



UBS Bloomberg SPGSCI Constant Maturity (January 2011)

Combining the S&P GSCI composition and weighting
with the innovative CMCI methodology

Summary

Background on the CMCI Flex products

- Investor demand in commodities has grown significantly over the last few years with the majority of new investment being in long only index products
- However many investors have been disappointed with the performance of traditional indices during times of persistent contango where negative roll yields have eroded returns relative to the underlying spot market
- The UBS Bloomberg CMCI was launched in Jan 2007 to address this issue and to provide a closer representation of the commodities asset class
- Many investors continue to track other indices but would like to benefit from the innovations introduced by the CMCI. To address this need, CMCI Flex products were created to allow customers to define their own commodity weightings while giving access to the longer tenors and constant maturity methodology of the CMCI
- One example of these Flex products which requires no further definition or maintenance is the SPGSCI Constant Maturity Index (CMSP), which was created to exactly match the commodity components and weights of the S&P GSCI index (SPGSCI) and is approved and licensed to UBS by Standard and Poor's
- The SPGSCI Constant Maturity can also be an excellent tool to extract alpha from commodity markets as it can be used in a long/short form against the SPGSCI index as an efficient way to trade relative value on the commodity curve and benefit from the different investment methodologies.

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- 1. Reference Index Comparison**
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Reference Index Comparison

	S&P GSCI Index	UBS Bloomberg CMCI
Composition	<p>Precious Metals, 3.49%</p> <p>Livestock, 4.42%</p> <p>Industrial Metals, 8.13%</p> <p>Agriculture, 16.52%</p> <p>Energy, 67.45%</p>	<p>Livestock, 4.0%</p> <p>Agriculture, 29.2%</p> <p>Energy, 34.2%</p> <p>Precious Metals, 5.5%</p> <p>Industrial Metals, 27.1%</p>
Creation Date	January 1991	January 2007
Roll methodology	Traditional (punctual roll over 5 days)	Constant Maturity Approach (daily roll)
Tenor of investment	Front month only	3 Months to 3 Years
Return p.a.	-1.0%	10.5%
Volatility	25.8%	16.8%
Roll methodology	-0.04	0.63

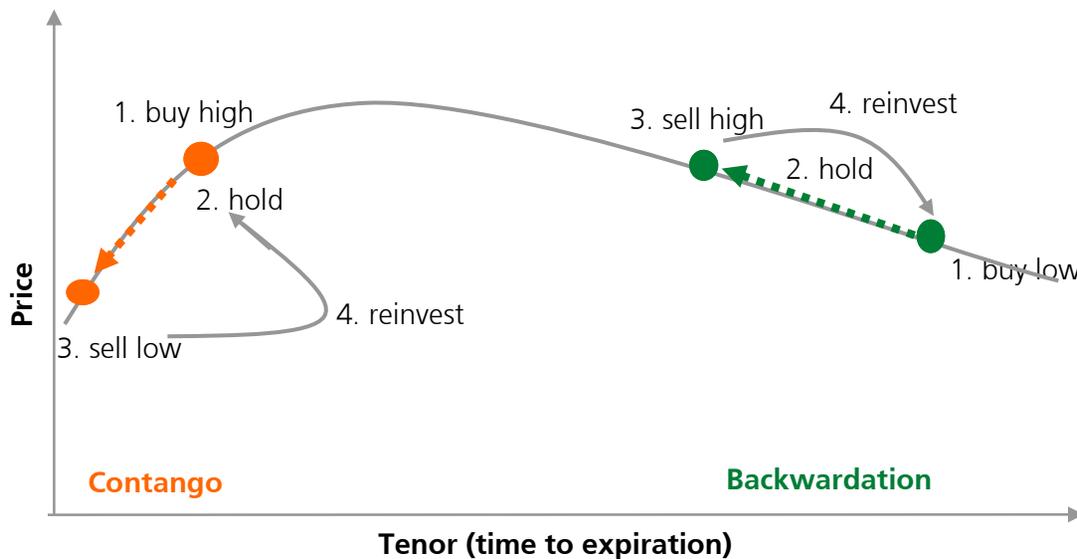
Source : UBS AG, Bloomberg. Weekly from 2 December 2000 to 2 December 2010; The indices used are "Excess return".

CMCI Data contains back-tested values up to Jan 2007 and live thereafter.

Composition refers to Target Weights as of December 2, 2010

S&P GSCI

- **Fundamentals:** broad-based commodity index representing unleveraged, long only positions in a basket of exchange-traded futures on commodities
- One of the **first investable commodity indices**, started back in 1991
- **Weighting Engine** that is based on a combination of historical Production at current prices means that the energy commodities have high weighting in the index
- Rebalances to new target weights on annual basis
- **Index Rolling Mechanism:** repeated buying, holding, selling and reinvesting of front-month futures



Traditional Indices

- **Front month futures only**
all the traditional indices are positioned on the same part of the forward curve
- **Punctual roll**
The exact days of rolls are predefined (i.e. 5th to 9th business day of the month) for each index and transparent to the market

UBS Bloomberg CMCI

The UBS Bloomberg CMCI (“CMCI”) is a unique index that demonstrates:

➤ **Constant and stable outperformance with REAL track record**

- As a result of the methodology that minimises the impact of roll yield on returns, the CMCI has outperformed S&P GSCI by more than 180% since 1998 and 35% since CMCI went live in January 2007.

➤ **Close tracking of commodity prices**

- The revolutionary calculation methodology of the CMCI, that involves daily rolling to comply with the Constant Maturity concept, not only ensures that the tracking error of the investment vehicle vs. actual performance of commodity markets is minimised, but also avoids the problems of having to roll large notionals over the short punctual roll period.

➤ **Broad market coverage not only in terms of commodities but also tenors**

- CMCI not only covers a broad range of commodities, but also introduces a time dimension to commodity investment. Diversification not only among commodities, but also investment maturities for each individual commodity ranging from 3 Months to 3 Years allows for a high level of flexibility in making investment allocation decisions.

➤ **Highly transparent and operationally stable**

- To ensure the stability of the CMCI, it is overseen by a committee (the CMCI Governance Committee, composed of UBS, Bloomberg and external members) established by the two Index Sponsors, which ensures the validation, determinations, changes to the composition and communication regarding the CMCI. The unique feature of a co-sponsor makes the index most transparent and operationally stable

➤ **Highly liquid**

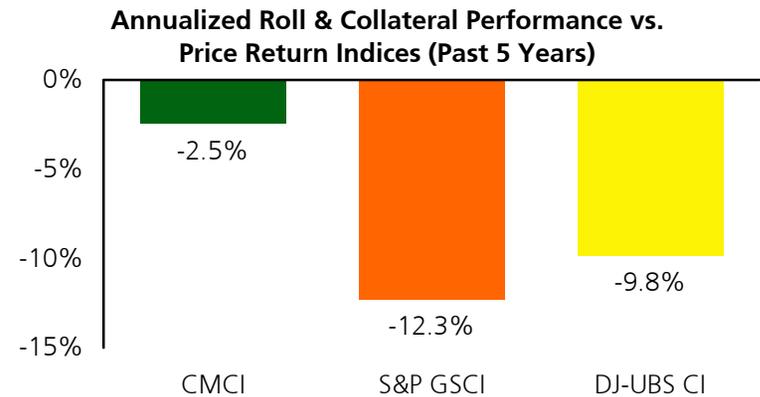
- As a result of selecting highly liquid futures contracts diversified along the forward curve, as well as the Constant Maturity methodology that involves daily rolling, CMCI avoids the problem of punctual roll (when high volumes are traded in announced transactions) and trades smaller volumes on a daily basis, having less impact on the market and hence not distorting the performance that the index investor receives.

CMCI vs. Traditional Indices

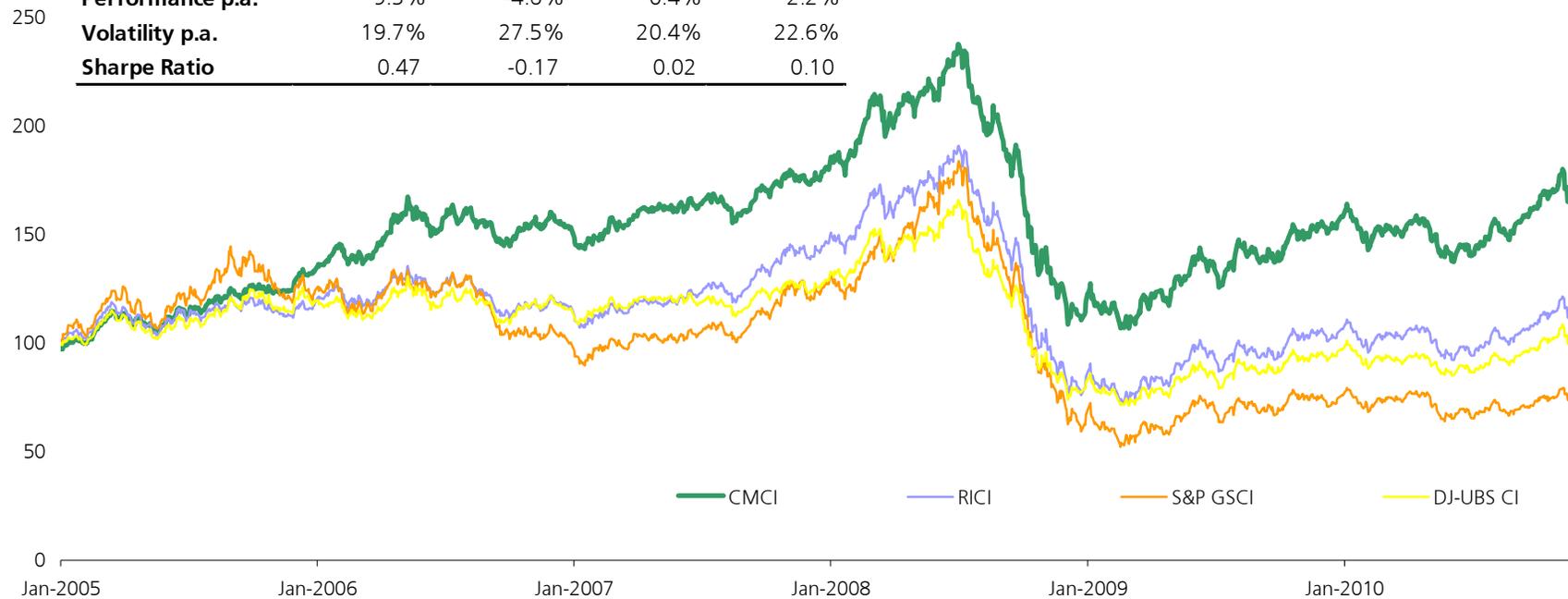
Better performance at lower volatility, compared to traditional commodity indices

Performance drivers

- **Significant outperformance** thanks to the exposure to longer dated commodity futures
- **Lower volatility** by minimising exposure to the most volatile front-month futures
- **Minimum exposure to negative effects of roll yield** as a result of Constant Maturity approach



	CMCI	S&P GSCI	DJ-UBS CI	RICI
Performance p.a.	9.3%	-4.6%	0.4%	2.2%
Volatility p.a.	19.7%	27.5%	20.4%	22.6%
Sharpe Ratio	0.47	-0.17	0.02	0.10



Source: UBS, Bloomberg. 1 January 2005 – 26 November 2010. DJ-UBS CI refers to Dow Jones-UBS Commodity IndexSM

CMCI data back-tested up to January 2007 and live thereafter



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UBS Bloomberg SPGSCI Constant Maturity

What is the SPGSCI Constant Maturity ?

- The UBS Bloomberg CMCI introduced two unique concepts to commodity index investment – constant maturity and diversification across the commodities futures curve
- The SPGSCI has historically been the most widely used commodity index with a well established commodity weighting methodology
- The SPGSCI Constant Maturity Index combines features from both indices
 - **SPGSCI Constant Maturity uses the exact commodity weights and rebalancing methodology of the SPGSCI index, but instead of rolling front month futures, SPGSCI Constant Maturity uses the forward tenors, daily rolling and constant maturity methodology of the CMCI**
 - This combination provides a unique balance between the widely followed, high energy weighted SPGSCI index 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 SPGSCI Constant Maturity may lead to lower volatility and mitigation of negative roll yield while still keeping pace during periods of backwardation
- Products on the SPGSCI Constant Maturity Index can represent either the absolute performance of the index or relatively pure index 'alpha' trades as a result of the perfectly matched commodity components. This avoids the common problem of mismatched components in other long/short index strategies.

SPGSCI Constant Maturity vs. SPGSCI comparison

	SPGSCI	SPGSCI Constant Maturity
Composition	24 components	24 components
Sector Weights	<ul style="list-style-type: none"> - Energy 67.5% - Industrial Metals 8.1% - Precious Metals 3.5% - Agriculture 16.5% - Livestock 4.4% 	<ul style="list-style-type: none"> - Energy 67.5% - Industrial Metals 8.1% - Precious Metals 3.5% - Agriculture 16.5% - Livestock 4.4%
Mechanism of investment (roll)	On the front end of the forward curve between the 5 th and the 9 th of each month	The roll takes place on a daily basis according to the Constant Maturity principle
Average tenor of investment	Front month only	3 Months to 3 Years

Source: UBS,
Data as of 2 December 2010

CMCI – not just a contango beater

Positive returns may arise from both contango and backwardated commodities

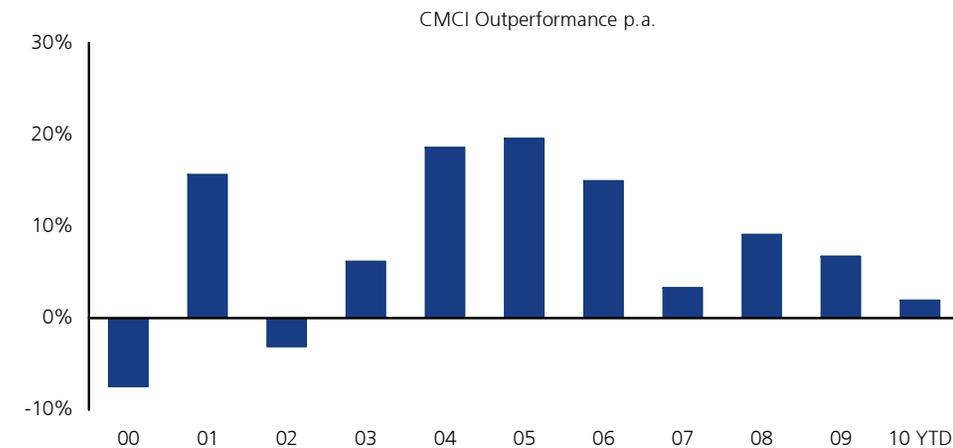
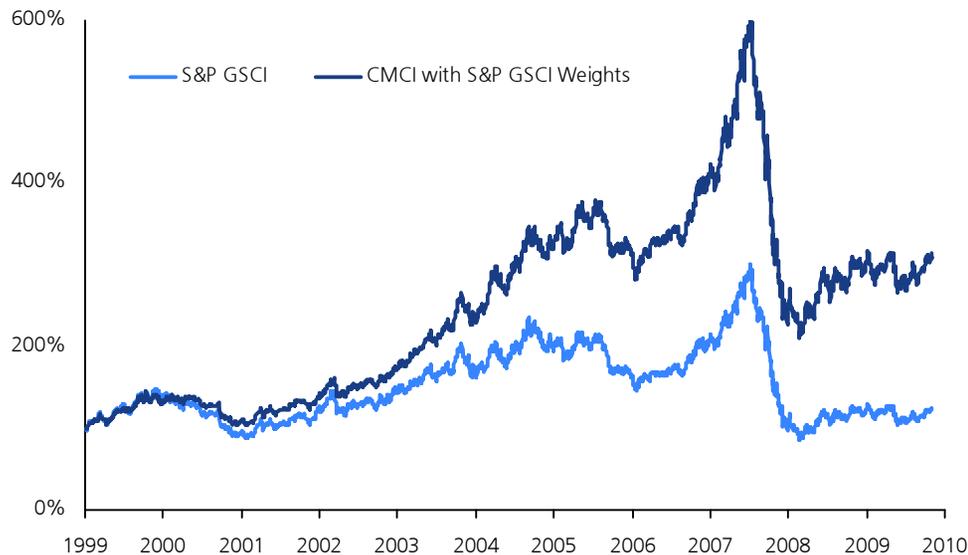
2007			2008			2009			2010YTD		
Commodity	Outperformance CMCI vs S&PGSCI	Curve Shape									
Chicago Wheat	17.72%	C	Sugar #11	13.87%	C	Cocoa	25.17%	C	Lean Hogs	12.80%	C
Natural Gas	17.15%	B	WTI Crude Oil	13.72%	C	WTI Crude Oil	20.00%	C	Sugar #11	10.12%	B
Aluminium	14.00%	B	Chicago Wheat	10.82%	C	Natural Gas	19.18%	C	Natural Gas	5.38%	C
Lean Hogs	12.28%	C	Natural Gas	10.41%	B	Lead	9.99%	C	WTI Crude Oil	4.42%	C
Corn	11.12%	C	Brent Crude Oil	9.61%	C	Live Cattle	2.92%	C	Live Cattle	2.98%	B
Lead	10.53%	B	Lean Hogs	6.71%	C	Zinc	2.44%	C	Cocoa	2.91%	C
Live Cattle	7.01%	C	Corn	5.64%	C	Chicago Wheat	2.04%	C	Corn	2.58%	C
Nickel	6.62%	B	Live Cattle	5.58%	C	Cotton	1.83%	C	Chicago Wheat	1.90%	C
Cotton	6.52%	C	Soybeans	4.92%	C	Silver	0.80%	C	Zinc	1.36%	C
Copper	5.57%	C	Aluminium	3.77%	C	Nickel	0.71%	C	Coffee	1.35%	C
Zinc	3.21%	C	Heating Oil	3.61%	C	Gold	0.18%	C	Lead	1.18%	C
Soybeans	3.14%	C	Gasoil	3.49%	C	Copper	-0.04%	C	Nickel	0.55%	C
Sugar #11	2.84%	C	RBOB Gasoline	3.33%	C	Coffee	-0.19%	C	Silver	0.44%	C
Coffee	1.09%	C	Cotton	2.04%	C	Brent Crude Oil	-1.15%	C	Heating Oil	0.36%	C
Silver	0.68%	C	Zinc	1.65%	C	Corn	-1.21%	C	Gold	-0.33%	C
WTI Crude Oil	0.25%	C	Copper	1.47%	C	Lean Hogs	-1.53%	C	Aluminium	-0.35%	C
Gold	-0.42%	C	Coffee	1.00%	C	Gasoil	-2.35%	C	RBOB Gasoline	-0.49%	C
Brent Crude Oil	-1.64%	C	Nickel	0.73%	C	Aluminium	-2.69%	C	Soybeans	-1.01%	C
Cocoa	-1.65%	C	Lead	0.64%	C	Sugar #11	-2.70%	C	Brent Crude Oil	-1.40%	C
Heating Oil	-6.00%	C	Silver	-0.85%	C	Heating Oil	-4.58%	C	Gasoil	-2.08%	C
Gasoil	-6.66%	C	Gold	-1.33%	C	Soybeans	-6.99%	B	Copper	-2.86%	C
RBOB Gasoline	-7.53%	C	Cocoa	-3.14%	C	RBOB Gasoline	-10.27%	C	Cotton	-5.31%	B

Source: UBS AG, Bloomberg, 31 Dec 2006 – 31 Dec 2007; 31 Dec 2007 -31 Dec 2008; 31 Dec 2008 – 31 Dec 2009, 31 Dec 2009 – 8 Dec 2010 respectively.

CMCI data back-tested up to January 2007 and live thereafter Unclear cases have been excluded.

Historical Performance

The advantage of the CMCI methodology over that of a traditional index can be seen by applying the constant maturity approach of the CMCI to an index like the S&P GSCI



Source: UBS, Bloomberg. Total Return Indices. Daily data 31 December 1999 – 2 December 2010. CMCI with S&P GSCI weights data back-tested up to February 2008 and live thereafter

The advantage of the CMCI methodology over that of a traditional index is noticeable in every commodity sector and can be as high as 2.1% per month

Sector	Commodity	Weight	Outperformance (unweighted)	Average Outperformance per month
Energy	WTI Crude Oil	35.04%	0.80%	
	Brent Crude Oil	14.41%	0.29%	
	RBOB Gasoline	4.37%	0.32%	
	Heating Oil	4.60%	0.53%	
	Gasoil	5.69%	0.20%	
	Natural Gas	3.35%	2.13%	
Industrial Metals	Aluminum	2.41%	0.26%	
	Copper	3.82%	0.07%	
	Lead	0.46%	0.23%	
	Nickel	0.81%	0.21%	
	Zinc	0.62%	0.24%	
Precious Metals	Gold	3.00%	-0.01%	
	Silver	0.49%	0.22%	
Agriculture	Chicago Wheat	3.73%	0.63%	
	Kansas Wheat*	0.78%	-0.26%	
	Corn	4.01%	0.36%	
	Soybeans	2.57%	0.09%	
	Cotton	1.65%	0.29%	
	Sugar	2.57%	0.39%	
	Coffee	0.92%	0.17%	
	Cocoa**	0.30%	-0.78%	
Livestock	Live Cattle	2.62%	0.33%	
	Feeder Cattle***	0.43%	-0.06%	
	Lean Hogs	1.37%	1.03%	

*CMCI Kansas Wheat data only available since 29 May 2009. **CMCI Cocoa data only available since 12 September 2008.

***CMCI Feeder Cattle data only available since 30 September 2008.

Source: Bloomberg, UBS IB. All indices used are Excess Return. Data period 2 December 2000 – 2 December 2010.

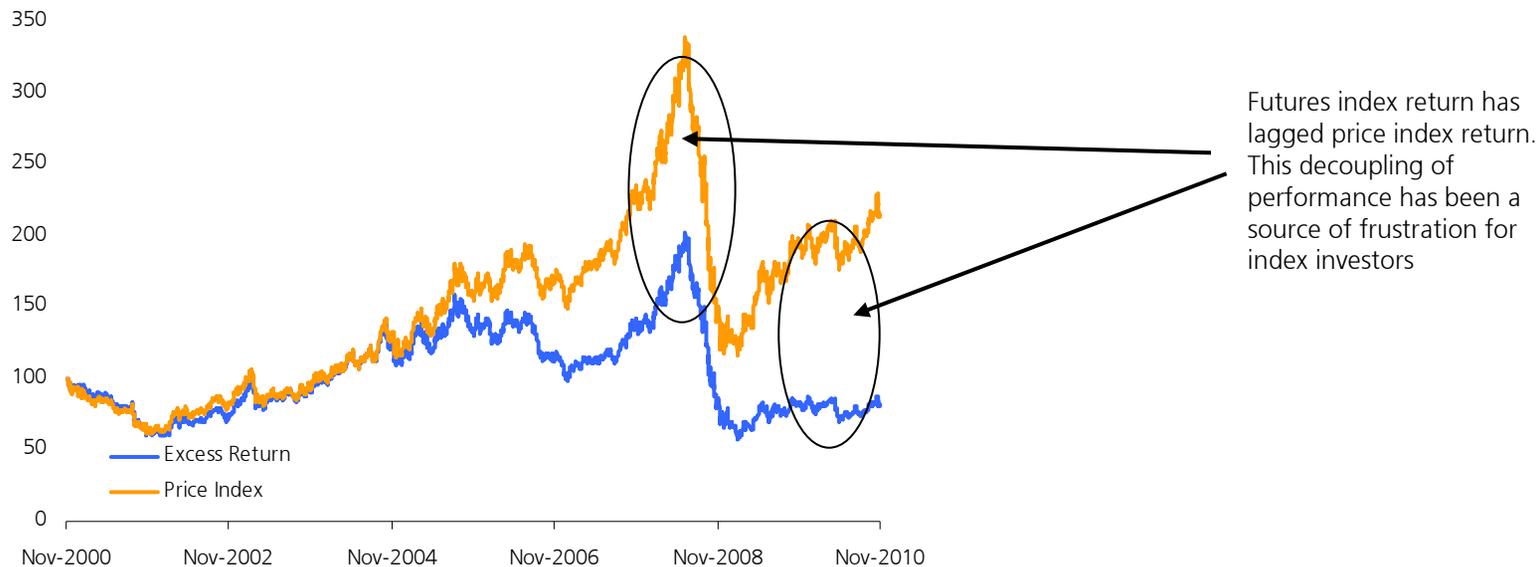
Weights used are as of 02 December 2010 and may not exactly match those of the actual index



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Excess returns lagging spot

Traditional commodity indices have been a popular vehicle for investors during the commodity markets expansion phase (2002-2005). However, the changing nature of commodity forward curves across the entire commodity spectrum has meant that traditional commodity indices, referencing the first 2-3 months future contracts, have started experiencing a negative roll yield since 2005. This caused some indices to perform worse than the underlying commodities prices, raising questions about the long-term strategy applied by conventional indices.



Daily closing return data for S&P GSCI from 22 November 2000 until 22 November 2010; Source Bloomberg
Important disclaimer: Past performance is not indicative of future performance.

The decoupling of spot vs. excess returns has been due to factors such as:

- A sharp change in the shape of forward curves over the past few years
- Relative price underperformance of short term futures relative to long term futures
- Sub-optimal rolling schedule

Negative roll yield adding up

Roll yields have turned negative over the last few years

- Historically roll yield has been a key component of returns
- “Curve slope explains about 70% of excess returns across commodities”

Source UBS Bloomberg, 1990-2007, Anthony Morris, UBS Research. Tradition front month roll method

- Roll yield and curve slope must be considered when constructing a commodity portfolio



Daily closing monthly return data for S&P GSCI from 30 November 2000 until 30 November 2010; Source Bloomberg
Important disclaimer: Past performance is not indicative of future performance.

What Shapes the Forward Curve?

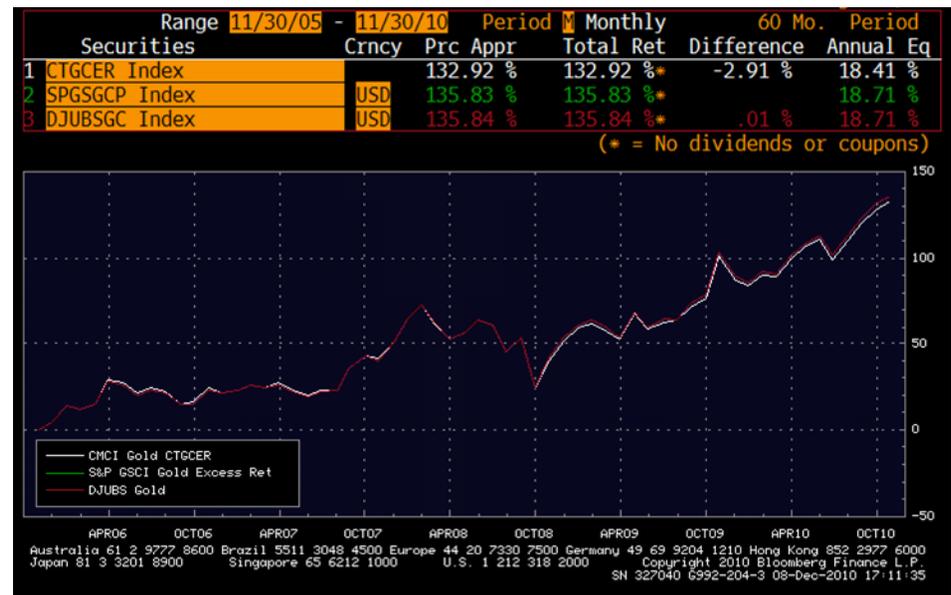
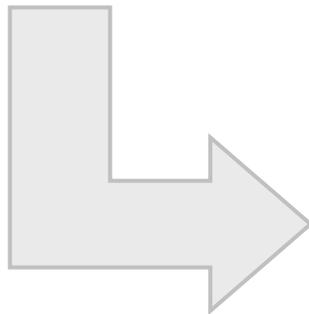
Commodity price and forward curves are affected by many factors, including macro-economic cycles, geopolitical events, inflation, weather and of course supply/demand (im)balances

- **A Contango curve** would be considered by many investors to be 'normal', where longer-term futures prices are higher than short-term futures prices. The curve shape (slope) is determined by 'cost-of-carry', The classic example of this in the real world is the gold market. Contango represents a cost to the investor.
- **A Backwardated curve** occurs where longer-term futures prices are lower than short-term futures prices. Perhaps counter-intuitively to some investors not familiar with commodity investing, this is also considered by some to be 'normal'. Economists such as John Maynard Keynes (1930) for example have suggested that forward curves in commodities should naturally be in backwardation in order to reflect a return, compensating futures buyers for providing price insurance to producers. Backwardation, in other words, effectively represents what can be called convenience yield. That is a premium that is paid by the market for physical in an environment of uncertain future

Curve Asymmetries

The roll yield experienced at one point in the curve can be very different from the returns experienced at another point; this is a function of convexity. Convexity is simply the change in the slope of the line (or curvature) over time. This is important because convexity creates differences in the return profile.

- This clearly creates the opportunity for some investors to outperform others, simply by shifting the average maturity or tenor of the futures position held.
- If there is a lack of convexity, such as is the case with gold for example, then what we find is that the opportunity to outperform or (underperform) along the curve falls to close to zero.



Data from 30 November 2005 to 30 November 2010. Source: Bloomberg
 CMCi data back-tested up to January 2007 and live thereafter

- If, however, there is asymmetry in futures markets, where **backwardated curves tend to be more linear and contango markets less linear**, then this is important for investors given the potential for underperforming in a backwardated market is less than the threat of underperforming in a contango market

Curve Asymmetries

Asymmetry at the Near End of the Curve

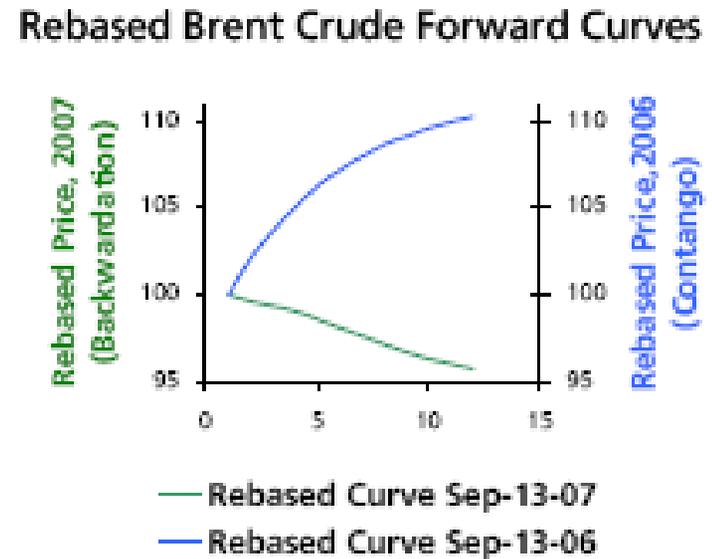
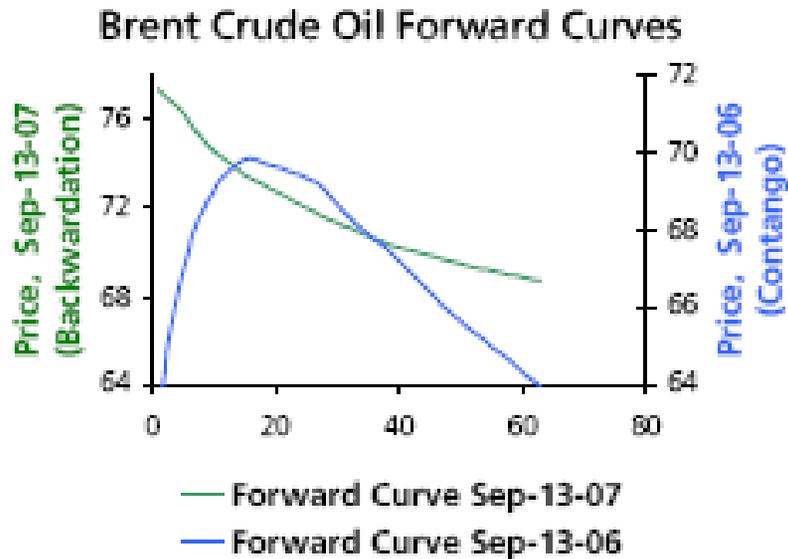
- Empirical evidence from commodity markets shows asymmetry:
 - UBS analysis suggest that there is greater curvature in contango, especially in the front months
 - Backwardated curves are often more linear, leading to similar roll returns on front month and longer dated futures
 - Volatility falls from near-dated contracts to longer-dated contracts and there is low probability of high volatility appearing in long-dated vol

Why do curve asymmetries exist? We would suggest that the near-term dynamic between contango and backwardated markets is actually quite different.

- As we discussed previously, contango is a function of physical and expected availability, backwardation is the opposite, a function of physical and expected scarcity. This is important fundamentally as: abundance can be infinite in theory, scarcity's maximum is zero.
 - **Optionality in contango:** If for example a producer/trader wishes to hedge a position and buys a one year futures contract for a particular commodity. As the contract approaches maturity, it is rational for the trader to gradually sell more and more of the contract as the price risk declines, much like the value of an option. This option expiry profile could create curvature in the market all other things being equal.
 - **Optionality in backwardation:** If for example a producer/trader wishes to hedge a position and buys a one year futures contract for a particular commodity. As the contract approaches maturity, once again, it is rational for the trader to gradually sell more and more of the contract as the price risk declines. However it is different psychologically as one must remember that this time the producer/trader is selling into a market which is focussed on scarcity. This scarcity of course creates a positive carry yield. Given the positive carry yield, there is less incentive to sell the contract in the same manner as in the contango example.

Curve Asymmetries – More convexity in contango

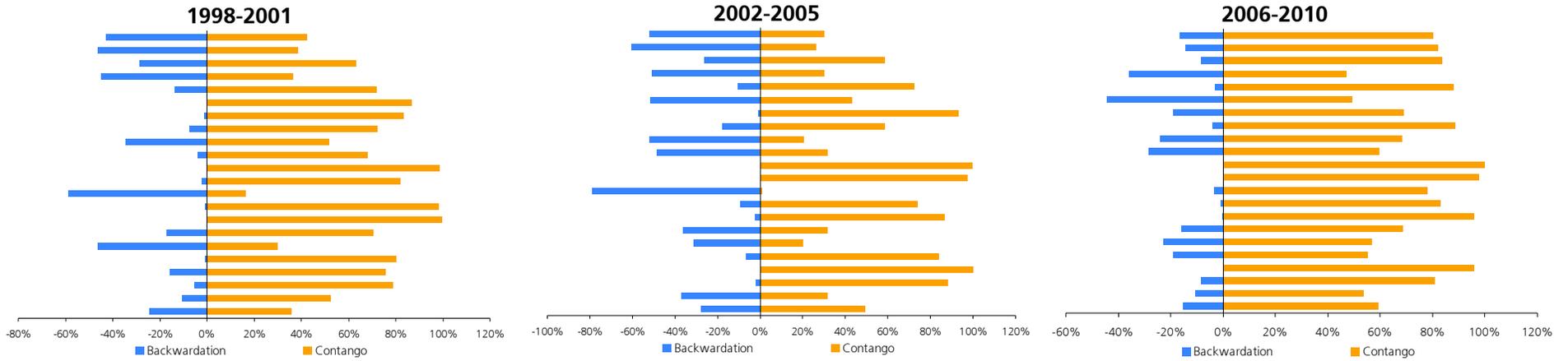
Contango curves have shown more convexity. Backwarddated curves tend to be more linear.



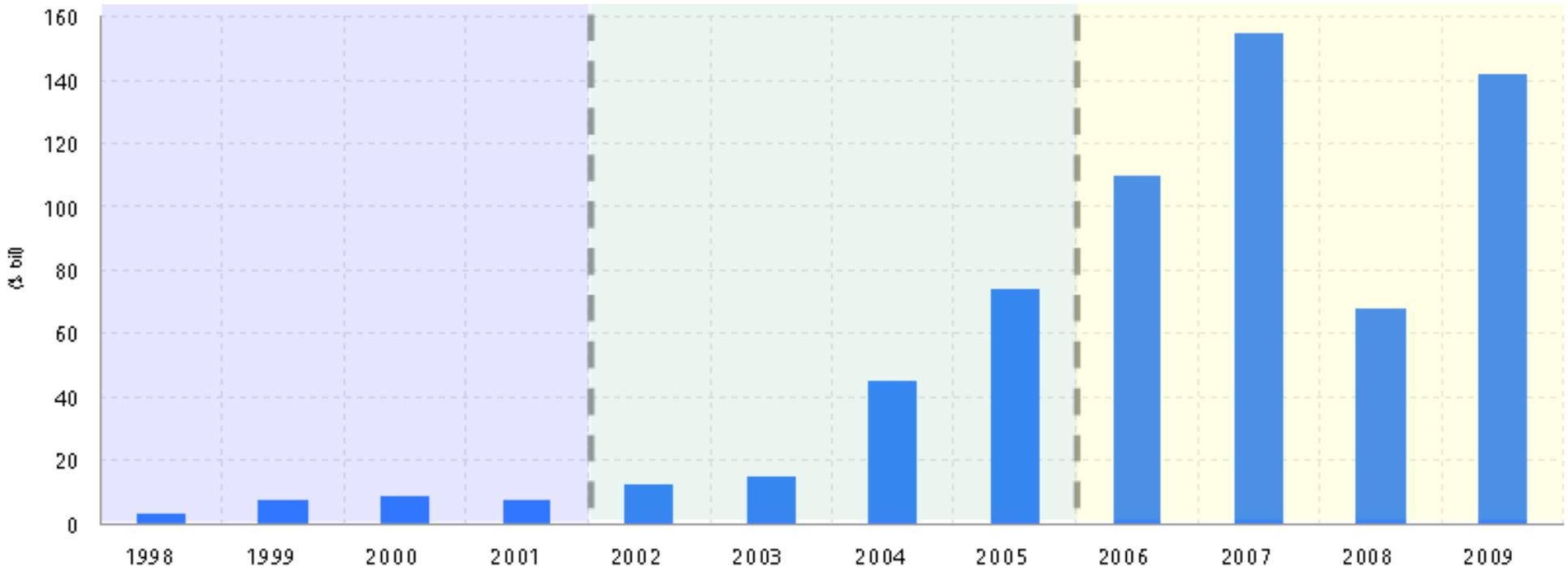
- Changing **slope along the curve (convexity)** can create differentiation in roll returns achieved
- If secular then opportunities may exist for out-performance in contango markets
- At the same time, a typical lack of convexity in backwardated markets can lead to similar performance characteristics due to linear roll income
- The combination could lead to an asymmetry of returns

Curve Asymmetries – Contango Prevails

High Correlation between Notional Amounts Tracking Commodity Indices and Contango



Source : Bloomberg / UBS



Notional Amounts Tracking Commodity Indices (*Estimate)



Dealing With the Problem of Roll Yield

The shape of commodity futures curves has generated substantial interest among investors, and many market participants have developed variations on traditional indices, which in many cases use rule driven engines aiming at avoiding negative roll

- **A number of these strategies have been designed to capture the returns in commodity futures markets through an active investment strategy, conditional on the shape of the forward curve:**
 - These instruments attempt to maximise the positive roll yield in backwardated curve structures and minimise the negative roll yield in contango markets by either changing the roll schedule to include the futures that generate the maximum implied roll yield or by implementing a long/short strategy, which plays the outperformance between different parts of the curve
- **Other strategies aim to maximise roll return by having the rolling period triggered by market indicators, such as price and open interest thresholds**
- **Alternatively, some indices have introduced some flexibility in terms of when they roll their exposure to avoid times when futures demand is lowest and hence contango effect is steepest**

Some of these 'backwardation seeking' strategies are rather reactionary, adapting to conditions which currently exist rather than strategies which learn from what has occurred and position investors to take advantage of future changes in the market conditions

UBS believes that the solution to many of the recent issues faced by investors lies not in creating increasingly complex vehicles, such as some of the recently emerged rule based indices or long/short strategies, but in providing greater flexibility and choice. The UBS Bloomberg CMCI allows investors to manage the limitations of nearby-only vehicles embodied by many major commodity indices and invest on the entire forward curve, while at the same time managing the problem of punctual roll and minimising the tracking error of the investable index by employing a daily roll mechanism.

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CMCI Website: www.ubs.com/cmci

UBS Bloomberg CMCI

UBS Bloomberg CMCI Home

- UBS Bloomberg CMCI
- Evolution of Commodity Investment
- CMCI Methodology
- CMCI Universe
- Investment Products

ETCs on CMCI

- Switzerland
- UK

Private Investors

UBS Homepage > UBS Bloomberg CMCI

UBS Bloomberg CMCI Constant Maturity Commodity Index

Together with Bloomberg, UBS has created a highly innovative concept for commodity investors: the UBS Bloomberg CMCI (Constant Maturity Commodity Index). This global index not only covers a broad range of commodities, but also introduces a time dimension to commodity investment. With a series of investment maturities for each individual commodity and a revolutionary new calculation methodology, the CMCI opens up a new era for commodity investors.

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Product info

- Investment Manual
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- Presentation of index
- Factsheet
- Technical documentation
- Chartbook
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Educational materials on:

- Commodity Index development
- CMCI Methodology
- Products
- etc.

Wide range of CMCI documents available for download:

- CMCI Manual
- Presentation
- Factsheets
- Chart book (index comparison)
- etc.

UBS – A Leader in Commodity Index Investments

What We Have

- Extensive team of professionals across North America, Europe and Asia specializing in indexed commodities
- Industry leading research and trading platform
- First-in-class operations and risk management infrastructure

What We Offer

- Exposure to first generation indices – DJ-UBS CI, S&P GSCI, RICI
- Access to second generation indices – **UBS Bloomberg CMCI**
- **Customized bespoke strategies** tailored to individual client needs
- **Enhanced** and **dynamic strategies** to potentially **outperform specific benchmarks**
- Highest levels of service and operational support

How We Offer Our Products

- Swaps
- Leveraged and Principal Protected Structured Notes
- Options on indices
- ETNs and ETCs
- Structured Funds

Bloomberg Cheat Sheet

UBS Bloomberg CMCI functions

- **CMCN** - Entry page
- **CMCX** – CMCI monitor
- **CMCITR Index GP*** – CMCI graph

General functions

- **CRR** – Commodity Ranked Returns
- **CCRV** – Commodity Futures Curves
- **CLA Comdty CT*** – WTI Crude Oil Futures Table
- **CLA Comdty CTG*** – WTI Crude Oil Futures Graph
- **GCIN** – General commodity index screen



Source: Bloomberg. Data from 31 December 2008 to 16 December 2009

* Example, applicable to all underlyings

UBS Commodities – Contacts

Global Head of Commodities: Jean Bourlot +44 207 567 8376

Jean Bourlot joined UBS in August 2010 as a Managing Director, Global Head of Commodities.

From 1995 to 2007 he was trading options on Oil and Refined products, joint-head of the Options book at Morgan Stanley from 2002. In 2007 he set up an Agricultural trading team, transforming it into an industry leader.

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