			1	
	USD	AUD-USD	USD per AUD	-1	BB: AUD F143 Curney HP <GO>
	CHF	AUD-CHF	CHF per AUD	-1	USD-CHF x AUD-USD
	EUR	AUD-EUR	EUR per AUD	-1	AUD-USD / EUR-USD
	GBP	GBP-AUD	AUD per GBP	1	GBP-USD / AUD-USD
	JPY	AUD-JPY	JPY per AUD	1	USD-JPY x AUD-USD
JPY	JPY			1	
	USD	USD-JPY	JPY per USD	1	BB: JPY F143 Curney HP <GO>
	AUD	AUD-JPY	JPY per AUD	1	USD-JPY x AUD-USD
	EUR	EUR-JPY	JPY per EUR	1	USD-JPY x EUR-USD
	CAD	CAD-JPY	JPY per CAD	1	USD-JPY / USD-CAD
	CHF	CHF-JPY	JPY per CHF	1	USD-JPY / USD-CHF
	GBP	GBP-EUR	EUR per GBP	1	GBP-USD / EUR-USD

Source: UBS Investment Bank, CMCI Advisory Committee

From Section 2.2.1., form (4), we know the generic expression for any Index Currency Reference (ICR).

$$CMCI - PI_{USD,SCM,t} = MF_{SCM,USD} \times \sum_{c=1,N} DCV_{c,USD,SCM,t} = MF_{SCM,USD} \times BV_{USD,SCM,t} \quad (4)$$

where:

$$DCV_{c,USD,SCM,t} = IsIn_{c,Index} \times DCMFP_{c,SCM,t} \times CNW_{c,SCM} \times [FX_{USD,c,t}]^{CCYScalar_{USD,ccy}} \quad (5)$$

⁶: Australian Dollar

⁷: Canadian Dollar

If ICR is EUR, a JPY component will be using the following conversion:

$$DCV_{c, EUR, SCM, t, t} = IsIn_{c, Index} \times DCMFP_{c, SCM, t, t} \times CNW_{c, SCM} \times [(USD - JPY \times EUR - USD)_t]^{(-1)}$$

B. Details of Calculations and Assumptions

B.1. Calculation of the Daily Constant Maturity Date

For the determination of the exact forward date we use the expression:

$$DCMD_{SCM} t = t + pd$$

Where:

t is a CMCI Business Day (as defined in section 2.6)

pd denotes the tenor period in days:

If SCM=3M then pd = 91 days, if SCM=6M then pd = 182 days, if SCM=1Y then pd = 365 days, if SCM=2Y then pd = 730 days, if SCM=3Y then pd = 1095 days, if SCM=4Y then pd = 1460 days, if SCM=5Y then pd = 1825 days)

B.2. Further details on the calculation of the Daily Constant Maturity Forward Price (DCMFP)

For a given SCM, the Daily Constant Maturity Forward Price of a specific component c, takes the following expression:

$$DCMFP_{c, SCM, t, d} = DCNP1_{c, t} \times CPI_{c, SCM, d} + DCNP2_{c, t} \times CP2_{c, SCM, d} \quad (3)$$

where:

c denotes component commodity c,
t is the calculation date (by definition, a CMCI Business Day),
d is the reference date for which contract proportions are calculated. For the Price index, d is equal to t. For the Excess return index, d is equal to t-1

and, for a component c, a Standard Constant Maturity SCM and a calculation date t:

DCNP1_{c,t} is the Daily Contract Nearby Price, that is to say the Forward or Futures Contract price associated with the futures contract whose MDP date is equal or immediately preceding the Daily Constant Maturity Date (related to the specified Standard Constant Maturity or Constant Maturity Boundary), as defined by the Eligible Nearby Contract table

DCNP2_{c,t} is the Daily Contract Nearby Price, that is to say the Forward or Futures Contract price associated with the futures contract whose MDP date is immediately following the Daily Constant Maturity Date (related to the specified Standard Constant Maturity or Constant Maturity Boundary), as defined by the Eligible Nearby Contract table.

When, for a specific component, the Standard Constant Maturity tenor is limited by a Constant Maturity boundary (CMB), the definition of the Constant Maturity Forward Price is simply amended using CMB instead of SCM.

B.3. Calculation of the CMCI in the particular case of a changes in MDPs

Should any parameter of a futures contract be changed by the relevant exchange, or should the Index Sponsors change the MDP rule (by changing the naMDP, introducing a new MDPa or changing/removing an existing MDPa) a discontinuity in the Index could arise.

In any of the above cases the Index mechanism avoids such discontinuity by allowing the new parameter or parameters to be introduced over the course of a designated appropriate Maintenance Period (as defined by the CMCI Governance committee). We substitute form (8) and calculate the Basket Value as per the following formula (8b) below:

$$\begin{aligned}
 BV_{ICR,t} = & MF_{ICR,old,OLD-MDP} / MF_{ICR,new,NEW-MDP} \\
 & \times \left[\sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,old,OLD-MDP} \times RP1_{c,t} \times DCMFP_{c,SCM,t,t,OLD-MDP} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}} \right] \\
 & + \sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,new,NEW-MDP} \times RP2_{c,t} \times DCMFP_{c,SCM,t,t,NEW-MDP} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}} \quad , \quad (8b)
 \end{aligned}$$

where:

RP1_{c,t} and RP2_{c,t} the rebalancing proportions for component c, at calculation date t (as defined in Section 1.2. Summary of key index terms and in section 2.2.2. Index continuity maintenance).

New Maintenance Factors are calculated at the close of business on the CMCI Business Day immediately preceding the first maintenance day, and their values used for subsequent calculations:

$$BVR_{ICR,t} = \frac{\sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,new,NEW-MDP} \times DCMFP_{c,SCM,t,t,NEW-MDP} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}}}{\sum_{c=1,N} IsIn_{c,Index} \times CNW_{c,old,OLD-MDP} \times DCMFP_{c,SCM,t,t,OLD-MDP} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,ccy}}} \quad , \quad (9b)$$

Where BVR is the Basket Value Ratio. We then obtain:

$$MF_{ICR,new} = \frac{MF_{ICR,old}}{BVR_{ICR,t}} \quad , \quad (10b)$$

The procedure described above is theoretically valid for any change of parameters affecting the level of the DCMFP. It is proposed by the CMCI Advisory Committee and its implementation ratified by the CMCI Governance Committee.

C. Index rebalancing Mechanism: detailed calculations

For each commodity in the CMCI composite index ("c" being the mute counter index), we require:

$$\frac{CNW_{c,SCM,new} \times DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,cy}}}{\sum_{c=1,N} CNW_{c,SCM,new} \times DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,cy}}} - TW_{c,\%} = 0 \quad (9)$$

For notation purposes, one introduces currency denominated quantities:

$$DCMFP_{c,SCM,t,t} \times [FX_{ICR,c,t}]^{CCYScalar_{ICR,cy}} = XDCMFP_{ICR,c,SCM,t,t} = XDCMFP_c$$

Then for each of the N commodities in the Index, one can rewrite the previous equation as:

$$\begin{aligned} & (1 - TW_c) XDCMFP_c \cdot CNW_{c,SCM,new} \\ & - (TW_1 \cdot XDCMFP_1 \cdot CNW_{1,SCM,new} + \dots + TW_{c-1} XDCMFP_{c-1} \cdot CNW_{c-1,SCM,new}) \\ & - (TW_{c+1} \cdot XDCMFP_{c+1} \cdot CNW_{c+1,SCM,new} + \dots + TW_N XDCMFP_N \cdot CNW_{N,SCM,new}) = 0 \end{aligned}$$

We thus obtain a system

- of N linear equations
- with N unknowns (i.e. $(CNW_{c,SCM,new})_{1 \leq c \leq N}$).

This system can be expressed as the following matrix equation:

$$\begin{bmatrix} (1 - TW_1) & -TW_1 & \dots & -TW_1 \\ -TW_2 & (1 - TW_2) & \dots & -TW_2 \\ \dots & \dots & \dots & \dots \\ -TW_N & \dots & -TW_N & (1 - TW_N) \end{bmatrix} \begin{pmatrix} XDCMFP_1 \times CNW_{1,SCM,new} \\ \vdots \\ \vdots \\ XDCMFP_N \times CNW_{N,SCM,new} \end{pmatrix} = 0$$

If one further defines:

the matrix $M = \begin{bmatrix} TW_1 & TW_1 & \dots & TW_1 \\ TW_2 & TW_2 & \dots & TW_2 \\ \vdots & \vdots & & \vdots \\ TW_N & \dots & TW_N & TW_N \end{bmatrix}$

and the vector $z = \begin{pmatrix} XDCMFP_1 \times CNW_{1,SCM,new} \\ \vdots \\ \vdots \\ XDCMFP_N \times CNW_{N,SCM,new} \end{pmatrix}$,

it all comes down to:

$$Mz = z$$

which amounts to finding an eigenvector associated to eigenvalue 1 for M. Note M obviously has rank 1 and is a projection on the line generated by z (in the vector space sense).

Any component z_i belonging to any such given eigenvector z would then satisfy:

$$TW_i \left(\sum_{k=1}^N z_k \right) = z_i$$

implying that:

$$\left(\sum_{k=1}^N z_k \right) = \frac{z_i}{TW_i} = \frac{z_j}{TW_j}, \quad \forall i, j, \quad 1 \leq i, j \leq N$$

Note the left hand side of the equation doesn't depend on i or j.

On the other hand, the vector from the initial equation has to satisfy this relationship since all eigenvectors do. This reads:

$$\frac{XDCMFP_i}{TW_i} CNW_{i,SCM,new} = \frac{XDCMFP_j}{TW_j} CNW_{j,SCM,new}, \quad \forall i, j, \quad 1 \leq i, j \leq N$$

To find a unique solution (as opposed to a line of solutions) one has to fix one end of the inputs, hence the use of x. If one decides (without loss of generality) to set:

$$CNW_{N,SCM,new} = x$$

Then the corresponding unique solution satisfying the previous constraint is given by:

$$CNW_{i,SCM,new} = \frac{XDCMFP_N}{XDCMFP_i} \frac{TW_i}{TW_N} x, \quad \forall i, \quad 1 \leq i \leq N$$

D. List of calculated indices in the CMCI Index Family

D.1. Core CMCI Indices

The CMCI, its sectors and its component indices are calculated for the following Standard Constant Maturities (SCM):

- 3 Months (3M),
- 6 Months (6M),
- 1 Year (1Y),
- 2 Years (2Y),
- 3 Years (3Y),

We also provide single component indices for the following Standard Constant Maturities for specific commodities only:

- 4 Years (4Y),
- 5 Years (5Y).

All of the Core CMCI Indices can be made available in currency-hedged format.

The list of CMCI indices is provided in table I.1, while the index composition is provided in table below.

TABLE D1. CMCI INDICES

CMCI Index	Code	Index Ticker	3M	6M	1Y	2Y	3Y	4Y	5Y
CMCI Composite	CI	CMCI	Yes	Yes	Yes	Yes	Yes	-	-
CMCI High Energy	HE	CMHE	Yes	Yes	Yes	Yes	Yes	-	-
CMCI ex-Lean Hogs	XL	CMXL	Yes	Yes	Yes	Yes	Yes	-	-
CMCI Food Index	FO	CMFO	Yes	Yes	Yes	-	-	-	-
CMCI Energy	EN	CMEN	Yes	Yes	Yes	Yes	Yes	-	-
CMCI Industrial Metals	IM	CMIM	Yes	Yes	Yes	Yes	Yes	-	-
CMCI Precious Metals	PM	CMPM	Yes	Yes	Yes	Yes	Yes	-	-
CMCI Agriculture	AG	CMAG	Yes	Yes	Yes	-	-	-	-
CMCI Livestock	LV	CMLV	Yes	Yes	-	-	-	-	-
CMCI WTI Crude Oil	WC	CTWC	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CMCI Brent Crude Oil	CO	CTCO	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CMCI Heating Oil	HO	CTHO	Yes	Yes	Yes	-	-	-	-
CMCI Gasoil	QS	CTQS	Yes	Yes	Yes	-	-	-	-
CMCI RBOB Gasoline	XB	CTXB	Yes	Yes	-	-	-	-	-
CMCI Natural Gas	NG	CTNG	Yes	Yes	Yes	Yes	Yes	-	-
CMCI LME Copper	LP	CTLP	Yes	Yes	Yes	Yes	Yes	Yes	-
CMCI High Grade Copper	HG	CTHG	Yes	Yes	-	-	-	-	-
CMCI LME Zinc	LX	CTLX	Yes	Yes	Yes	-	-	-	-
CMCI LME Aluminium	LA	CTLA	Yes	Yes	Yes	Yes	Yes	Yes	-
CMCI LME Nickel	LN	CTLN	Yes	Yes	Yes	-	-	-	-
CMCI LME Lead	LL	CTLL	Yes	Yes	Yes	-	-	-	-

CMCI Gold	GC	CTGC	Yes	Yes	Yes	Yes	-	-	-
CMCI Silver	SI	CTSI	Yes	Yes	Yes	Yes	-	-	-
CMCI Wheat	WW	CTWW	Yes	Yes	Yes	-	-	-	-
CMCI Corn	CN	CTCN	Yes	Yes	Yes	-	-	-	-
CMCI Soybeans	SY	CTSY	Yes	Yes	Yes	-	-	-	-
CMCI Soybean Meal	SM	CTSM	Yes	Yes	-	-	-	-	-
CMCI Soybean Oil	BO	CTBO	Yes	Yes	-	-	-	-	-
CMCI Sugar #11	SB	CTSB	Yes	Yes	Yes	-	-	-	-
CMCI Sugar #5	QW	CTQW	Yes	Yes	-	-	-	-	-
CMCI Cocoa	QC	CTQC	Yes	Yes	-	-	-	-	-
CMCI Coffee "C" Arabica	KC	CTKC	Yes	Yes	Yes	-	-	-	-
CMCI Cotton	CT	CTCT	Yes	Yes	-	-	-	-	-
CMCI Live Cattle	LC	CTLC	Yes	Yes	-	-	-	-	-
CMCI Lean Hogs	LH	CTLH	Yes	Yes	-	-	-	-	-

Source: UBS Investment Bank, CMCI Advisory Committee
Yes: Index is quoted

Legend:

TABLE D.2. CMCI INDICES COMPOSITION

CMCI Index Composition	Index Ticker	CL	EN	CO	HO	OS	RB	NG	LP	HG	LX	LA	LN	LX	GC	SI
CMCI Composite	CMCI	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CMCI High Energy	CMHE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CMCI ex-Lean Hogs	CMXL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CMCI Food index	CMFO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub Indices																
CMCI Energy	CMEN	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-	-
CMCI Industrial Metals	CMIM	-	-	-	-	-	-	-	Y	Y	Y	Y	Y	Y	-	-
CMCI Precious Metals	CMPM	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y
CMCI Agriculture	CMAG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Livestock	CMLV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Single Component Indices																
CMCI WTI Crude Oil	CTWC	Y	Y	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Brent Crude Oil	CTCO	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Heating Oil	CTHO	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-
CMCI Gasoil	CTQS	-	-	-	-	Y	-	-	-	-	-	-	-	-	-	-
CMCI RBOB Gasoline	CTXB	-	-	-	-	-	Y	-	-	-	-	-	-	-	-	-
CMCI Natural Gas	CTNG	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	-
CMCI LME Copper	CTLP	-	-	-	-	-	-	-	Y	-	-	-	-	-	-	-
CMCI High Grade Copper	CTHG	-	-	-	-	-	-	-	-	Y	-	-	-	-	-	-
CMCI LME Zinc	CTLX	-	-	-	-	-	-	-	-	-	Y	-	-	-	-	-
CMCI LME Aluminium	CTLA	-	-	-	-	-	-	-	-	-	-	Y	-	-	-	-
CMCI LME Nickel	CTLN	-	-	-	-	-	-	-	-	-	-	-	Y	-	-	-
CMCI LME Lead	CTLL	-	-	-	-	-	-	-	-	-	-	-	-	Y	-	-
CMCI Gold	CTGC	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	-
CMCI Silver	CTSI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y
CMCI Wheat	CTWW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Corn	CTCN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Soybeans	CTSY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Soybean Meal	CTSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Soybean Oil	CTBO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Sugar #11	CTSB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Sugar #5	CTQW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Cocoa	CTQC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Coffee "C" Arabica	CTKC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Cotton	CTCT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Live Cattle	CTLC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Lean Hogs	CTLH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: UBS Investment Bank, CMCI Advisory Committee

Legend: Y: Component is included, -: Component is not included.

TABLE D.2. CMCI INDICES COMPOSITION (CONTINUED)

CMCI Index Composition	Index Ticker	W	C	S	SM	BO	SB	QW	QC	KC	CT	LC	LH
CMCI Composite	CMCI	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CMCI High Energy	CMHE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CMCI ex-Lean Hogs	CMXL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-
CMCI Food Index	CMFO	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y
Sub Indices													
CMCI Energy	CMEN	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Industrial Metals	CMIM	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Precious Metals	CMPM	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Agriculture	CMAG	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-
CMCI Livestock	CMLV	-	-	-	-	-	-	-	-	-	-	Y	Y
Single Component Indices													
CMCI WTI Crude Oil	CTWC	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Brent Crude Oil	CTCO	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Heating Oil	CTHO	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Gasoil	CTQS	-	-	-	-	-	-	-	-	-	-	-	-
CMCI RBOB Gasoline	CTXB	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Natural Gas	CTNG	-	-	-	-	-	-	-	-	-	-	-	-
CMCI LME Copper	CTLP	-	-	-	-	-	-	-	-	-	-	-	-
CMCI LME Zinc	CTLX	-	-	-	-	-	-	-	-	-	-	-	-
CMCI LME Aluminium	CTLA	-	-	-	-	-	-	-	-	-	-	-	-
CMCI LME Nickel	CTLN	-	-	-	-	-	-	-	-	-	-	-	-
CMCI LME Lead	CTLL	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Gold	CTGC	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Silver	CTSI	-	-	-	-	-	-	-	-	-	-	-	-
CMCI Wheat	CTWW	Y	-	-	-	-	-	-	-	-	-	-	-
CMCI Corn	CTCN	-	Y	-	-	-	-	-	-	-	-	-	-
CMCI Soybeans	CTSY	-	-	Y	-	-	-	-	-	-	-	-	-
CMCI Soybean Meal	CTSM	-	-	-	Y	-	-	-	-	-	-	-	-
CMCI Soybean Oil	CTBO	-	-	-	-	Y	-	-	-	-	-	-	-
CMCI Sugar #11	CTSB	-	-	-	-	-	Y	-	-	-	-	-	-
CMCI Sugar #5	CTQW	-	-	-	-	-	-	Y	-	-	-	-	-
CMCI Cocoa	CTQC	-	-	-	-	-	-	-	Y	-	-	-	-
CMCI Coffee "C" Arabica	CTKC	-	-	-	-	-	-	-	-	Y	-	-	-
CMCI Cotton	CTCT	-	-	-	-	-	-	-	-	-	Y	-	-
CMCI Live Cattle	CTLC	-	-	-	-	-	-	-	-	-	-	Y	-
CMCI Lean Hogs	CTLH	-	-	-	-	-	-	-	-	-	-	-	Y

Source: UBS Investment Bank, CMCI Advisory Committee

Legend: "Y": Component is included, "-": Component is not included

In addition to above CMCI Indices, Index Sponsors created a number of additional CMCI Component Indices for commodities we see significant demand for, but which do not pass index membership criteria. These are listed in the table below.

TABLE D.3 INTRODUCING NEW COMPONENT INDICES

Contract	Code Reuters	Code Bloomberg	Index Ticker	3M	6M	1Y	2Y	3Y	4Y	5Y
Canola	RS	RS	CTRS	Yes	-	-	-	-	-	-
Barley	AB	WA	CTWA	Yes	-	-	-	-	-	-
Lumber (Random Length)	LB	LB	CTLB	Yes	-	-	-	-	-	-
Rough Rice	RR	RR	CTRR	Yes	-	-	-	-	-	-
Rapeseed	COM	IJ	CTCZ	Yes	-	-	-	-	-	-
Platinum	PL	PL	CTPL	Yes	-	-	-	-	-	-
Orange Juice A	OJ	JO	CTJO	Yes	-	-	-	-	-	-

Source: UBS Investment Bank, CMCI Advisory Committee

Legend: Yes: Index is Quoted

CMCI Benchmark indices combine all the available Tenors for composite, sector or individual commodity component.

D.3. CMCI Strategy Indices

In addition to the CMCI Core Indices, Index Sponsors created a number of additional CMCI Strategy Indices that fall within the categories of CMCI Active, CMCI Flex and CMCI Essence.

All of the CMCI Strategy Indices can be made available in currency-hedged format.

The Total Return version of the CMCI Strategy indices will use the same Available Reference Rates as the CMCI Core indices.

D.3.1. CMCI Active

CMCI Active was officially launched on 25th of April 2008 (and was launched internally in August 2007) as a recent addition to the UBS Bloomberg CMCI index family. It is a unique commodity instrument which offers you all the benefits of a leading commodity index with a flexible and sustainable form of performance enhancement.

Although passive index investment is still the most popular route and continues to serve the market well, many investors are looking for a more active approach as the market becomes more sophisticated. As the only commodity index to be both closely aligned to an established benchmark and to draw on the insights of one of the world's leading research teams, CMCI Active is the solution that other providers will seek to match.

CMCI Active is a unique index that allows all investors access to the strong strategic and tactical knowledge of UBS's research analysts and opens up the market to those previously excluded from traditional active products due to high fees, lack of transparency or minimum investment level. It is available to all investors from individuals to Sovereign Wealth Funds.

CMCI Active uses the same calculation methodology and commodity components as the CMCI Benchmark Index. In addition, index weights are adjusted every month to reflect changes in the market and our analysts' views on relative value and performance. The fixed rules or algorithms on which other 'enhanced' indices depend are often based on historical price patterns or curve shapes and can become outdated over time. By contrast, CMCI Active is flexible, forward looking and designed to respond quickly to changes in the market.

All of the CMCI Core indices can be made available in CMCI Active format.

D.3.2. CMCI Flex Indices

While the UBS Bloomberg CMCI is an innovative index that has introduced two unique concepts to commodity index investment – constant maturity and diversification across the commodity futures curve, the S&P GSCI (further referred to as SPGSCI) and Dow-Jones UBS Commodity IndexSM (further referred to as DJUBS) have historically been the most widely used commodity indices.

CMCI Flex indices combine features from both indices. It uses the exact commodity weights and rebalancing methodology of the SPGSCI or DJUBS, but instead of rolling front month futures, CMCI Flex indices use the forward tenors, daily rolling and constant maturity methodology of the CMCI. This combination provides a unique balance between the widely followed, SPGSCI or DJUBS indices and the benefits of diversification across maturities and rolling methodology provided by the UBS Bloomberg CMCI. The constant maturity approach and longer maturities that the UBS Bloomberg CMCI brings to the CMCI Flex indices may lead to lower volatility and mitigation of negative roll yield while still keeping pace during periods of backwardation.

CMCI Flex indices combining CMCI methodology with DJUBS weights are called UBS Bloomberg DJ-UBS Constant Maturity.

CMCI Flex indices combining CMCI methodology with SPGSCI weights are called UBS Bloomberg SPGSCI Constant Maturity.

CMCI Flex indices can be made available on any composite, sector or commodity component.

D.3.3. CMCI Essence

CMCI Essence indices are diversified market neutral commodity strategies, aiming to generate alpha from commodity markets by benefiting from the different investment methodologies of the CMCI and the traditional commodity indices. The long leg of the strategy will typically be the CMCI Flex index and the short leg of the strategy will be the traditional index that the CMCI Flex index is derived from. CMCI Essence indices are rebalanced quarterly.

CMCI Essence indices can be made available on any composite, sector or commodity component.

CMCI Essence T10 is one of the indices in the CMCI Essence family.

E. Details of Calculations and Assumptions for CMCI Benchmark Indices

E.1. Calculation of the CMCI in the particular case of a change in MDPs

Should any parameter of a futures contract be changed by the relevant exchange, or should the Index Sponsors change the MDP rule (by changing the naMDP, introducing a new MDPa or changing/removing an existing MDPa) a discontinuity in the Index could arise.

In any of the above cases the Index mechanism avoids such discontinuity by allowing the new parameter or parameters to be introduced over the course of a designated appropriate Maintenance Period (as defined by the CMCI Governance committee). We substitute form (3) and calculate the Curve Value as per the following formula (3b) below:

$$\begin{aligned}
 CV_{ICR,t,t} = & \frac{MF_{ICR,old,MDP_{old}}}{MF_{ICR,new,MDP_{new}}} \times \\
 & \sum_{c=1,N} RP1_{c,t} \left[\sum_{j=1,AT} IsIn_{c,j,Index,old} \times CNW_{c,j,old,MDP_{old}} \times TWAF_{c,j,old,MDP_{old}} \times XDCMFP_{c,j,t,t,MDP_{old}} \right] \\
 & + \sum_{c=1,N} RP2_{c,t} \left[\sum_{j=1,AT} IsIn_{c,j,Index,new} \times CNW_{c,j,new,MDP_{new}} \times TWAF_{c,j,new,MDP_{new}} \times XDCMFP_{c,j,t,t,MDP_{new}} \right], \quad (3b)
 \end{aligned}$$

where:

RP1_{c,t} and RP2_{c,t} the rebalancing proportions for component c, at calculation date t (as defined below).

New Maintenance Factors are calculated at the close of business on the CMCI Business Day immediately preceding the first maintenance day, and their values used for subsequent calculations. From (4) we then get (4b):

$$CVR_{ICR,t} = \frac{\sum_{c=1,N} \sum_{j=1,AT} IsIn_{c,j,Index,new} \times CNW_{c,j,new,MDP_{new}} \times TWAF_{c,j,new,MDP_{new}} \times XDCMFP_{c,j,t,t,MDP_{new}}}{\sum_{c=1,N} \sum_{j=1,AT} IsIn_{c,j,Index,old} \times CNW_{c,j,old,MDP_{old}} \times TWAF_{c,j,old,MDP_{old}} \times XDCMFP_{c,j,t,t,MDP_{old}}}, \quad (4b)$$

Where CVR is the Curve Value Ratio. We then obtain (5b):

$$MF_{ICR,new} = \frac{MF_{ICR,old}}{CVR_{ICR,t}}, \quad (5b)$$

The procedure described above is theoretically valid for any change of parameters affecting the level of the XDCMFP and not only the MDP date. It is proposed by the CMCI Advisory Committee and its implementation ratified by the CMCI Governance Committee.

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