Monthly

Commodity Compass

'Rockets and feathers' – a phenomenon for managing price retracements

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Exchange traded products (ETPs) – Changes in AUM

		$m
Diversified	↑	37
Energy	↓	949
Industrial Metals	↓	175
Agriculture	↑	216
Livestock	↓	4
Precious Metals	↓	2030

Source: SG Cross Asset Research /Commodities.
May be zero due to rounding.

* Please see section 10 for details.

- **The term 'rockets and feathers' has been connected with crude oil and retail gasoline for decades. The notion being that retail gasoline prices shoot up like rockets and fall down like feathers - an asymmetric transmission of oil prices to gasoline prices. Surprisingly, there is little research on whether the phenomenon exists in commodity derivative markets.**
- **Here we test the prevalence of 'rockets and feathers' in derivative markets in energy since 2005. Our analysis confirms that all the oil products in our study obey the phenomenon including over the most recent period since Nov 2014. Retail oil, derivative and physical oil products all move up broadly in alignment with oil price increases, but fall less when oil prices decline. More precisely, oil products capture significantly less of the crude oil downside than they do the upside. We attempt to offer explanations as to why we think this is the case. We also find evidence of 'rockets and feathers' in the soybean (crush) complex and offer possible reasons why.**
- **The 'rockets and feathers' phenomenon provides a useful tool to enhance and refine both trading and investment mandates by switching between crude and products during large market swings to manage retracements.**

Market overview

The S&P GSCI and BCOM indices gained 8.72% and 4.65% respectively in Q2. The energy and grain sectors were up 12.97% and 11.46%, with the industrial metals sector down 5.52%. The diversity in the performance between individual commodities has been significant this year, with trends in price well defined and for the most part, driven by clear changes in supply/demand dynamics. The current trend in the popularity of 'risk-premia' investment strategies, risks masking many of these opportunities, with investors potentially missing out on meaningful price moves. We continue to advocate a diversified approach to commodity investing and caution against potential risk clustering in many of these strategies.

Figure 1 – YTD commodity sector performance

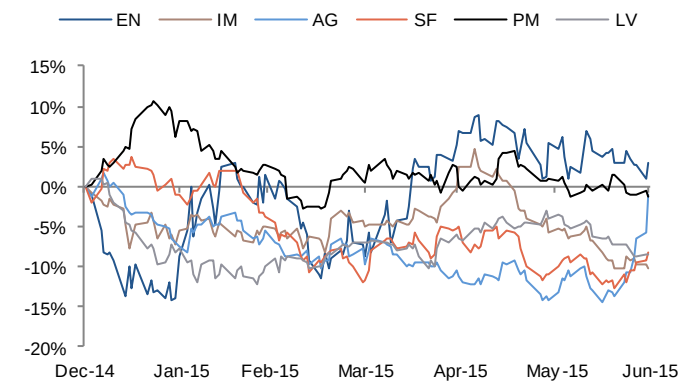
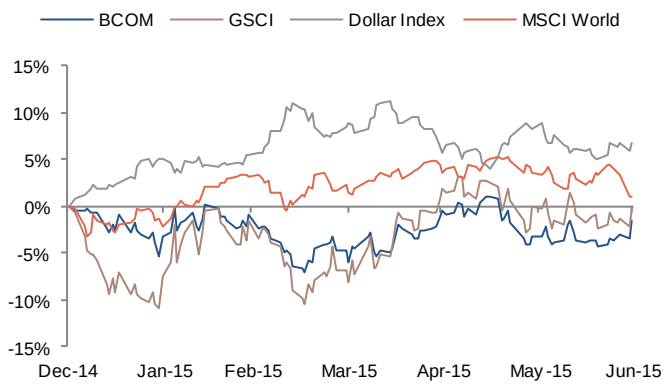


Figure 2 – YTD performance of key indices



Source: SG Cross Asset Research/Commodities, Bloomberg.

Chart key: EN = Energy, IM = Industrial Metals, AG = Agriculture, SF = Softs, PM = Precious Metals, LV = Livestock. All sectors refer to the S&P GSCI sector ER indices.
Table key: Increase in flows ↑, Decrease in flows ↓

'Rockets and feathers' – a phenomenon for managing price retracements

Background

The term 'rockets and feathers' has been connected with crude oil and retail gasoline since 1991 when Robert Bacon published his famous article: 'Rockets and feathers: the asymmetric speed of adjustment of UK retail gasoline prices to cost changes.'[1] The notion being that retail gasoline prices shoot up like rockets and fall down slowly like feathers – such is the popular belief among the general public as well as policymakers. Although the pass-through of the crude price to the retail gasoline prices might take a long time due to economic reasons such as transportation costs, storage issues, collusion etc, rational economics would suggest that the price adjustment should be symmetric whether oil prices are rising or falling.

The energy economics 'rockets and feathers' literature is rich and has examined the phenomenon over different time periods, in different countries with a battery of varying econometric tests. A detailed empirical literature on gasoline markets is provided by Grasso and Manera (2007).[2] Out of the 23 studies surveyed, 14 find evidence of asymmetric pass-through from crude oil to gasoline, with various reasons being offered as explanations. Firstly, price collusion. When costs drop, companies slowly adjust their final (gasoline) price because they do not want to signal that by cutting margins they are breaking away from a collusive agreement. However, when costs rise the companies raise retail gasoline prices to show that they are adhering to the collusive agreement. A second explanation comes from the demand side of the market and suggests that consumers contribute to the asymmetry through what is coined 'consumer search theory'. Consumers search less intensively for a better deal when prices are rising rather than falling. Another argument comes from an inventory approach. Decreasing inventories might imply the purchasing of more inputs (resulting in price increases) or a reason to potentially produce less (also resulting in higher prices). Unfortunately, the opposite does not have to hold for an increasing amount of inventories which adjust more slowly. Lastly, accounting and inventory valuation techniques may be responsible for the sluggish response of final (retail) prices to increases or decreases in crude oil prices. For example, if the first-in-first-out (FIFO) method is applied to inventories, the firm does not adjust output immediately when costs change, but waits until the stocks of inputs bought at the old price are depleted. If the replacement criterion is used (last-in-first-out (LIFO)) the firm adjusts its price very rapidly.[3]

The perception of price asymmetries in the mechanism of the transmission which links prices to output prices usually focuses on retail prices and mostly in the gasoline market. However it has been extended to agricultural products (e.g., vegetables, meat, dairy products) and also in financial markets (e.g., interest rates, bank deposits etc).[4] Interestingly, there has been very

[1] Bacon, R.W., 1991. *Energy Economics*, 13 (3), 211 – 218.

[2] Grasso, M., Manera, M., 2007. "Asymmetric error correction models for the oil-gasoline price relationship." *Energy Policy*, 35, 156 – 177.

[3] Kristoufek, L., Lunackova, P., 2015. "Rockets and feathers meet Joseph: Reinvestigating the oil-gasoline asymmetry on the international markets." *Energy Economics*, 49, 1 – 8.

[4] For example: Goodwin, B and Holt, M., 1999. "Price transmission and asymmetric adjustment in the US beef sector." *American Journal of Agricultural Economics*, 81, 630 – 637. Ward, R.W., 1982 "Asymmetry in retail, wholesale and shipping point prices for fresh vegetables." *Journal of Agricultural Economics*, 64, 205 – 212. Karras, G., Stokes, H.H, 1999. Why are the effects of money-supply shocks asymmetric? Evidence from prices, consumption, and investment." *Journal of Macroeconomics*, 21, 713 – 727.

little attention focusing on derivative markets. One noticeable exception comes from Prete and Norman (2013) who searched for asymmetries (rockets and feathers) in electricity futures markets.[5] Not surprisingly, the finding of a 'rockets and feathers' phenomenon in futures markets could not be attributed to the reasons offered in the retail market. Inventory arguments could not be applied. Power demand has to meet supply in real time and prices must adjust regularly to reflect market conditions. Consumer search theories also do not apply because futures markets are characterised by the presence of speculators whose main goal is to profit from volatility (whether prices are increasing or decreasing). Interestingly, Prete and Norman (2013) found no evidence of 'rockets and feathers' in electricity markets despite providing reasons as to why it could appear.

However, as pointed out by Lin and Liang (2010), heterogeneous expectations by risk-averse participants in financial markets may cause price asymmetries in derivative markets. In addition, non-economic factors such as transportation infrastructure, seasonality, matching futures contracts to the underlying spot prices, changes in inventories, production facilities closing due to weather, price controls by cartels (OPEC) could also explain the asymmetric adjustment process of petroleum derivative markets.[6]

'Rockets and feathers' – a phenomenon for managing price retracements?

Accordingly, in this editorial we explore in a very simple, non-econometric framework the extent to which the phenomenon of rockets and feathers applies to retail, physical and also derivative markets in energy since 2005. Interestingly, our analysis confirms that all the oil products in our study obey the phenomenon. Retail oil products, derivative oil products and physical oil products all move up broadly in alignment with oil price increases, but fall less when oil prices decline. More precisely, oil products capture significantly less of the crude oil downside than they do the upside. We attempt to offer explanations as to why we think this is the case. Moreover, when we focus on the energy derivative complex since November 2014 (after the now-famous OPEC meeting that gave a clear signal that the market will balance itself henceforth), we too find evidence of the rockets and feathers phenomenon. We also study whether the phenomenon appears in the 'soybean crush' derivative complex. We observe the phenomenon applying to soybeans and soybean meal, but interestingly not to soybeans and soybean oil. We offer an explanation for this finding too.

By tracking the upside and the downside capture of oil product prices, relative to crude oil prices during a fixed time interval, we are able to broadly measure this phenomenon and quantify the extent to which moves in oil prices are transmitted through to the underlying oil products. With volatility having increased significantly across the petroleum complex and with markets in the process of tracing out their new pricing framework, we ask ourselves whether the rockets and feathers phenomenon also occurs in derivative markets (and also in the non-retail physical product markets) and if so, whether we might be able to make use of the dynamic to enhance petroleum trading and investment mandates.

Measuring the phenomenon

Upside and downside capture is an intuitive concept calculated as the percentage participation of one asset's price in the move of another – in this context, if crude oil prices

[5] Prete, C.L., Norman, C.S., 2013. "Rockets and feathers in power futures markets? Evidence from the second phase of the EU ETS." Energy Economics, 36, 312 – 321.

[6] Lin., JB and Liang., C.C, 2010. "Testing for threshold cointegration and error correction: evidence in the petroleum futures markets." *Applied Economics,* 42, 2897 – 2907.

rise by 10% in a month and gasoline rises only 7% - the upside capture is 70%. Similarly, if crude oil falls by 10% in a month and gasoline falls by 6%, the downside capture is 60%. In Figure A, we plot as blue (upside) and red (downside) bars, the upside and downside capture of US average retail gasoline prices and US average retail diesel prices relative to WTI prices. We also plot Euro 27 area average diesel prices (excl. tax) relative to Brent prices. We use monthly data (therefore implicitly looking at moves within the period of a month) and filter the WTI or Brent price moves to include only months where prices have moved in excess of 5% either way. Our analysis starts in Oct 2005 due to data availability (sample period = Oct 2005 to present). We use WTI and Brent S&P GSCI excess return indices to remove roll gaps and to produce a continuous return stream including the roll yield.

Figure A – Retail gasoline and diesel upside and downside capture statistics for the US relative to WTI and Euro 27 Area diesel upside and downside capture statistics relative to Brent.

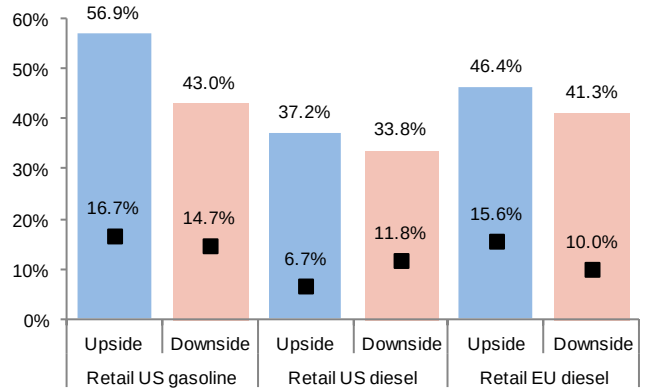
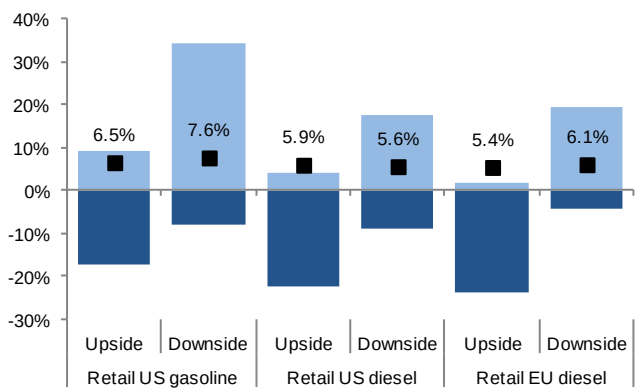


Figure B – Maximum over and underperformances during the analysis period including the tracking error.



Retail US gasoline – The national average of regular gasoline. Source: the American Automobile Association
Retail US diesel - The national average. Source: the American Automobile Association Retail
Euro 27 Area diesel – Source: The European Commission
Oil prices – S&P GSCI ER indices
Source: SG Cross Asset Research, Bloomberg

Figure A shows that retail gasoline prices in the US captured 56.9% of the upside in WTI in months when WTI rose by over 5%, but only 43% of the downside in months when WTI fell by over 5%. In 16.7% (black markers) of these instances, retail gasoline prices outperformed WTI (rose by more – the downsides capture was >100%) and in 14.7% (black markers) of these instances, retail gasoline prices underperformed WTI (fell by more – the upside capture was >100%). Figure B shows the tracking error (black markers), defined as the standard deviation of the excess returns (Gasoline return-WTI return) as 6.5% on the upside and 7.6% on the downside, with a maximum outperformance of 9.4% (light blue bar) above WTI and a maximum underperformance of 17.3% (dark blue bar) over the sample period.

The 'rockets and feathers' phenomenon clearly applies in the retail oil products markets – both US retail gasoline and US retail diesel prices capture more WTI price upside than they do downside and also outperform more frequently than they underperform. In Europe, a similar profile for EU27 Area retail diesel prices relative to Brent is also seen – EU27 Area retail diesel prices capture 46.4% of the Brent price upside but only 41.3% of the downside, and outperform in more instances than they underperform.

These results are intuitive and most of us have witnessed this. The interesting question is whether the phenomenon also applies to the derivatives markets? Intuitively, we would expect a more efficient pricing transmission mechanism, with product prices reflecting oil price

moves equally to the upside and downside with any potential variations to this likely a function of expected seasonal dynamics.

In Figure C and D, we replace the retail product prices used in Figures A and B with NYMEX gasoline (RBOB), heating Oil (ULSD) and ICE gasoil prices. We also use S&P GSCI excess return indices to remove roll gaps and to produce a continuous and investable return streams including the roll yield.

Figure C – Derivative (NYMEX) gasoline (RBOB) and ULSD upside and downside capture statistics relative to WTI and ICE gasoil upside and downside capture statistics relative to Brent.

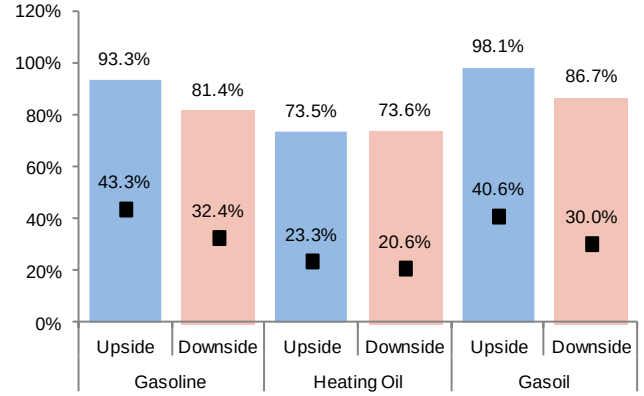
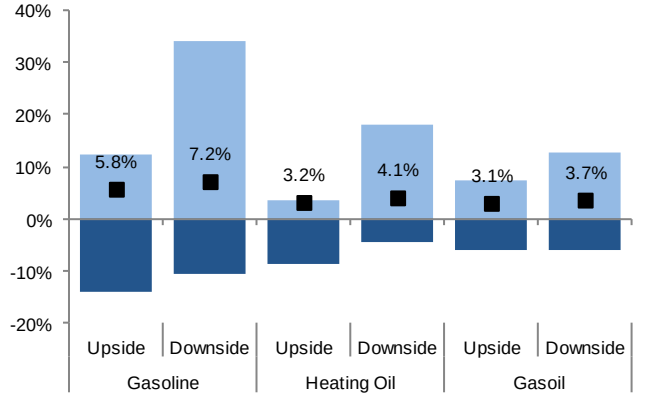


Figure D – Maximum over and underperformances during the analysis period including the tracking error.



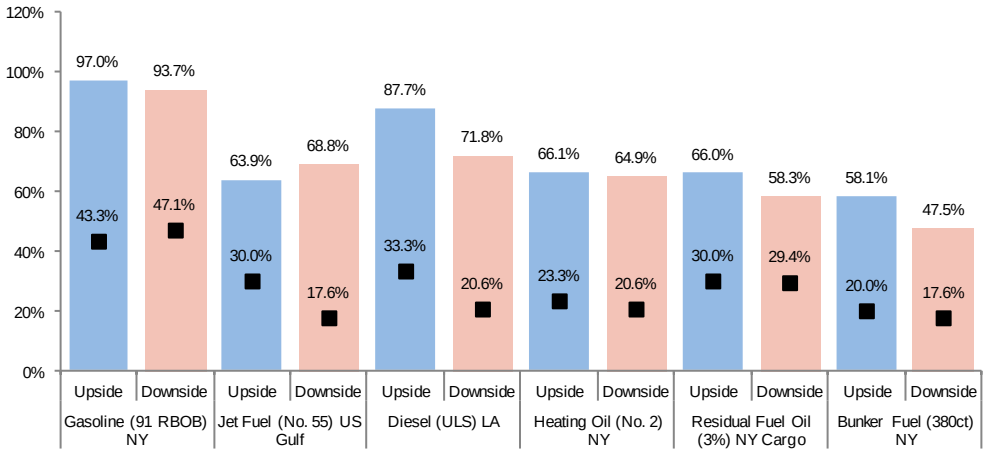
Oil and product prices – S&P GSCI ER indices
Source: SG Cross Asset Research, Bloomberg

The derivative products show an almost identical profile to the retail products - the magnitude of the overall capture is significantly greater due the difference in volatilities between retail prices and derivative process, but the bias or skew remains. Nymex gasoline (RBOB) captures 93.3% of WTI upside, but only 81.4% of the downside for moves in WTI of over 5% and outperforms in more instances (43.3%) that it underperforms (32.4%). Heating oil is a slight exception with less of a bias between the upside and downside capture statistics but a still greater percentage of instances where outperformance is greater than underperformance.

Surprisingly the 'rockets and feathers' phenomenon appears to apply to oil derivative products as well as to retail oil products. **This is particularly useful to clients that need to retain exposure to oil prices (for investment or hedging reasons) but are looking to enhance or optimise their overall return profile. By allocating some or all of their exposure to gasoline or gasoil during periods where oil price retracements might be expected, the investor could reduce downside without compromising too much overall upside. This concept could be developed further in the generation of a ratchet-like trading model, where long positions in crude oil might be moved into products following significant up-moves to mitigate retracement risk.**

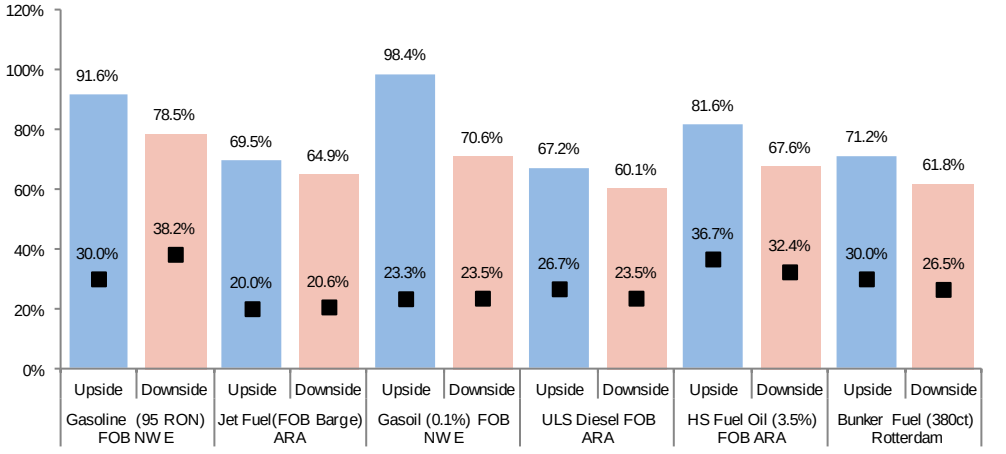
For completeness, we extend our analysis into a number of US and EU physical markets. As with the retail and derivative markets, we see an almost identical profile. In all instances (Figures E-F), the upside capture is greater than the downside capture and instances of overall outperformance are also generally higher than underperformance. Physical markets are very similar to derivative markets in so far they are also very actively traded by physical commodity traders. A key difference however is that due limited access instruments and numerous barriers to entry, these markets have less traditional speculators (retail, funds etc).

Figure E – US Physical oil product (gasoline, jet fuel, diesel, heating oil, residual fuel oil and bunker fuel) upside and downside capture statistics relative to WTI.



Source: SG Cross Asset Research/Commodities, Bloomberg

Figure F – European Physical oil product (gasoline, jet fuel, gasoil, diesel, fuel oil and bunker fuel) upside and downside capture statistics relative to Brent.



Source: SG Cross Asset Research/Commodities, Bloomberg

'Rockets and feathers' since the Nov 2014 OPEC meeting

In concentrating our analysis on the time period since the November 2014 OPEC meeting and focusing exclusively on the derivatives markets (Nymex RBOB, Nymex ULSD and ICE Gasoil), reducing our time window to weekly (from monthly) and looking at moves in WTI and Brent in excess of 1% (down from 5%), we observe the same outcome. Product prices have captured significantly less downside than upside, but more surprisingly the upside capture has been on average in excess of 100%.

In visualising the dynamic a little differently, in order to gain an insight into the robustness or consistency of the phenomenon, Figures G-I shows scatter plots for all the weeks where crude prices have moved up or down by more than 1%. Up-moves in crude oil are shown against their corresponding moves in the products as blue dots, with equivalent down-moves shown as red dots. The difference in slopes of the two linear regression lines shows the bias

or the "skew" in the capture. The greater the coefficient for the blue dot line, the greater the upside capture and the smaller the coefficient for the red dots the smaller the downside capture. In all three markets, a positive profile is obtained and the tightness of the dots illustrates the robustness.

Figure G – Nymex gasoline (Y-axis) vs. WTI (x-axis)

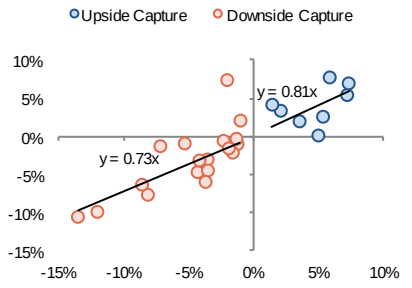


Figure H – Nymex ULSD (Y-axis) vs. WTI (x-axis)

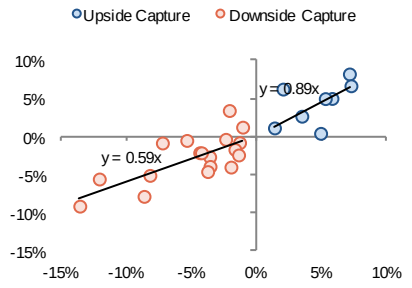
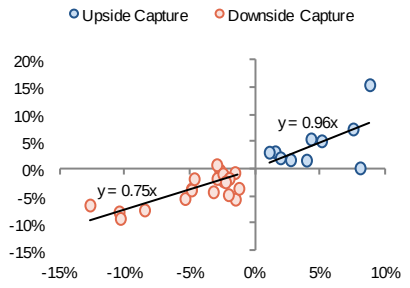


Figure I – ICE gasoil (Y-axis) vs. Brent (x-axis)



Source: SG Cross Asset Research/Commodities, Bloomberg.
Oil and product prices – S&P GSCI ER indices

The bar charts (Figures J - K) also reflect this profile – in short the capture statistics are so compelling that for weekly moves in excess of 1% in crude, it makes more sense to invest in the products.

Figure J – Derivative (NYMEX) gasoline (RBOB) and ULSD upside and downside capture statistics relative to WTI and ICE gasoil upside and downside capture statistics relative to Brent.

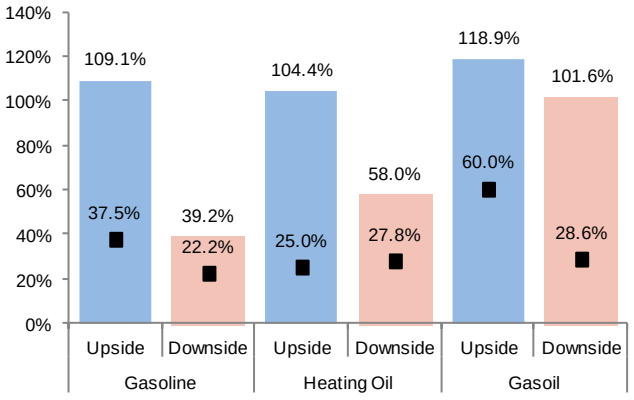
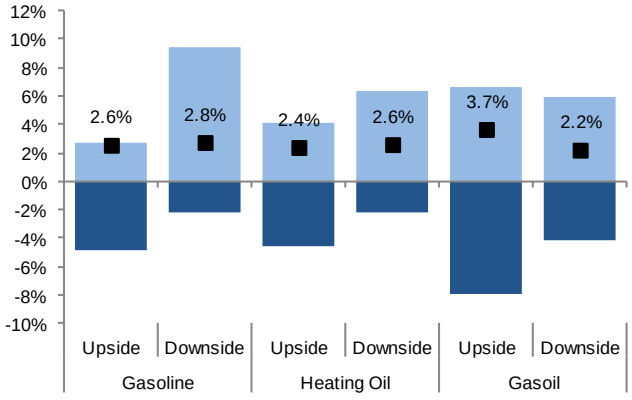


Figure K – Maximum over and underperformances during the analysis period including the tracking error.



Source: SG Cross Asset Research/Commodities, Bloomberg.
Oil and product prices – S&P GSCI ER indices

'Rockets and feathers' in soybeans and soybean products

Extending the analysis to soybeans and soybean products (soybean meal (soymeal) and soybean oil (beanoil)) and using the same parameters we used in our crude oil analysis above – monthly time periods and price moves in excess of 5% - we observe the phenomenon applying to soybeans and soymeal, but interestingly not to soybeans and beanoil.

This difference in behaviour between soymeal and beanoil could be a function of the relative ease of storage between soymeal and beanoil. Soymeal is very difficult to store and inventories are typically always less than soybean oil. Soymeal tends to settle or consolidate over time. This phenomenon occurs in most granular materials and becomes more severe with increased moisture, time and small particle size. Because of this, bulk soymeal is best stored

in flat storage buildings instead of vertical silos. This complexity typically means that soymeal inventories are often low relative to soybean oil[7]. Consequently soymeal prices are often more sensitive to changes in supply/demand dynamics relative to beanoil (beanoil can also be substituted easily with palm oil). During bearish periods, the inherent tightness of soybean meal inventories relative to beanoil inventories might provide a degree of insulation to falling soybean prices.

Figure J –Soybean meal and soybean oil upside and downside capture statistics relative to soybeans.

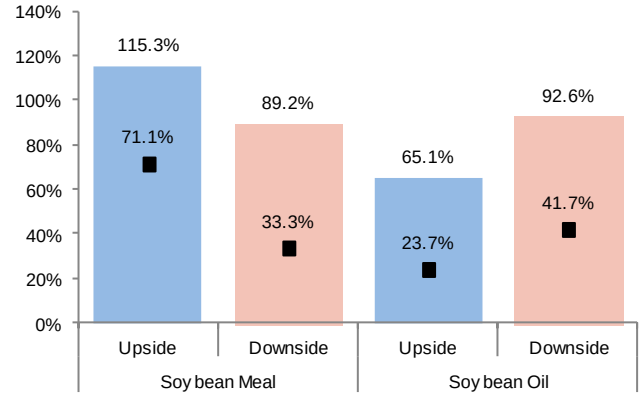
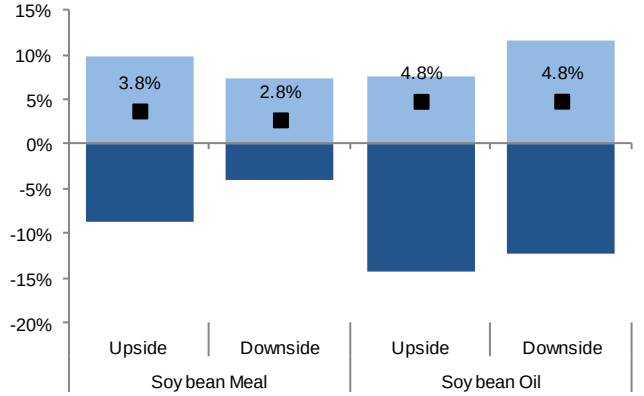


Figure K – Maximum over and underperformances, including tracking error.



Source: SG Cross Asset Research/Commodities, Bloomberg.
Oil and product prices – S&P GSCI ER indices

Possible explanations of the 'rockets and feather' phenomenon in derivative and physical markets.

The 'rockets and feathers' phenomenon may at first appear to be difficult to explain outside retail channels as one would expect a derivative, and in particular, speculators to make price transmission efficient and hence symmetrical. On the surface, rationalising the retail gasoline argument is intuitive, but in observing the phenomenon also extending into derivative and physical oil products, additional factors or more structural dynamic are likely to be at play. A few intuitive explanations stand out (not too dissimilar to the arguments made at the start of this study), but these are not likely to be exclusive and in practise, the rationalisation of this dynamic will be a combination of these factors contributing along with other variables.

1. From a supply perspective. We too offer an inventory argument as others have listed in the academic literature (see the start of the editorial). Changes in crude oil and soybean (feedstock) inventories carry a greater degree of explanatory power on crude oil and soybean prices relative to product inventories and product prices. This is likely due to the fact that the factors driving changes in refined product inventories are more specialised in nature and are generally less widely followed in the market than crude oil and soybean stocks. Consequently a sudden rise in crude stocks (perhaps due to a rise in imports) will be swiftly reflected in prices via the weekly DOE report (in the case of stocks). Furthermore it is unlikely that refinery runs will immediately adapt to process the extra crude (the extent to whether this occurs will be a function of current demand and factors such as the storability of the products (curve structure and tank availability)). A large rise (fall) in crude supply will likely lead

[7] Ulysses A. Acasio - Department of Grain Science and Industry, Kansas State University, USA. "Handling and Storage Of Soybeans and Soybean Meal". http://www.feedmachinery.com/articles/feed_ingredients/soybean_storage1/

to a greater (smaller) rise in crude stocks relative to product stocks within a fixed time period and crude prices will weaken (strengthen) more, and corresponding differences in the upside and downside capture profiles will emerge. For example: see page 12 of the 1 June 2015 Oil Drivers. Crude versus product stocks have behaved very differently throughout 2015.

2. From a demand perspective. Both crude oil and soybeans are raw products – they are processed into products to meet demand. As such, producers need to ensure that product inventory is always available to cater for any excess demand. In bullish periods (defined as moves in excess of 5% over a month in our study), when demand rises, crude oil inventories likely decline faster than expected as refineries (crushing facilities) need to meet demand. The timing mismatch between the processing and the transport of the newly refined product out of storage to meet final end-user demand within a fixed time period (1 month in our study) could lead to crude inventories falling relatively quicker than their refined products. During bearish periods, the reverse is true; crude oil stocks will build relatively quicker, as refinery throughput slows. However, lower oil prices could stimulate product demand (over time) as lower oil prices ultimately stimulate GDP. Perhaps this expectation gets priced into the product market. On balance this dynamic drives asymmetric price responses and corresponding differences in the upside and downside capture profiles.

3. From a speculative perspective – crude oil (WTI and Brent) and soybeans are more vulnerable to speculative activity and geopolitical risk than their refined products. As large prices swings tend to be more exaggerated than with products in a fixed time period, this leads to more muted capture dynamics on both the upside and the downside in the products. Moreover, since November 2014, flows into (mainly) long-only ETF products that focus on crude oil (and not the products) reached record levels. While a mainly 'retail' derivative product, the flows ultimately find themselves into the futures markets.

Concluding remarks

On the surface, we did not expect the 'rockets and feathers' phenomenon to extend beyond retail oil products to the extent that we have found, but the fact it does makes sense to us. This, combined with the fact that the dynamic remains very much in play post the November OPEC meeting, suggests that it is robust and potentially exploitable.

The 'rockets and feathers' phenomenon provides a useful tool to enhance and refine both trading and investment mandates by switching between crude and products during large market swings to manage retracements. For example, by allocating some or all of their exposure to gasoline or gasoil during periods where oil price retracements might be expected, the investors could reduce downside without compromising too much overall upside.

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Feb 2015	The contango tango – the mechanics of contango and freight markets
Jan 2015	The circularity of oil prices and oil burden
Dec 2014	Commodity Put/Call Ratios – Enhancing trading and investment strategies
Nov 2014	Supply and demand – key drivers of returns this year, as nearly all of our SD models
Oct 2014	Interest rate increases and the influence on the commodity forward curve
Sep 2014	Our new Oil Product Demand Indicator (OPDI) - evidence of China's shifting economy?
Aug 2014	The seasonality of commodity index investment flows
July 2014	Evaluating the magnitude and duration of risk premia during geopolitical tensions
June 2014	A new India – Copper consumption to double & gold imports to double?
May 2014	The econometrics of El Niño & the impact of ECB policy changes on commodity markets
April 2014	From Cocoa to Zinc – El Niño's impact on commodities and whether it can be captured?
Mar 2014	Eight important commodity factors to watch...
Feb 2014	Putting recent macro events in context & analysing their impact on commodities
Jan 2014	2013 – A bad year for price performance; but a good year for the asset class

1) SG trade recommendations

Please refer to our Commodity Strategy publications for a more in-depth analysis.

Commodity	Type	Recommendation
WTI	Options	**Short WTI Dec-15 strangle: short Dec-15 $65 call & short Dec-15 $55 put** We expect the WTI price to be range-bound during the remainder of this year, trading within $55-65 most of the time. The estimated average US shale oil production cost of $50-55 should act as a price floor while $65-70 should provide a ceiling as US rig counts and, after a time lag, oil production are expected to stabilise and start rising at prices above $60. The net premium received from selling the two options is $5.30, at the time of writing, which is also the maximum net profit if WTI trades between $55 and $65 at expiry. The position is net profitable between $49.7 and $70.3 at expiry but increasingly loss-making below $49.7 and above $70.3. The risks to the position include geopolitical events, OPEC policy surprises and uncertainties with respect to the estimated US shale production costs and producers' reaction to price signals. For more details on the key fundamental factors, please see the oil section.
US natural gas	Relative value	**Short Nov-15 US natural gas vs long Nov-16** The US natural gas market remains structurally oversupplied. We forecast the front-month price to trade between $2.50 and $3.00 during the remainder of the injection season. US domestic production has been strong so far this year. The May EIA report is predicting domestic production to start declining gradually soon but we are unconvinced that 2015 will see a sustained production decline and hold a relatively flat profile in our base-case, with risk of outperformance due to highgrading and ongoing productivity improvements. The US natural gas inventory level is at a good year-over-year surplus with the strong likelihood of reaching a record end-of-October 2015 finish. Nov-15 currently trades about 28 cents below Nov-16. We would put the trade on if the spread dips to about 25 cents and would target a widening to 40-45 cents.
Copper	Flat price	**Short Dec-15 LME copper** We recommend selling rallies in the copper price towards $6000. Our copper supply/demand outlook remains unchanged with an expected market surplus for 2015 at 280kt. We have allowed for further supply problems in our assumed 5% (or 1.15Mt) disruption allowance for 2015. We have not assumed any purchases by China's SRB because these are highly price-dependent. The resumption of copper concentrate exports by Indonesian miners coupled with the ramping up of production at new mines (Caserones, Sierra Gorda, Toromocho, Oyu Tolgoi and Bisha), which have been delayed for a variety of reasons, plus new capacity additions (Boschekul, Antucoya and Buenavista) should see growth accelerate over coming months. The large increase in copper mining output should increasingly result in significantly higher refined copper production and higher LME warehouse stock levels. We expect the copper price to trade down to $5500-5600 before year-end.
Zinc, copper	Relative value	**Long Dec-15 LME zinc vs short Dec-15 LME copper** Zinc's fundamentals continue to improve, reflected in falling LME stocks and tightening nearby spreads, while anticipating tightening supplies over coming years, with mine supply not keeping pace with demand growth. In addition, China in the year-to-date returned to being a net importer of refined metal. We forecast another zinc market deficit in 2015 albeit slightly lower than anticipated in our last Commodity Review, which should see a further decline in inventories and be supportive of higher prices. See above for our bearish outlook for copper.
Nickel	Flat price	**Long Dec-16 LME nickel** Nickel prices have sold off hard this year on the relentless rise in LME stocks to new record levels. There are few, if any, tangible signs of the much anticipated tightening in Chinese nickel supply. On the contrary, imports of ores & concentrate from the Philippines rebounded sharply in April and ferronickel imports from other countries have also been boosted. However, we believe that the bearish factors are now fully reflected in the cash price and the forward prices are looking cheap. We maintain a view that as a result of Indonesia's ban on nickel ore exports the nickel market is on course to shift from structural oversupply to a 45kt deficit this year, with sizeable deficits probable thereafter. The nickel market is trying to assess when the ban might lead to a dramatic cut in Chinese NPI. While the exact timing is difficult to predict, we consider a Dec-16 nickel price of currently about $12,200 to be an attractive buy as much of the bad news are already in the price.
Gold	Flat price	**Short gold spot** Our outlook for the gold price remains bearish. We have raised our Q315 forecast by $50 to $1,150 because of the shift in our US Fed rate hike expectations towards September, from June previously. However, as US economic growth is expected to strengthen over the summer, a rate hike should become imminent by September. Physical gold demand from China has been hindered in no small part by the dramatic surge in domestic equity prices which have seen investors buying equities rather than other investments, including gold. While jewellery demand from India has recovered significantly, we note that gold buying for the spring festival season is over for the year.

Source: SG Cross Asset Research/Commodities, Bloomberg

2) Commodity market analysis

This section provides a backward-looking analysis of the market over the previous month with a focus on the main contributors to return in the S&P GSCI and BCOM commodity indices.

Figure 3 – May sector performance

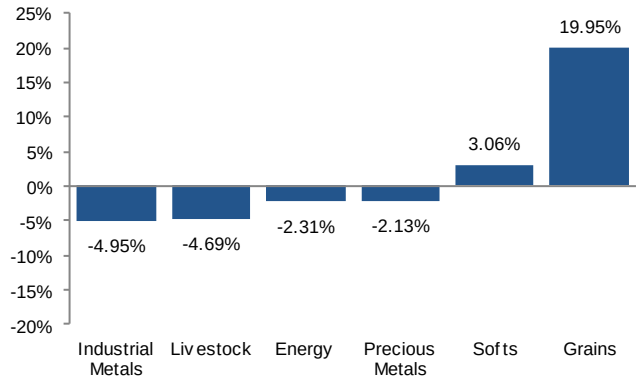
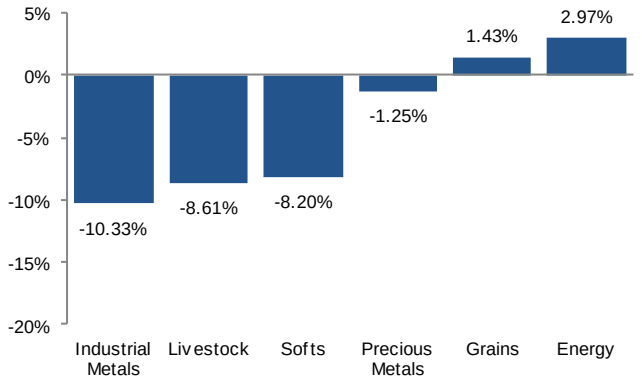


Figure 4 – YTD year sector performance



Source: SG Cross Asset Research/Commodities, Bloomberg.

Figure 5 – May market performance

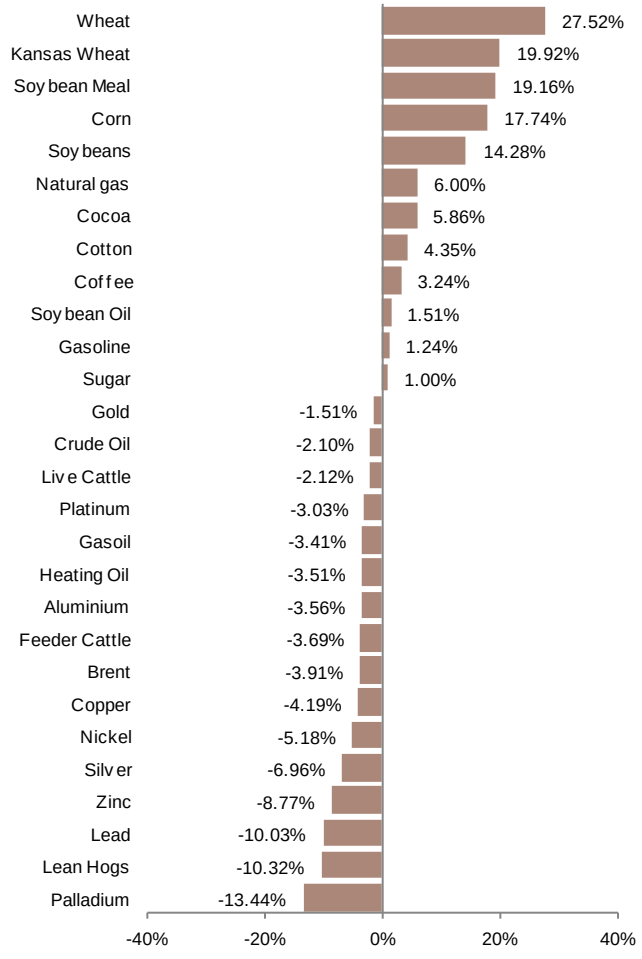
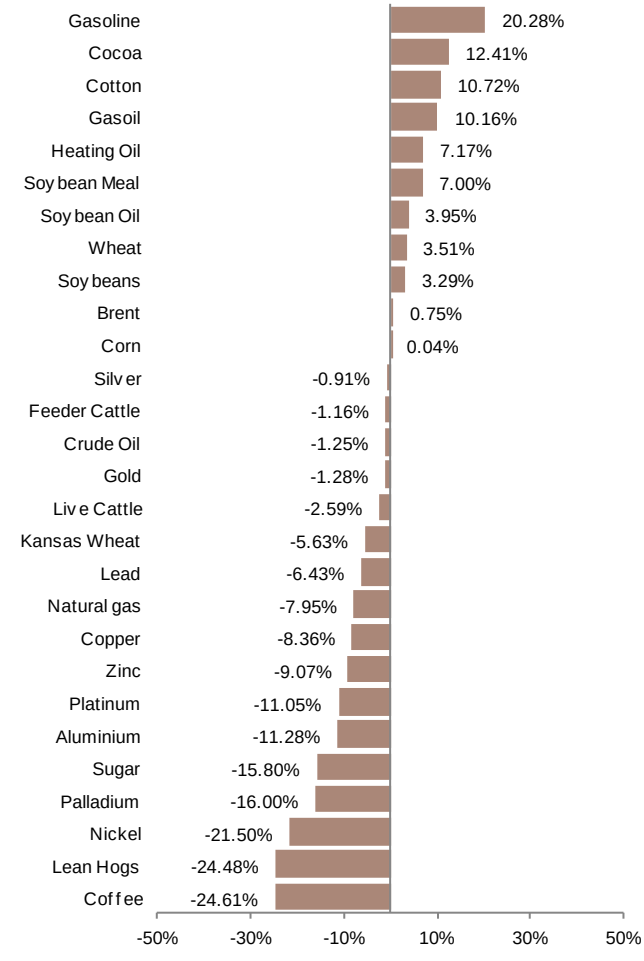


Figure 6 – YTD year market performance



Source: SG Cross Asset Research/Commodities, Bloomberg.

Energy

The energy sector declined 2.13% in June, leaving it up 2.97% YTD. Natural gas (+6.00%) was the best performing market and Brent (-3.91%) the worst. Gasoline (+1.24%) prices continued to climb and are now up 20.28% YTD – the best performing commodity across the asset class.

Total US oil production trended sideways during the month at just over 9.5Mb/d. The Baker Hughes oil rig count continued to decline at an average of about four rigs per week. The total US oil rig count and US horizontal rig count (including gas rigs) currently stand at 628 and 654, down 61% and 52% respectively from the 2014 peaks.

US inventories, after declining each week since reaching record highs in April, rose in the final week of June. This was largely a function of increased imports following Tropical Storm Bill and also a rebound in Canadian production following wildfires.

OPEC output reached a three-year high in June due to record and near-record output from both Iraq and Saudi Arabia, with the rise in output to 31.6Mb/d coming despite outages in Libya and Nigeria. OPEC output has now risen by more than 1.3Mb/d since the organisation decided to defend its market share at its 21 November meeting. Interestingly, the biggest rise came from Iraq following its decision to split export grades into Basra Heavy and Basra Light in order to resolve quality issues. This has lead to an increase in production from certain companies.

Concerns over the return of Iranian oil to the market following a further continuation of the sanction talks weighed on prices, and concerns surrounding a potential Greek euro exit weighed on sentiment. The concerns relating to Greece, however, appear significantly smaller than during the previous Greek-related episodes of the last few years.

Natural gas (+6.00%) prices reversed the May losses as fundamentals tightened due to weaker supply and strong demand from the power-generation sector. The YoY surplus continued to trend lower from over 80% in April to under 40% in June.

Industrial metals

The industrial metals sector was the weakest sector in June with a fall of 4.95%. All markets fell, with lead (-10.33%) falling the most and aluminium (-3.56%) the least. The 1.47% decline in the dollar index failed to support the complex as macro concerns – specifically the risks of a Greek euro exit and ongoing concerns about China – weighed on both price and sentiment. China's fourth rate cut since November worried the market about the state of the economy.

As reported in this section in previous reports, the significant jump in lead cancelled warrants from warehouses in Johor in March may have not represented true demand but rather a potential relocation of inventory. Market rumours suggested this might be to Korea. Last month, much of the inventory appears to have re-surfaced, in large part in the Netherlands, with a significant jump of over 35kt in inventory over a two-day period mid-month. This caused lead prices to fall steeply, leaving the overall net price change since the end of March at -3.30% after the initial rally of almost 17% following the cancellations in March.

Despite the first decline in LME nickel stocks last month in 13 months, nickel (-5.18%) prices continued to fall in June, reaching their lowest level in six years. YTD, nickel continues to disappoint, as evidenced by the ongoing declines in open interest, and it is the worst-performing metal with an overall decline of 21.50%.

Copper (-4.19%) and aluminium (-3.56%) exchange registered inventories (LME, Shanghai and COMEX) declined by 3.7% and 6.9% respectively in June. However, these drawdowns, combined with the supportive dollar, were unable to offset the negative macro risks.

Agriculture

The grain sector (corn, wheat, Kansas wheat, and soybeans) rose 19.95% in June – its largest gain since the summer of 2012. The softs sector (cotton, coffee, sugar and cocoa) rose 3.06%. The grain sector is now up YTD with an overall gain of 1.43%. All agriculture markets rose during the month, with wheat (+27.52%) rising the most and sugar (+1.00%) the least.

Wheat and Kansas wheat (+19.92%) were the best-performing commodities across the complex as heavy rains soaked crops across the entire Midwest region, disrupting harvesting. Six times the normal amount of rain has fallen over certain parts of the US Midwest, according to data from the National Weather Service. Rain makes the operation of combine harvesters very difficult due to the mud and also damages the crop quality and increases the risk of disease. There were several reports of vomitoxin, a toxin that results from a fungal disease that develops in wet conditions.

Only 19% of the nation's crop has been harvested, according to the most recent harvest report from the USDA, which is well behind the national average of 31% for the same period.

The slow wheat harvest has also boosted soybean prices, as the same acres are used to plant soybeans after the wheat crop has been harvested.

Soybean (+14.48%) prices also rose after the USDA reported that inventory estimates were 625m bushels compared to expectations of 674m. Planting estimations came in largely in line with expectations, with the USDA reporting an estimate of 85.14m acres versus expectations of 85.19m acres. Reports that yield estimates might also need to be revised down following harsh weather further supported prices.

Corn (+17.74%) prices rose after the USDA reported an estimate of 88.90m acres of corn planted this year versus expectations of 89.17m and an estimate of corn stockpiles at 4.45bn bushels versus expectations of 4.51bn bushels.

Cotton (+4.35%) prices rose following confirmation that planted acreage would be less than expected (9.0m acres vs expectations of 9.35m) following the rains in April and May that delayed planting in several states include Texas, the largest producer. Strong export sales also supported prices.

Cocoa (+5.86%) rose due to ongoing concerns about the Ghanaian crop size – specifically now concerning the late application of pesticides and fungicides to protect cocoa tress may have caused the crop to shrink, increasing concerns that delivery obligations will not be met.

Livestock

The livestock sector declined 4.69% in June, with all three markets falling.

Lean hogs (-10.32%) fell due to rising pork supplies after a US government report showed that the US hog herd was up 8.7% YoY to 66.9m.

Precious metals

The precious metal sector fell 2.13% in June, with gold (-1.51%) and silver (-6.96%).

Despite a supportive dollar and concerns over Greece and China, which implemented its fourth rate cute since November, gold prices continued to fall as its safe-haven appeal continue to wane.

ETF holdings fell for the second consecutive month in gold, and money manager short positions as reported by the CFTC reached a new record.

Sources include, but are not restricted to, SG Cross Asset Research/Commodities, Bloomberg, The Financial Times, The Wall Street Journal, Reuters, Agrimoney.com and AgWeb.com.

3) SG Cross Asset Research – commodity indices

The following indices have been developed by the commodities research group. Their objective is to deliver new and innovative ways of investing in commodities and provide an investible framework to capture specific dynamics within the asset class.

The SG Supply & Demand Commodity Index (SG SDCI)

The SG SDCI was up 1.51% in June, underperforming the BCOM by 0.22%, but outperforming the S&P GSCI commodity indices by 1.62%. The SDCI underperformed the SDCI benchmark index by 1.67%. The greatest outperformance within the index was generated by lead and zinc, with outperformance above a passive long-only holding of 5.90% and 4.12%, respectively. The greatest underperformance occurred in wheat and corn, with underperformance of 12.65% and 6.97% respectively relative to a passive long-only holding.

Figure 7 – SG SDCI (Bloomberg: SGCOL13E Index) cumulative performance vs the SDCI benchmark (SGCOL44E Index)

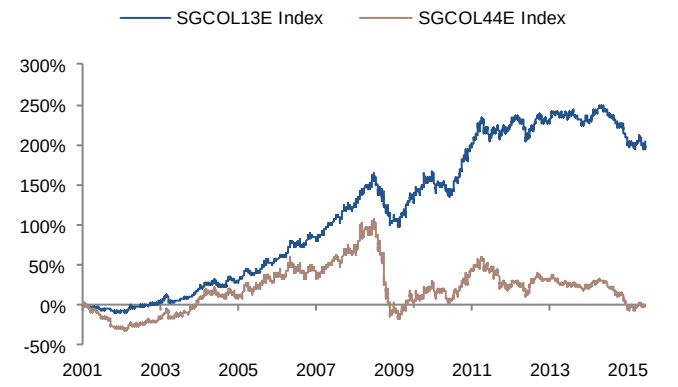
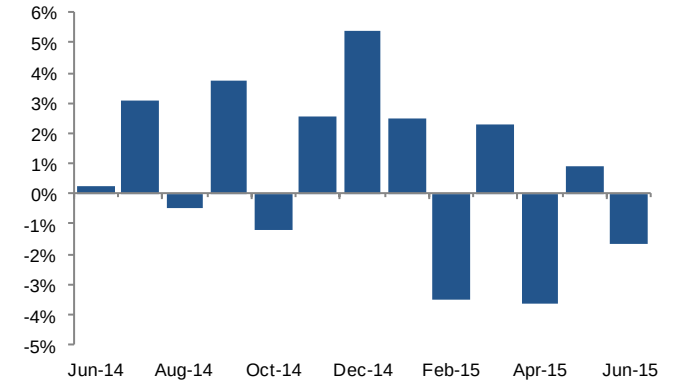


Figure 8 – Performance of the SG SDCI (SGCOL13E Index) relative to the SDCI benchmark (SGCOL44E Index)



Source: SG Cross Asset Research/Commodities, Bloomberg.

Figure 9 – Historical performance of the SG SDCI (SGCOL13E Index). Returns are gross of all fees.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YEAR
2002	-0.8%	1.0%	5.4%	-0.1%	1.3%	1.8%	-0.7%	0.4%	1.8%	0.2%	0.3%	0.6%	11.7%
2003	3.7%	6.4%	-7.6%	-1.5%	1.5%	1.0%	1.6%	1.8%	-0.4%	4.5%	1.3%	3.4%	16.1%
2004	2.0%	4.7%	-0.2%	0.6%	1.7%	-4.0%	-0.1%	-0.5%	6.0%	0.9%	-1.1%	-0.3%	9.7%
2005	2.4%	5.3%	3.1%	-3.5%	-1.0%	1.2%	2.4%	7.0%	1.0%	-2.0%	0.2%	2.6%	19.8%
2006	3.2%	-0.5%	1.0%	6.0%	3.6%	-1.0%	2.0%	-3.0%	0.2%	5.6%	1.4%	-0.8%	18.7%
2007	0.5%	1.5%	2.5%	3.0%	0.1%	2.7%	3.0%	-1.7%	7.2%	0.9%	-2.1%	1.2%	20.0%
2008	4.0%	3.7%	0.8%	1.3%	0.9%	5.6%	-4.2%	-3.4%	-3.4%	-5.8%	-3.2%	-3.3%	-7.5%
2009	0.1%	-1.5%	5.0%	0.1%	8.1%	1.1%	3.8%	-1.0%	3.4%	2.4%	1.4%	1.3%	26.8%
2010	-6.3%	3.1%	-0.8%	0.1%	-3.1%	-2.0%	7.0%	-0.6%	6.6%	4.8%	-0.1%	5.8%	14.6%
2011	2.0%	4.2%	2.9%	1.5%	-3.2%	-3.9%	2.7%	1.8%	-4.4%	4.9%	-0.9%	0.7%	8.0%
2012	1.8%	2.0%	-1.8%	0.6%	-6.5%	1.5%	1.9%	1.9%	3.8%	-2.8%	1.0%	-1.4%	1.6%
2013	3.5%	-0.7%	1.2%	-0.6%	-0.4%	-1.6%	1.7%	-0.4%	-1.3%	-0.7%	-0.2%	1.5%	1.7%
2014	-1.1%	2.6%	0.9%	1.9%	-1.1%	-0.6%	-1.8%	0.1%	-3.2%	0.0%	-2.0%	-2.9%	-7.1%
2015	-3.3%	0.8%	-1.2%	4.0%	-3.4%	1.5%							-1.8%

Source: SG Cross Asset Research/Commodities, Bloomberg.

The SG SDCI Index – Overview

The SG Supply & Demand Commodity Index (SG SDCI) is a 'long only' index investing in 12 commodity mono indices based on supply and demand model(s) applied to the related commodity. On a weekly basis, for each commodity, the relevant model(s) take a long position on a commodity according to supply and demand data. If the commodity supply and demand data change is bullish, the mono index goes long this commodity (50% or 100%). If the commodity supply and demand data change is bearish, the mono index goes neutral on this commodity (0%). The 12 mono indices are equally weighted in the SG SDCI, with monthly rebalancing. The SDCI benchmark index (SGCOL44E Index) is an equally weighted index of the 12 SDCI components. It illustrates the performance of the SDCI components if the impact of changes in supply and demand dynamics as determined by the SDCI index methodology were to be ignored. The performance of the SG SDCI relative to the SDCI benchmark gives an indication of the "alpha" in the strategy. The SGCOL13E and SGCOL44E Indices are excess return indices.
Please refer to the publication **The Société Générale Supply & Demand Commodity Index (SG SDCI)** for a description of the index's construction methodology.

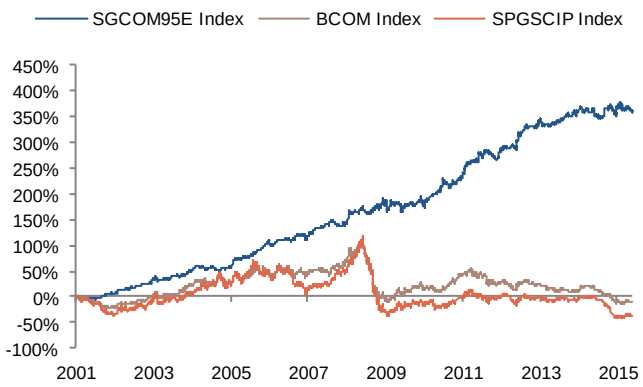
The SG Seasonal Factor Commodity Index (SG SFCI)

The SG SFCI and SG SFCI 100% indices were down 0.26% and 1.09 % respectively in June. By way of comparison, the BCOM and S&P GSCI indices were up 1.73% and down 0.11% respectively.

In May, four of the 11 positions in the index generated positive returns. The long position in corn (+17.74%) and the long position in coffee (+3.24%) generated the largest positive contributions to return, with the long positions in lean hogs (-10.32%) and the short position in cotton (4.35%) generating the largest negative contributions to return.

Please see the table below for the current positioning.

Figure 10 – SG SFCI (Bloomberg: SGCOM95E Index) cumulative performance vs the S&P GSCI and BCOM commodity indices



Source: SG Cross Asset Research/Commodities, Bloomberg.

Figure 11 – The SG SFCI seasonal factor matrix

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Crude Oil	Long	Long	Long	Short	Short	Long	Long	Long	Short	Short	Short	
Gasoline	Long	Long	Long	Long		Long	Long	Long	Short	Short	Short	Short
H. Oil (ULSD)	Long	Long	Long			Long	Long	Long	Short	Short		Long
Natural gas		Long	Long	Long	Long			Short	Long			
Brent	Long	Long	Long	Short	Short	Long	Long	Long	Short	Short		
Gasoil	Long	Long	Long	Long		Long	Long	Long	Short	Short	Short	Long
Soybean meal		Long	Long	Long	Long			Long		Long	Long	Long
Soybean oil		Long	Long	Long	Long							
Corn	Long	Long			Long	Long	Long		Short			Long
Wheat	Short	Short	Short				Long	Long	Long	Long		Short
Kansas wheat	Short	Short	Short				Long	Long	Long	Long		Short
Soybeans		Long	Long	Long	Long				Short			
Cotton	Long	Long				Short	Short	Short			Long	Long
Sugar		Short	Short	Short		Long	Long					
Coffee	Long					Long	Long	Long			Long	Long
Cocoa	Long	Long	Long	Long							Long	Long
Lean hogs			Long	Long		Long	Long				Long	
Live cattle						Long	Long					
Gold	Long	Long		Long	Long			Long	Long	Long	Long	Long
Silver	Long	Long	Long						Long	Long	Long	
Lead	Long						Long			Long	Long	Long
Copper	Long	Long	Long	Long								Long
Aluminium	Long	Long										
Zinc	Long	Long										Long
Nickel	Long	Long										Long

Source: SG Cross Asset Research/Commodities, Bloomberg.
Grey cells show a period where the allocation can shift according to the timing of the underlying seasonal factor.

Figure 12 – Historical performance of the SG SFCI (SGCOL95E Index). Returns are gross of all fees.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YEAR
2002	-0.4%	3.0%	5.6%	0.2%	1.5%	-0.3%	1.9%	2.6%	1.2%	1.8%	0.3%	0.6%	19.1%
2003	5.5%	4.5%	-4.6%	1.7%	0.1%	-0.2%	2.3%	2.3%	0.7%	1.8%	-1.6%	4.6%	18.0%
2004	1.5%	5.5%	1.1%	-0.9%	-2.6%	-1.0%	2.2%	-0.7%	-2.4%	-0.7%	3.4%	0.2%	5.5%
2005	2.0%	6.1%	3.1%	-0.5%	0.7%	0.6%	1.5%	1.1%	2.9%	2.5%	2.0%	1.8%	26.6%
2006	5.7%	-4.4%	3.0%	2.2%	-0.2%	1.2%	-0.7%	-0.5%	0.9%	3.7%	0.5%	-0.4%	11.1%
2007	-1.0%	3.2%	2.8%	0.7%	1.2%	-0.2%	2.9%	1.6%	0.6%	-3.0%	-0.4%	0.6%	9.2%
2008	2.4%	7.9%	-1.1%	1.4%	-0.4%	2.7%	-2.6%	-1.2%	1.9%	2.4%	2.6%	0.1%	16.9%
2009	0.6%	-3.8%	2.7%	0.0%	-0.1%	-0.3%	0.3%	-0.5%	1.2%	-1.2%	1.9%	1.5%	2.3%
2010	-4.2%	3.9%	2.8%	1.4%	1.0%	1.3%	5.8%	-0.3%	-2.5%	2.0%	-0.3%	4.0%	15.5%
2011	1.6%	4.3%	2.8%	0.7%	0.4%	0.4%	2.5%	2.0%	-0.2%	-0.7%	-1.7%	-1.9%	10.6%
2012	4.2%	2.2%	-0.4%	0.9%	-0.3%	1.2%	4.2%	2.5%	2.2%	-0.3%	0.1%	-0.5%	17.1%
2013	2.7%	-1.8%	0.7%	-0.2%	0.2%	-0.1%	1.1%	1.2%	1.4%	0.2%	-0.2%	1.4%	6.8%
2014	0.2%	2.0%	-1.9%	1.2%	-1.4%	0.9%	-2.1%	-0.6%	0.4%	2.9%	1.2%	-1.6%	1.1%
2015	-0.9%	4.3%	-2.6%	0.0%	-0.3%	-0.3%							0.1%

Source: SG Cross Asset Research/Commodities, Bloomberg.

The SG SFCI Index – Overview

The SG Seasonal Factor Commodity Index (SG SFCI) is a dynamic index that invests directionally across 25 commodity mono-indices. The objective of the SG SFCI is to capture price changes that are driven by the seasonal shifts and changes in commodity fundamentals or factors. The weight or exposure of each commodity mono-index is individually switched between a long, flat or short position according to whether the respective underlying seasonal factors are bullish, absent, or bearish for a given period. The SG SFCI is driven by a matrix 72 seasonal factors that is used to determine the monthly weight or exposure to each commodity within the index. Each of the factors has been identified through a research-driven process and each represents a specific seasonal dynamic. Each factor has a logical and robust explanation of why it occurs, when it occurs, and how it can impact or influence the price of a particular commodity. The 25 mono-indices are equally weighted in the SG SFCI, with monthly rebalancing. The SFCI 100% is a variation of the SG SFCI. It assigns an equal weight to all mono-indices within each month and is always fully invested and does not have any flat positions.

Please refer to the publication: **The SG Seasonal Factor Commodity Index (SG SFCI) – 72 trade recommendations in a single product** for a description of the index's construction methodology.

4) Principal Component Analysis (PCA) – disentangling commodity fundamentals from non-fundamentals

Please see the end of this section for an explanation of PCA

Systemic risk (macro, currency and interest rate factors combined) eased from a month earlier, although the liquidity factor edged up for most commodities, most notably in the oil sector. The macro factor continued to be muted, and the dollar factor receded on the back of a stabilising currency. The latter decrease more than offset the 10 percentage point increase in the liquidity factor. Agricultural commodities led the rally in idiosyncratic risk (fundamentals) and with the sole exception of gasoil, commodity fundamentals account for 80% or more of total risk across each market. Overall, the equally-weighted basket still exhibits more idiosyncratic risk (and hence better diversification benefits) than the BCOM index, though the gap narrowed by two percentage points. Base metals continue to offer attractive levels of idiosyncratic risk and idiosyncratic risk for sugar and cotton improved most, capitalising on the stabilisation of the US dollar. Natural gas, gasoil and silver were the three commodities whose systemic risk increased the most.

Figure 13 – PCA profile for copper

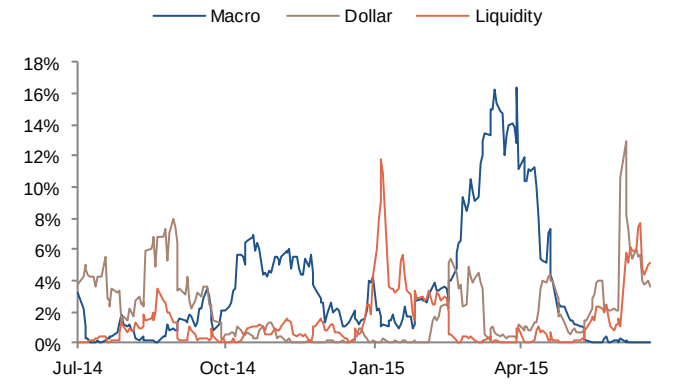
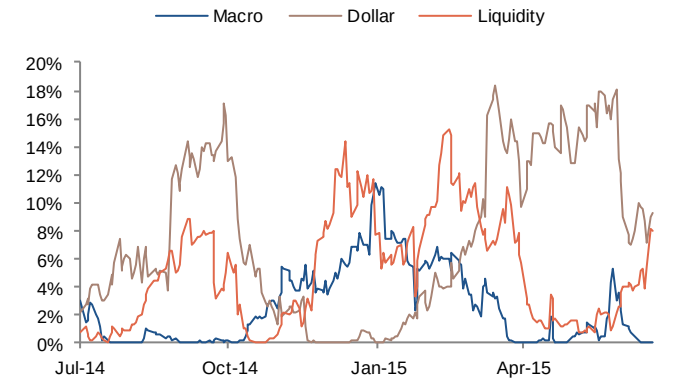


Figure 14 – PCA profile for Brent



Source: SG Cross Asset Research/Commodities.

Figure 15 – PCA profile for gold

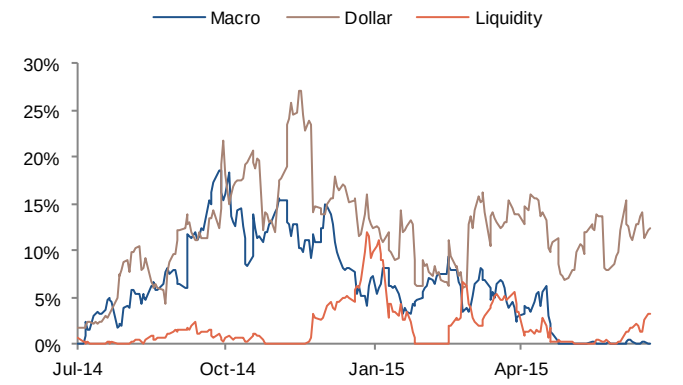
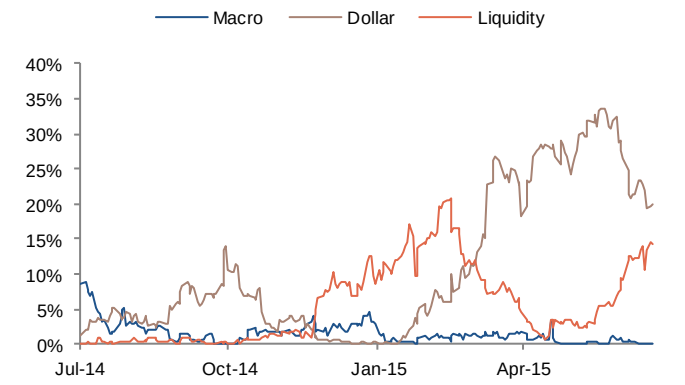


Figure 16 – PCA profile for the BCOM



Source: SG Cross Asset Research/Commodities.

Figures 13 to 16 show the change in explanatory power of the major factors (as determined by the SG PCA model) over the past 12 months for copper, Brent, gold and the BCOM commodity index. The underlying prices used in the analysis are the daily settlement prices of the BCOM F3 excess return index and the daily settlement prices of the respective BCOM F3 excess return component indices for the individual markets.

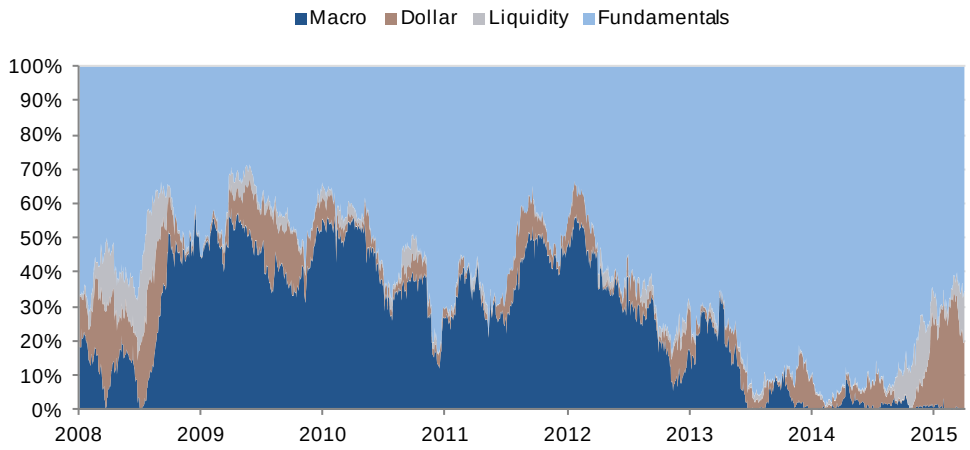
Figure 17 – PCA analysis: change in profile over the month

	June-2015				May-2015			
	Macro	Dollar	Liquidity	Fundamental	Macro	Dollar	Liquidity	Fundamental
Aluminium	0.09%	1.67%	1.19%	97.06%	1.26%	2.23%	2.75%	93.76%
Copper	0.06%	3.62%	5.11%	91.21%	0.00%	3.93%	2.31%	93.76%
Lead	0.01%	1.02%	0.11%	98.86%	0.43%	2.50%	0.02%	97.05%
Nickel	0.72%	3.52%	1.22%	94.54%	0.14%	2.72%	2.65%	94.49%
Zinc	0.13%	1.17%	0.67%	98.03%	0.16%	1.27%	2.22%	96.35%
Gold	0.11%	12.42%	3.23%	84.25%	0.01%	13.76%	0.36%	85.87%
Silver	0.06%	13.13%	4.37%	82.44%	0.12%	10.03%	1.32%	88.53%
Crude Oil (WTI)	0.24%	8.62%	8.22%	82.92%	0.49%	19.01%	1.83%	78.67%
Brent	0.06%	9.33%	7.92%	82.69%	0.39%	17.89%	2.05%	79.66%
Heating Oil	0.07%	11.31%	8.59%	80.03%	0.88%	18.23%	2.34%	78.56%
Gasoline	0.03%	8.73%	6.73%	84.51%	0.54%	18.08%	1.50%	79.87%
Gasoil	0.66%	11.36%	13.96%	74.01%	5.20%	10.18%	5.81%	78.80%
Natural Gas	1.54%	10.46%	2.15%	85.85%	0.02%	6.16%	0.93%	92.89%
Corn	0.19%	1.65%	6.05%	92.11%	0.15%	15.16%	2.89%	81.78%
Wheat	2.46%	0.01%	7.49%	90.05%	6.84%	6.62%	5.37%	81.17%
Soybeans	0.07%	6.88%	6.01%	87.04%	0.05%	16.42%	1.68%	81.84%
Cotton	5.21%	7.64%	1.31%	85.84%	3.58%	18.89%	1.66%	75.88%
Sugar	0.26%	5.59%	0.00%	94.15%	0.43%	10.67%	0.83%	88.06%
Coffee	0.74%	0.07%	9.68%	89.50%	0.13%	0.20%	8.94%	90.73%
Cocoa	0.65%	11.80%	2.80%	84.73%	1.65%	13.84%	1.62%	82.89%
Live Cattle	2.80%	10.30%	0.07%	86.83%	2.67%	15.77%	0.14%	81.40%
Lean Hogs	1.59%	1.20%	2.19%	95.02%	0.79%	1.99%	3.38%	93.84%
BCOM	**0.00%**	**20.07%**	**14.33%**	**65.60%**	**0.00%**	**33.70%**	**5.34%**	**60.95%**
AVERAGE	0.81%	6.43%	4.50%	88.26%	1.18%	10.25%	2.39%	86.18%

Source: SG Cross Asset Research/Commodities.

Figure 17 shows the change in explanatory power for each of the major factors across 22 major commodity markets and the BCOM commodity index over the month. The underlying prices used in the analysis are the daily settlement prices of the BCOM F3 excess return index and the daily settlement prices of the respective BCOM F3 excess return component indices for the individual markets. The average shown at the bottom of the table is the equally-weighted arithmetic mean of the 22 markets.

Figure 18 – Historical PCA profile of the BCOM commodity index since 2008



Source: SG Cross Asset Research/Commodities.

PCA explained:
Principal Component Analysis (PCA) is a statistical tool that allows us to break down commodity price returns and isolate the major explanatory variables. SG has developed a PCA model, specifically for commodity markets, that uses 23 different non-fundamental variables. These include measures of inflation, currency changes, credit spreads, implied volatility, equity and changes in equity indices. These variables are simplified into three principal components through the PCA process. Each component is a linear combination of the original 23 variables that can be mapped to a "real world" factor by examining and interpreting the underlying weightings of these variables. The first factor is defined as a macro-related factor, the second a currency factor, and the third an interest rate or liquidity factor. Each of the three factors is linearly regressed against each commodity to determine the explanatory power each factor has on the variance of that commodity. The residual, or that which is not explained by the regression process, is attributed to fundamentals (specific commodity supply & demand dynamics).

5) Dispersion analysis

Please see the end of this section for an explanation of dispersion

Long-term dispersion continued its trend lower for all sectors despite the marked increase in idiosyncratic risk. The energy sector showed the largest decrease in dispersion, in harmony with the fall in idiosyncratic risks across the energy sector (see discussion on PCA above).

On a shorter horizon, most commodity sectors featured a U-shaped reversal in dispersion, suggesting either a potential stabilisation or a reversal in dispersion going forward. The agricultural commodities featured the largest swing in short-term dispersion, in line with the observation that the sector's drivers were increasingly idiosyncratic. The industrial metals were also on an upwards trend in the second half of the month, though it still appears the sector is driven by a range of fundamentals having a common effect on prices.

Figure 19 – S&P GSCI universe of 24 commodity markets*

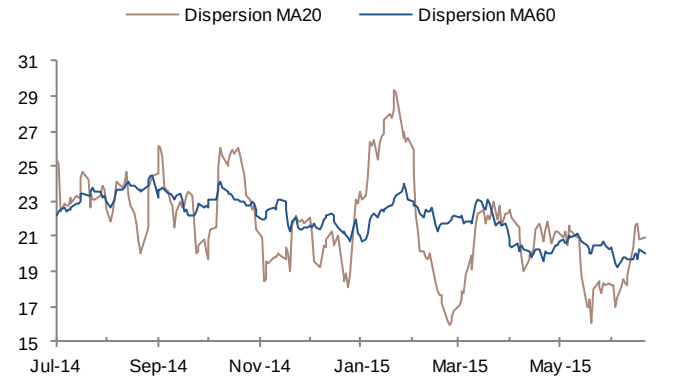
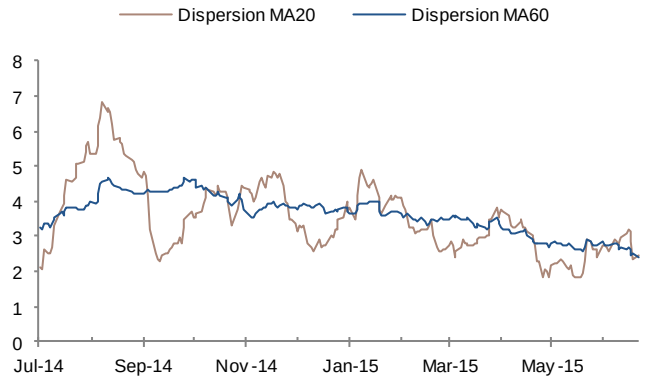


Figure 20 – Energy sector



Source: SG Cross Asset Research/Commodities.

Figure 21 – Industrial metals sector

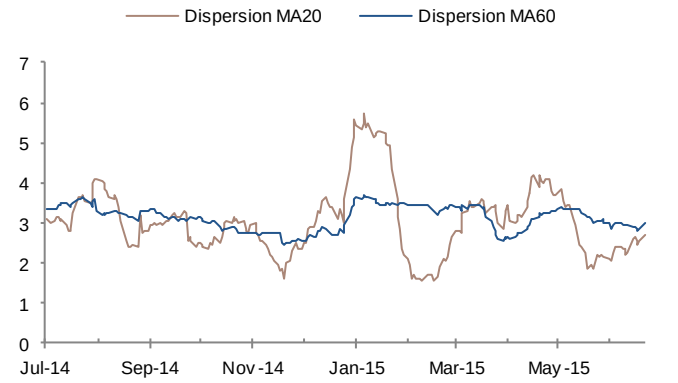
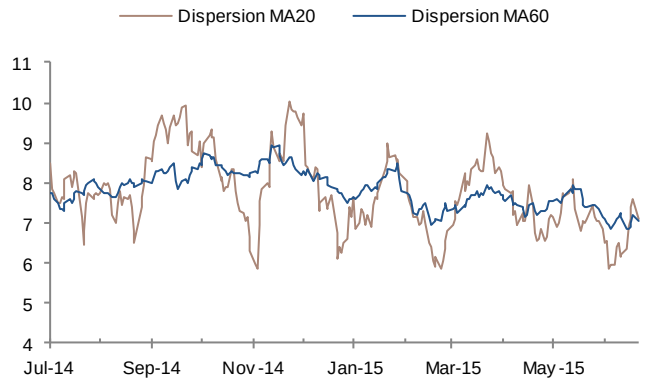


Figure 22 – Agriculture sector



Source: SG Cross Asset Research/Commodities.

Dispersion explained:
Dispersion analysis is a tool that can be used to provide additional insight into the nature of the underlying price drivers. Dispersion analysis measures the independence of the commodities markets themselves. To model dispersion in the commodity complex, we calculate a simple dispersion index based on a basket of commodities. Using daily returns for each of the commodities in the basket, we: 1) normalise the series by dividing each return by the 20-day standard deviation, 2) subtract the standardised return from the average standardised return of the remaining commodities in the basket, and 3) square that value. If the value of the index is zero then the individual commodities move exactly in line with the remaining 23 — and we have extreme co-movement. A value far from zero implies independence.
Figures 19 – 22 show the dispersion profile within the S&P GSCI universe (* excluding feeder cattle) and the major commodity sectors. The underlying prices used in the analysis are the daily settlement prices of the S&P GSCI excess return component indices.

6) Significant option trades

The natural gas and copper markets showed the greatest options activity last month, with significant volumes of natural gas Aug $3 calls and Oct $2.7 puts trading and copper Dec $5000 puts. Total OI in the copper Dec 5000 puts now stands at over 7,000 lots – a significant position and the largest put position by quite some magnitude across all strikes (puts and calls). Large OI strikes can often trigger spikes in volatility, especially when surrounding strikes have minimal OI (as is the case currently) if flat prices approach the strike near expiry.

The Brent Sep $85 calls were the furthest traded options strikes above current front month prices (33.67% above) and the Brent Dec $45 puts (-29.23% below) were the furthest traded option strikes below current prices.

Figure 23 – Largest increases in call and put open interest (OI)

Futures price*		Calls					Puts				
Market	Price	Expiry	Strike	Option	Contracts	Change in OI	Expiry	Strike	Option	Contracts	Change in OI
Crude Oil	59.47	SEP 15	70	Calls	14153	1.1%	DEC 15	55	Puts	8406	0.6%
Brent	63.59	SEP 15	85	Calls	7102	0.9%	DEC 15	45	Puts	6676	0.7%
Natural Gas	2.832	AUG 15	3	Calls	3167	5.3%	OCT 15	2.7	Puts	3771	6.2%
Gold	1171.8	AUG 15	1250	Calls	4408	1.5%	OCT 15	1100	Puts	5611	1.0%
Silver	15.581	SEP 15	16	Calls	454	0.6%	MAR 16	16	Puts	454	0.6%
Corn	422	SEP 15	450	Calls	11030	1.7%	SEP 15	340	Puts	6655	0.8%
Wheat	615.75	SEP 15	650	Calls	2385	1.1%	SEP 15	550	Puts	7257	3.5%
Soybeans	1037.25	NOV 15	1040	Calls	10708	2.4%	NOV 15	900	Puts	8200	2.3%
Copper	5757.25	DEC 15	6000	Calls	1316	1.4%	DEC 15	5000	Puts	3719	5.5%
Aluminium	1658.5	DEC 15	1875	Calls	3000	3.7%	SEP 15	1650	Puts	1850	2.3%
Zinc	1991.75	SEP 15	2150	Calls	1400	2.8%	SEP 15	1950	Puts	830	2.0%
Lead	1749.25	SEP 15	1950	Calls	250	0.9%	AUG 15	1700	Puts	445	2.4%
Nickel	11939.5	DEC 15	12500	Calls	50	0.3%	DEC 15	11300	Puts	840	1.7%
Live Cattle	148.075	OCT 15	162	Calls	2833	2.9%	DEC 15	146	Puts	1726	2.4%
Lean Hogs	74.375	JUL 15	76	Calls	1668	1.1%	OCT 15	64	Puts	2236	2.0%

*Price of front month futures contract

Figure 24 – Percentage difference between current front month futures prices and the option strikes showing the largest increases in call and put open interest (from table above)

Futures price*		Calls			Puts		
Market	Price	Expiry	Strike	Difference	Expiry	Strike	Difference
Crude Oil	59.47	SEP 15	70	17.71%	DEC 15	55	-7.52%
Brent	63.59	SEP 15	85	33.67%	DEC 15	45	-29.23%
Natural Gas	2.832	AUG 15	3	5.93%	OCT 15	2.7	-4.66%
Gold	1171.8	AUG 15	1250	6.67%	OCT 15	1100	-6.13%
Silver	15.581	SEP 15	16	2.69%	MAR 16	16	2.69%
Corn	422	SEP 15	450	6.64%	SEP 15	340	-19.43%
Wheat	615.75	SEP 15	650	5.56%	SEP 15	550	-10.68%
Soybeans	1037.25	NOV 15	1040	0.27%	NOV 15	900	-13.23%
Copper	5757.25	DEC 15	6000	4.22%	DEC 15	5000	-13.15%
Aluminium	1658.5	DEC 15	1875	13.05%	SEP 15	1650	-0.51%
Zinc	1991.75	SEP 15	2150	7.95%	SEP 15	1950	-2.10%
Lead	1749.25	SEP 15	1950	11.48%	AUG 15	1700	-2.82%
Nickel	11939.5	DEC 15	12500	4.69%	DEC 15	11300	-5.36%
Live Cattle	148.075	OCT 15	162	9.40%	DEC 15	146	-1.40%
Lean Hogs	74.375	JUL 15	76	2.18%	OCT 15	64	-13.95%

*Price of front month futures contract

Source: SG Cross Asset Research/Commodities, Bloomberg.

Significant option trades are defined as those options that have had the largest increases and decreases in open interest (OI) over the month.
Figure 23 show the call and put options, organised by commodity, strike price and expiry that have had the greatest increase and decrease in open interest over the preceding month. Only commodity markets that have an active options market are shown and only major option strikes are shown. By way of a price reference, the front month futures contract for each market is shown on the left-hand side of each table. All data is recorded as at month end. The intensity of the red/blue shading illustrates the largest increase (blue) and largest decrease (red) in open interest in percentage terms relative to the other values in the same column. Figure 24 shows how far the option positions in Figure 23 are away from current front month prices.

7) Brent & gold option open interest (OI) maps

Option activity was significant in the Sep and Dec OTM calls in Brent. This clear breakout in trading activity follows several months of lackluster option activity with no clear directionality. Open interest in the Sep $80 and $85 calls is significant with large positions building in the call strip from $75 up to $100 in the Dec calls. Puts trading was uneventful with the OI floor still running through at $40-$45. Option activity continued to pick up in the gold market, but with no clear patterns emerging and the distributions of call and put volumes and open interest remaining skewed to the call side.

Figure 25 – Brent

		AUG 15	SEP 15	OCT 15	NOV 15	DEC 15		AUG 15	SEP 15	OCT 15	NOV 15	DEC 15
c	110	0	5700	0	1500	14899	110				1500	600
c	105	3750	6650	2300	0	8652	105					
c	100	500	11200	0	0	32175	100		1300			3200
c	95	0	4031	1350	0	18677	95	-2	1080	-1350		2225
c	90	3350	7696	1008	100	20599	90		1046	508		-2151
c	85	2651	18975	2950	300	21567	85	129	7102			2414
c	80	4723	22680	1850	0	26977	80	497	6650	1500		4570
c	75	5012	12399	4750	225	24569	75	2114	474	150	225	609
c	70	6457	9771	1650	152	21913	70	-758	467	1550	152	2207
c	65	8715	10515	2321	900	11642	65	3307	3285	571	650	-148
c	**60**	2228	6315	500	0	8525	**60**					150
p	**60**	14213	16503	2975	200	22548	**60**	5684	1458	1475	100	1514
p	55	7136	8119	3175	400	18522	55	156	300	1115	390	134
p	50	8086	14674	1250	340	24861	50	935	854	950	240	826
p	45	4050	9701	1404	0	26198	45		-750	1202		6676
p	40	1475	11580	0	500	21299	40	375	50		500	-1825
p	35	300	1575	0	0	2300	35					-350
p	30	0	200	0	0	2500	30					
p	25	0	0	0	0	0	25					
p	20	0	0	0	0	0	20					
p	15	0	0	0	0	0	15					
p	10	0	0	0	0	0	10					

Figure 26 – Gold

		AUG 15	OCT 15	DEC 15	FEB 16	APR 16		AUG 15	OCT 15	DEC 15	FEB 16	APR 16
c	1700	345	24	16846	728	666	1700			-51	1	186
c	1650	892	460	5869	1212	648	1650			-253		
c	1600	1040	212	9732	4191	0	1600			-207	3380	
c	1550	605	1828	4508	33	300	1550		191	6		
c	1500	4434	896	8848	1988	240	1500	1459	20	-599	939	40
c	1450	3091	418	6715	536	312	1450	89	-35	-58	9	100
c	1400	3211	3963	12467	930	2631	1400	306	979	1915	95	42
c	1350	1665	421	6401	607	1427	1350	-38	16	1601	24	2
c	1300	7714	4151	12361	733	61	1300	908	3095	-1029	-4	
c	1250	8546	2065	3948	746	566	1250	4408	1166	519	1	316
c	**1200**	6214	2062	3733	726	828	**1200**	3812	647	1710	206	12
p	**1200**	3031	2468	5814	207	476	**1200**	95	703	679		13
p	1150	7247	1256	6102	217	1051	1150	3975	575	-191		60
p	1100	5694	7105	9794	286	4475	1100	935	5611	-213	25	
p	1050	3291	1756	7737	421	600	1050	184	240	1485	50	50
p	1000	3608	2262	17115	620	977	1000	-205	20	2160	-15	-9
p	950	822	1684	5240	595	544	950	4	1455	-22		
p	900	178	120	10603	311	300	900	114	40	497	-40	
p	850	53	104	7143	223	1396	850		95	5		
p	800	285	0	1098	0	29	800			465		15
p	750	0	2	100	0	14	750					
p	700	0	0	1302	0	0	700			27		

Source: SG Cross Asset Research/Commodities, Bloomberg.

The tables on the left above illustrate the distribution of open interest for both major call and put option strikes. Strike prices either side of the ATM value (shown in black) are listed down the left-hand side and expiry across the top. Puts are shown in the bottom half of each table (denoted at "p") and calls in the top half (denoted as "c"). The darker the red (blue) shading the larger the put (call) open interest. The right-hand tables above illustrate the change in the open interest for each of the corresponding options shown in the tables on the left from the previous month. Positive (negative) numbers show an increase (decrease) in OI.

8) Implied probabilities – what are options markets telling us?

Please see the end of this section for an explanation of the implied probabilities model.

The implied volatility surface is a digest of option trades that contains information on the derivatives market's expectations for the direction of the underlying price. Observing the shape of the surface can help derive information of interest in certain parts of the surface relative to others. We translate these volatility levels, combined with the forward curve, into the much more common language of price probabilities. The following tables show the probabilities of price moves and implied settlement ranges on the time horizon date. These are calculated from the settlement price on the settlement date of each of the underlying futures.

Figure 27 – Implied probability analysis: Crude Oil (WTI)

Futures contract *	CLX5 Comdty			CLV5 Comdty		
Settlement price	60.44			60.96		
Settlement price date	28-Jun-15			31-May-15		
Time horizon date (+3m)	30-Sep-15			29-Aug-15		
Probability of a rise above the settlement price of more than:	20%	=	13.77%	20%	=	13.15%
	10%	=	28.44%	10%	=	27.92%
	5%	=	38.52%	5%	=	38.22%
Probability of a fall below the settlement price of more than:	5%	=	37.95%	5%	=	37.64%
	10%	=	26.44%	10%	=	25.89%
	20%	=	9.11%	20%	=	8.54%
Probability of price settling:	> $65	=	33.18%	< $50	=	12.84%
	> $60	=	51.74%	< $45	=	3.89%
Probability of prices settling between:	$59.18	to	$61.72 = 10%	r	$2.54	
	$53.99	to	$67.66 = 50%	r	$13.66	
	$45.90	to	$79.58 = 90%	r	$33.68	

* Bloomberg ticker symbol — r = range

Figure 28 – Implied probability analysis: Brent

Futures contract *	COX5 Comdty			COV5 Comdty		
Settlement price	65.22			67.04		
Settlement price date	28-Jun-15			31-May-15		
Time horizon date (+3m)	30-Sep-15			29-Aug-15		
Probability of a rise above the settlement price of more than:	20%	=	13.55%	20%	=	12.45%
	10%	=	28.27%	10%	=	27.32%
	5%	=	38.42%	5%	=	37.88%
Probability of a fall below the settlement price of more than:	5%	=	37.84%	5%	=	37.28%
	10%	=	26.26%	10%	=	25.26%
	20%	=	8.92%	20%	=	7.90%
Probability of price settling:	> $70	=	33.48%	< $60	=	30.73%
	> $65	=	50.81%	< $55	=	15.20%
Probability of prices settling between:	$63.88	to	$66.59 = 10%	r	$2.72	
	$58.32	to	$72.94 = 50%	r	$14.62	
	$49.65	to	$85.67 = 90%	r	$36.02	

* Bloomberg ticker symbol — r = range

Source: SG Cross Asset Research/Commodities.

The overall probability for a move higher, in both WTI and Brent, continues to be greater than for a move lower with a 28.44% and 28.27% probability of a 10% move higher in WTI vs Brent respectively, compared to a 26.44% and 25.89% probability of a move lower.

Figure 29 – Implied probability analysis: Copper

Futures contract *	LPV5 Comdty			LPU5 Comdty		
Settlement price	5767.75			6016.5		
Settlement price date	28-Jun-15			31-May-15		
Time horizon date (+3m)	30-Sep-15			29-Aug-15		
Probability of a rise above the settlement price of more than:	20%	=	4.99%	20%	=	5.24%
	10%	=	19.48%	10%	=	19.83%
	5%	=	32.98%	5%	=	33.21%
Probability of a fall below the settlement price of more than:	5%	=	32.16%	5%	=	32.41%
	10%	=	17.08%	10%	=	17.43%
	20%	=	2.19%	20%	=	2.35%
Probability of price settling:	> $6500	=	14.02%	< $5500	=	33.39%
	> $6000	=	36.08%	< $5000	=	9.84%
Probability of prices settling between:	$5,688	to	$5,849 = 10%	r	$161	
	$5,353	to	$6,215 = 50%	r	$862	
	$4,807	to	$6,920 = 90%	r	$2,113	

* Bloomberg ticker symbol — r = range

Figure 30 – Implied probability analysis: Gold

Futures contract *	GCV5 Comdty			GCV5 Comdty		
Settlement price	1172.8			1190.7		
Settlement price date	28-Jun-15			31-May-15		
Time horizon date (+3m)	30-Sep-15			29-Aug-15		
Probability of a rise above the settlement price of more than:	20%	=	0.62%	20%	=	0.57%
	10%	=	9.58%	10%	=	9.27%
	5%	=	25.21%	5%	=	24.89%
Probability of a fall below the settlement price of more than:	5%	=	24.11%	5%	=	23.79%
	10%	=	7.46%	10%	=	7.16%
	20%	=	0.11%	20%	=	0.10%
Probability of price settling:	> $1300	=	7.92%	< $1100	=	19.01%
	> $1200	=	37.67%	< $1000	=	1.45%
Probability of prices settling between:	$1,162	to	$1,184 = 10%	r	$21.53	
	$1,116	to	$1,232 = 50%	r	$115.58	
	$1,040	to	$1,323 = 90%	r	$282.53	

* Bloomberg ticker symbol — r = range

Source: SG Cross Asset Research/Commodities.

Similarly, the probability of a move higher for both copper and gold continues to be greater than for a move lower.

Implied probabilities explained:
The implied probabilities model looks up the volatility skew for the contract shown (Bloomberg ticker shown) in each table, which by default, is the first nearby or prompt month as of the date horizon (we have set this to three months forward from the month-end date in order to remove nearby noise). For example, in the tables above, we are able to read the implied probability of the futures contract as being 20% higher in price from the settlement price on the horizon date. We can then compare this probability, calculated at the settlement price date, to the same probability calculated one month prior. We retrieve the skew in delta space and then use piecewise interpolation in strike space to calculate the volatility level for a specific strike. Our model then uses an evenly spaced distribution of standard deviation multiples on both sides of the forward price to calculate the volatility at each point, translates them to standard deviations and performs a piecewise integration of the resulting lognormal price intervals. This axis is then translated to actual price levels, the standard deviation multiples are converted to probability levels and the two axes are mapped together to form the probability distribution. Source: SG Cross Asset Research/Commodities, Bloomberg.

9) Opportunities across the major forward curves

Changes in the curve structure of a commodity are largely a function of movements in the underlying commodity's price (flat price). In Section 2 of this report, we describe the reasons behind many of these moves and accordingly, for brevity, they will not be repeated in this section.

The objective of this section is to highlight changes in structure across the S&P GSCI constituents over the previous calendar month that look out of alignment. By identifying individual spreads that have moved by more or less than would normally be expected relative to the move in outright prices or moves in the surrounding spreads, potential trading opportunities can be identified. Changes in the forward curves are shown in Figures 33 – 56.

Some of these movements will occur for fundamental reasons, and we will highlight these. However, many of these movements occur for technical reasons, driven, for example, by changes in the liquidity of contracts down the curve or by localised buying or selling activity in specific contracts. As such, many of these movements are counterintuitive and prices typically realign themselves with the overall curve structure.

The identification of these points or sections on the curve can provide trading opportunities whereby commodity investor clients can optimise roll yield and corporate clients can make their trading and hedging activity more efficient.

Only markets that might present opportunities worth highlighting will be discussed. Generally, we will focus on the energy and metal curves, and trading suggestions will typically be in the form of spread-based relative value positions (e.g. butterfly spreads and condor spreads).

It is also important to note that the following comments might conflict with our house views.

Spread-based relative value trading suggestions:

Aluminium

The Sep/Oct spread looks slightly too weak relative to the surrounding spreads with no fundamental explanation. The Aug/Sep, Sep/Oct and Oct/Nov spreads ended the month at –0.55%, -0.77% and –0.12 % (Nov/Dec at -0.63%), respectively. Industrial metal curves are typically more linearly priced with less variation between individual spreads. **Suggestion: Sell Aug/Sep, Buy Sep/Oct and Sell Oct/Nov and look for the Sep/Oct spread to realign into a more linear profile.**

The following charts illustrate how the forward curves in WTI and Brent have changed as a function of changes in the flat price over the past six months.

Figure 31 – Crude oil WTI: six-month forward curve history

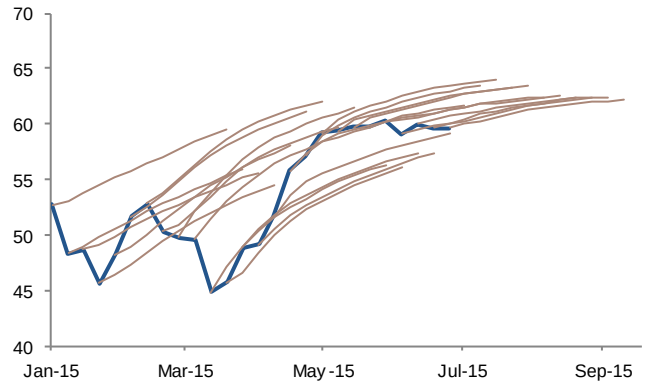
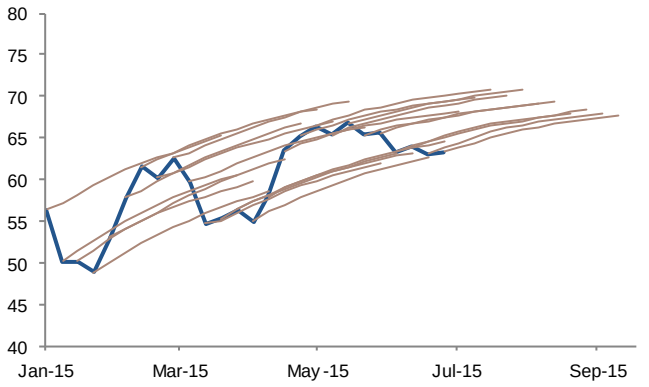


Figure 32 – Brent: six-month forward curve history



Source: SG Cross Asset Research/Commodities, Bloomberg.

The figures above show the recent price action of the front-month contract of crude oil (WTI) and Brent over the past six months as the blue line. For each week, the forward curve at the time, extending out across the next 12 listed contacts down the forward curve, is shown as a brown hair line. These charts give an idea of the shape of the forward curve as a function of how the price of the front-month contract has changed over the six months.

Figure 33 – Crude oil: price in $/b (LHS), spread as % (RHS)

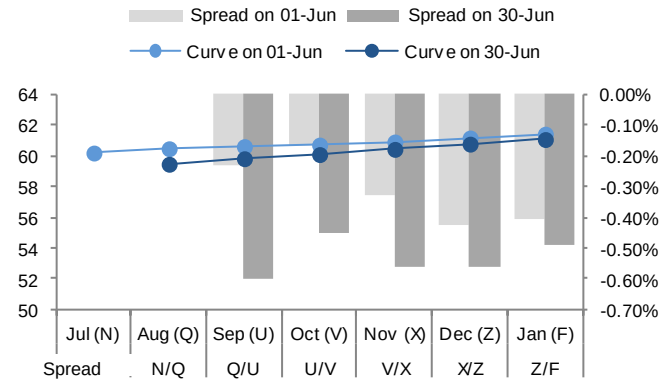


Figure 34 – Brent: price in $/b (LHS), spread as % (RHS)

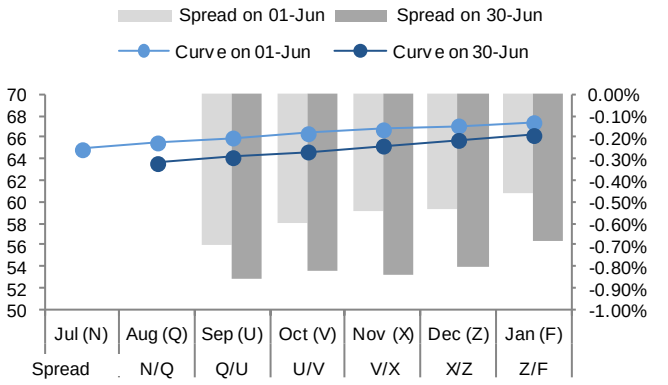


Figure 35 – Gasoline: price in c/g (LHS), spread as % (RHS)

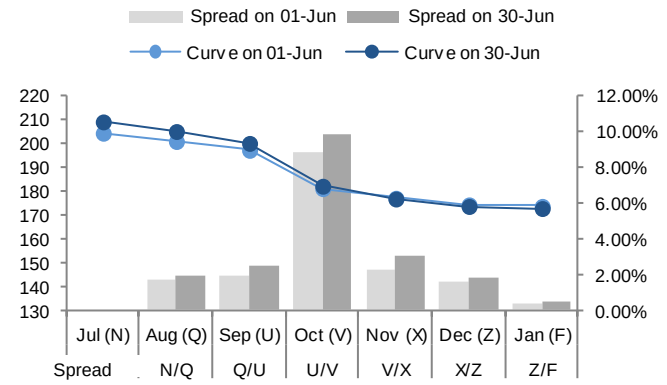


Figure 36 – Heating oil: price in c/g (LHS), spread as % (RHS)

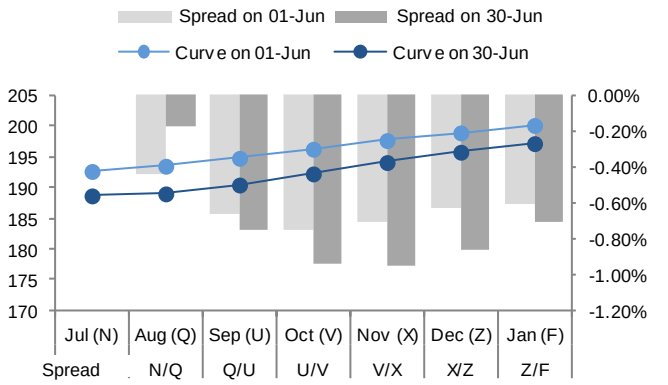


Figure 37 – Gasoil: price in $/t (LHS), spread as % (RHS)

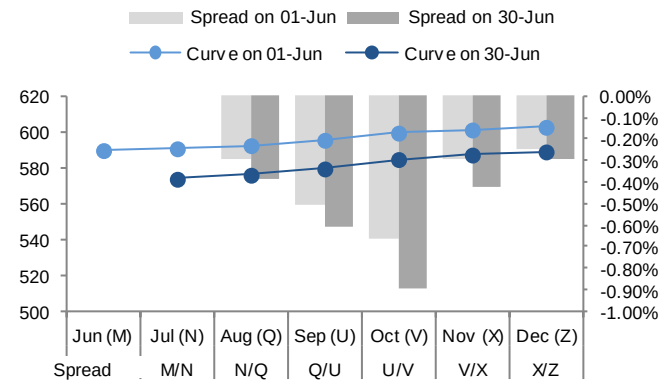
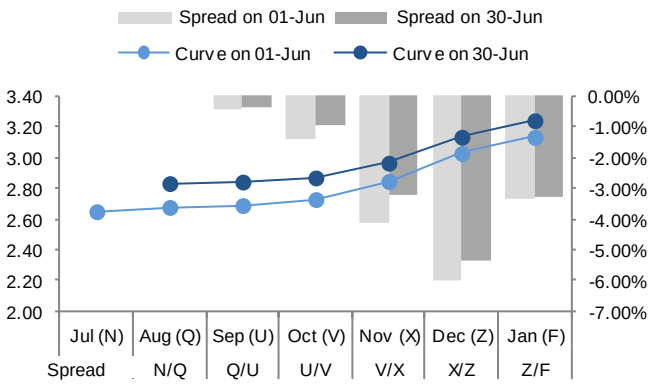


Figure 38 – NG: price in $/MMBTu (LHS), spread as % (RHS)



The line charts (LHS) illustrate the commodity forward price curves. The light blue line illustrates the shape of the curve at the beginning of the month and the dark blue line the shape of the curve at the end of the month – (exact dates shown). The underlying futures contracts at each point on the curve are shown on the top X axis.
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Figure 39 – Copper: price in $/t (LHS), spread as % (RHS)

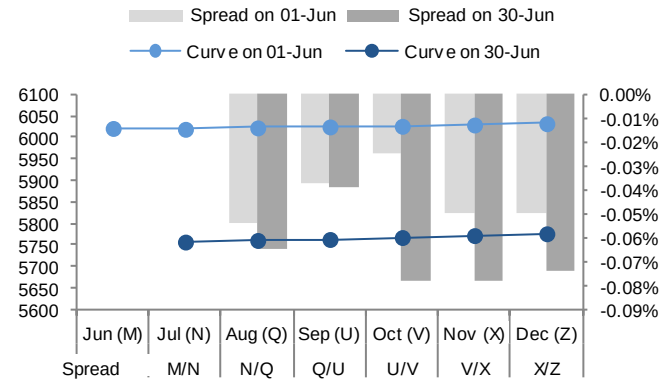

Figure 40 – Aluminium: price in $/t (LHS), spread as % (RHS)

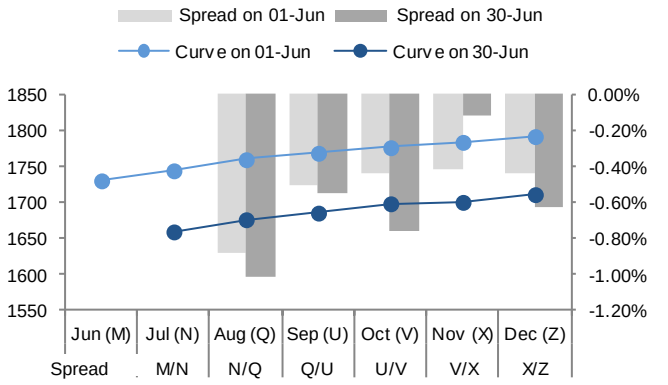

Figure 41 – Zinc: price in $/t (LHS), spread as % (RHS).

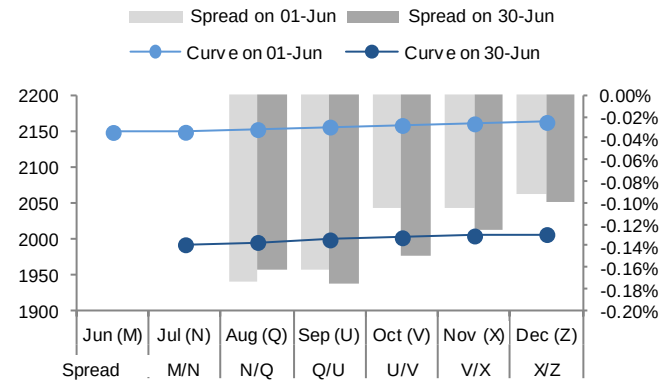

Figure 42 – Lead: price in $/t (LHS), spread as % (RHS).

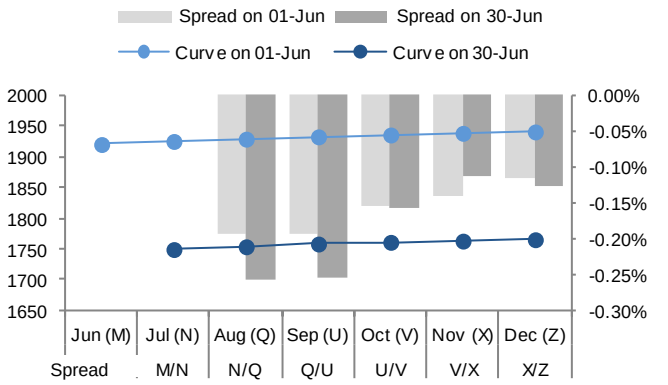

Figure 43 – Nickel: price in $/t (LHS), spread as % (RHS)

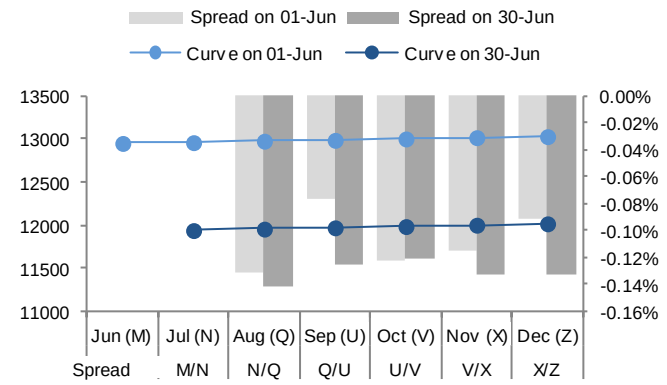

Figure 44 – Silver: price in $/oz (LHS), spread as % (RHS)

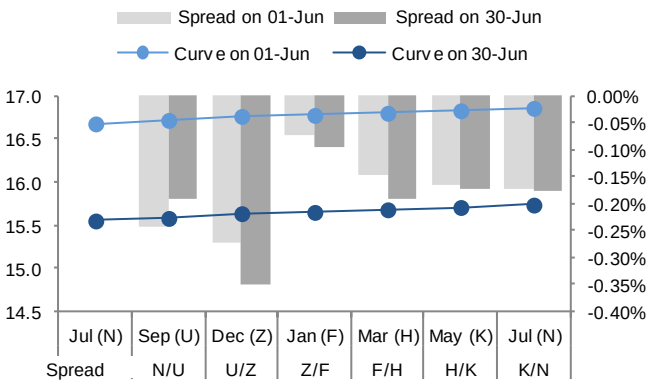

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Figure 45 – Gold: price in $/oz (LHS), spread as % (RHS)

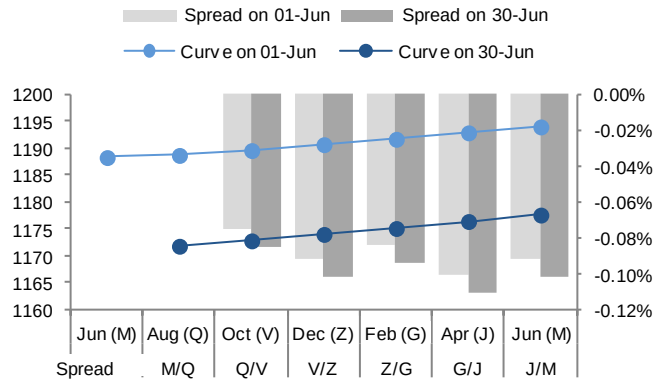

Figure 46 – Corn: price in c/bu (LHS), spread as % (RHS)

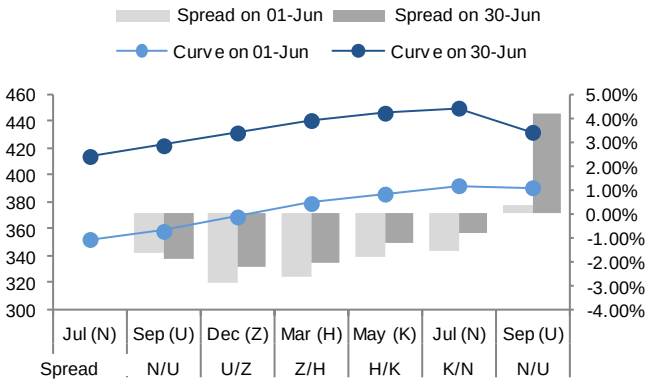

Figure 47 – Wheat: price in c/bu (LHS), spread as % (RHS)

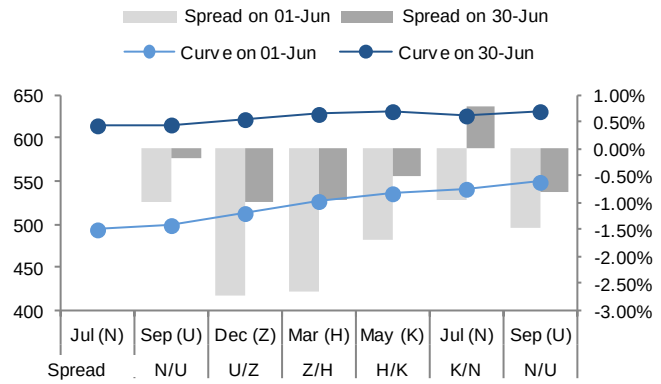

Figure 48 – Soybean: price in c/bu (LHS), spread as % (RHS)

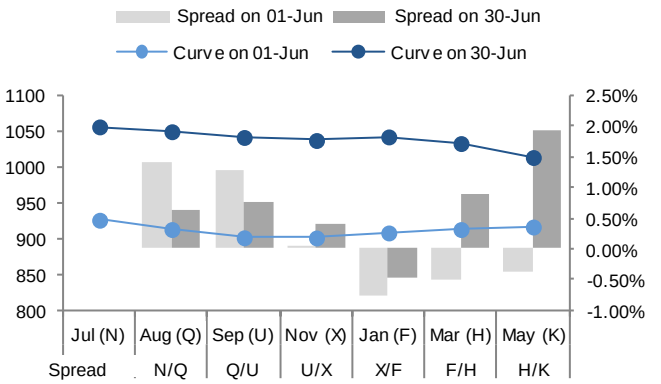

Figure 49 – K. wheat: price in c/bu (LHS), spread as % (RHS)

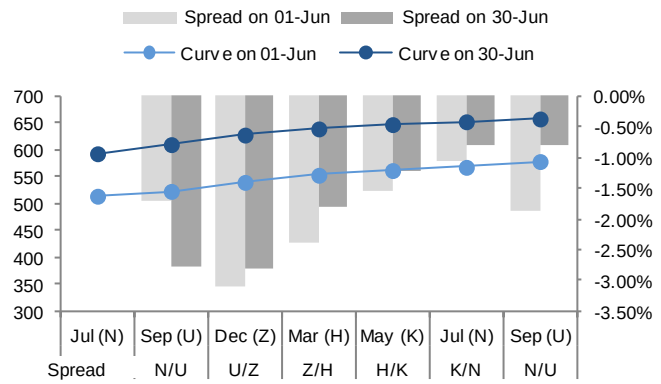

Figure 50 – Live cattle: price in c/lb (LHS), spread as % (RHS)

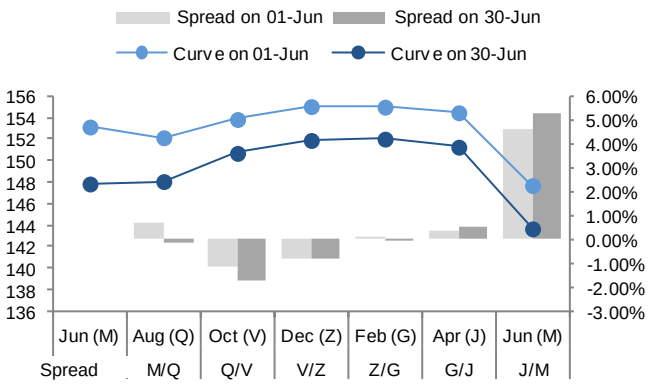

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Figure 51 – F. cattle: price in c/lb (LHS), spread as % (RHS)

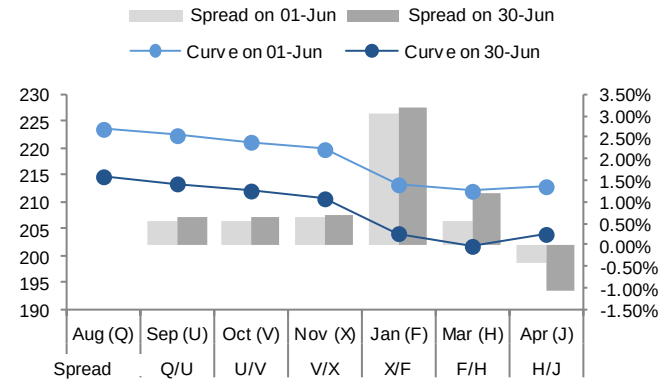


Figure 52 – Lean hogs: price in c/lb (LHS), spread as % (RHS)

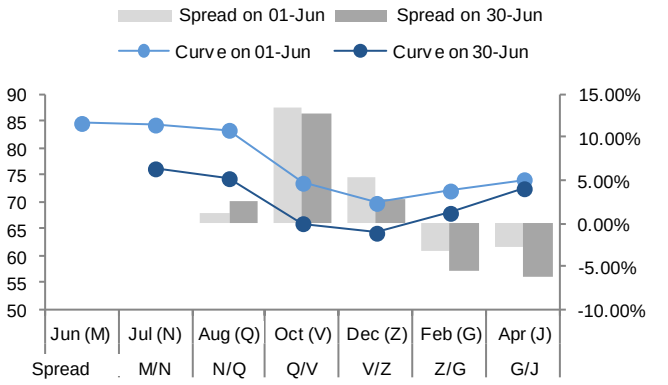


Figure 53 – Coffee: price in c/lb (LHS), spread as % (RHS)

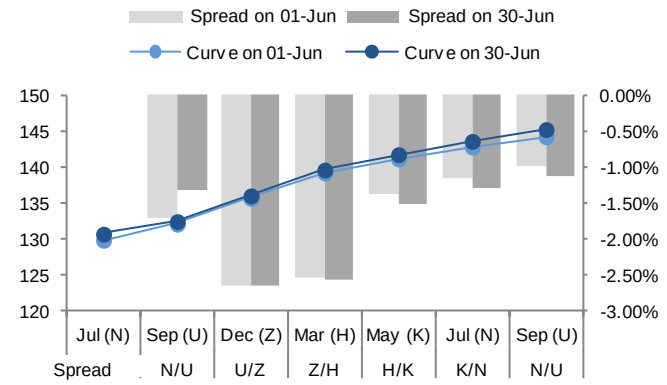


Figure 54 – Sugar: price in c/lb (LHS), spread as % (RHS)

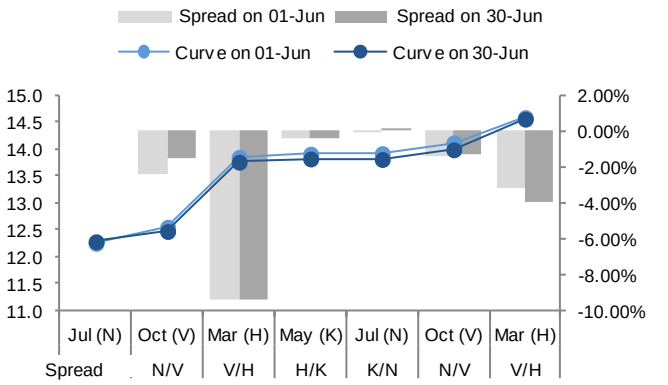


Figure 55 – Cocoa: price in $/t (LHS), spread as % (RHS)

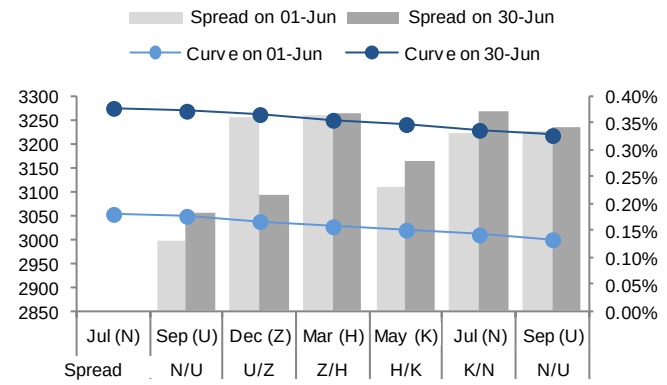
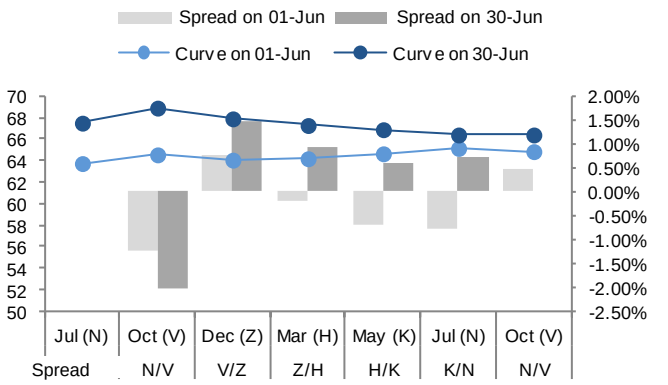


Figure 56 – Cotton: price in c/lb (LHS), spread as % (RHS)



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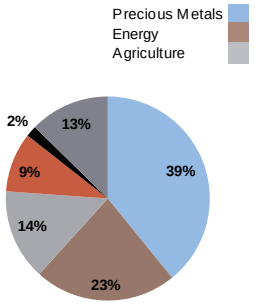
10) Commodity ETP flows

Total ETP AUM decreased by $2.91bn last month, with total ETP AUM currently standing at $102.40 across the 465 commodity ETPs in our model. Of the top 25 largest commodity ETPs, the iShares Diversified Commodity (DJCOMEX GR Equity) ETP had the biggest percentage increase in flows and the ProShares Ultra Bloomberg Crude (UCO US Equity) ETP the biggest percentage decline in flows. Some 32% of the largest ETPs had positive inflows.

Figure 57 – SG ETP universe

Breakdown by number of ETPs



Breakdown by ETP AUM

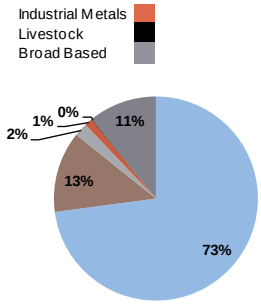


Figure 58 – ETP Analysis: Monthly change in AUM ($m)

ETP sector	Number	Fund Total Assets		Change
		May-15	Jun-15	
ALL ETPs	**465**	**$105,296**	**$102,391**	**-$2,905**
Precious Metal	182	$76,754	$74,724	-$2,030
Energy	105	$13,534	$12,585	-$949
Agriculture	67	$2,225	$2,441	$216
Industrial Metal	44	$1,313	$1,138	-$175
Livestock	8	$115	$111	-$4
Broad Based	59	$11,354	$11,391	$37

Figure 59 – Change in assets under management and flow changes of the top 25 largest commodity ETPs

Rank	Symbol (BB)	Name	Sector	Fund Total Assets		Change in Assets *		Change in Flows **	
				May-15	Jun-15	$m	%	$m	%
1	GLD US Equity	SPDR Gold Shares	Precious Metals	$27,410	$26,763	-$646	-2.4%	-$159	-0.6%
2	IAU US Equity	iShares Gold Trust	Precious Metals	$6,382	$6,312	-$70	-1.10%	$47	0.74%
3	SLV US Equity	iShares Silver Trust	Precious Metals	$5,283	$5,132	-$151	-2.86%	$120	2.34%
4	PHAU LN Equity	ETFS Physical Gold	Precious Metals	$4,308	$4,121	-$187	-4.34%	-$111	-2.60%
5	GBS LN Equity	Gold Bullion Securities Ltd	Precious Metals	$3,255	$3,144	-$111	-3.41%	-$53	-1.66%
6	DBC US Equity	PowerShares DB Commodity Index	Broad Based	$3,174	$3,104	-$71	-2.23%	-$71	-2.23%
7	ZGLD SW Equity	ZKB Gold ETF	Precious Metals	$2,536	$2,476	-$60	-2.35%	-$11	-0.44%
8	USO US Equity	United States Oil Fund LP	Energy	$2,514	$2,321	-$193	-7.69%	-$147	-5.92%
9	4GLD GR Equity	Xetra-Gold	Precious Metals	$2,231	$2,240	$10	0.43%	$38	1.71%
10	SGLD LN Equity	Source Physical Gold P-ETC	Precious Metals	$1,835	$1,813	-$22	-1.22%	$10	0.56%
11	DJP US Equity	iPath Bloomberg Commodity Inde	Broad Based	$1,320	$1,344	$25	1.87%	$23	1.73%
12	ZGLDUS SW Equity	ZKB Gold ETF-A USD	Precious Metals	$1,249	$1,225	-$25	-1.97%	-$2	-0.19%
13	NGPLT SJ Equity	New Gold Platinum ETF	Precious Metals	$1,200	$1,183	-$17	-1.38%	$26	2.21%
14	OIL US Equity	iPath Goldman Sachs Crude Oil	Energy	$1,101	$1,067	-$34	-3.12%	-$10	-0.94%
15	GLD SJ Equity	New Gold Issuer Ltd	Precious Metals	$1,084	$1,029	-$55	-5.09%	-$38	-3.57%
16	UCO US Equity	ProShares Ultra Bloomberg Crud	Energy	$1,082	$939	-$142	-13.15%	-$98	-9.29%
17	DBA US Equity	PowerShares DB Agriculture Fun	Agriculture	$877	$927	$50	5.68%	$13	1.49%
18	SGOL US Equity	ETFS Physical Swiss Gold Share	Precious Metals	$920	$893	-$28	-3.03%	-$12	-1.27%
19	GSG US Equity	iShares S&P GSCI Commodity Ind	Broad Based	$873	$842	-$31	-3.60%	-$22	-2.55%
20	UWTI US Equity	VelocityShares 3x Long Crude E	Energy	$975	$825	-$150	-15.41%	-$86	-9.11%
21	DJCOMEX GR Equity	iShares Diversified Commodity	Broad Based	$738	$794	$56	7.63%	$55	7.48%
22	ZGLDHC SW Equity	ZKB Gold ETF-H CHF	Precious Metals	$794	$784	-$9	-1.17%	$0	0.00%
23	ZSIL SW Equity	ZKB Silver ETF	Precious Metals	$755	$709	-$46	-6.09%	-$2	-0.27%
24	JBGOUA SW Equity	Julius Baer Precious Metals Fu	Precious Metals	$714	$690	-$24	-3.38%	-$11	-1.62%
25	PHAG LN Equity	ETFS Physical Silver	Precious Metals	$723	$681	-$42	-5.84%	-$6	-0.80%
				$73,333	$71,358	-$1,975		-$507	

Source: SG Cross Asset Research/Commodities, Bloomberg.

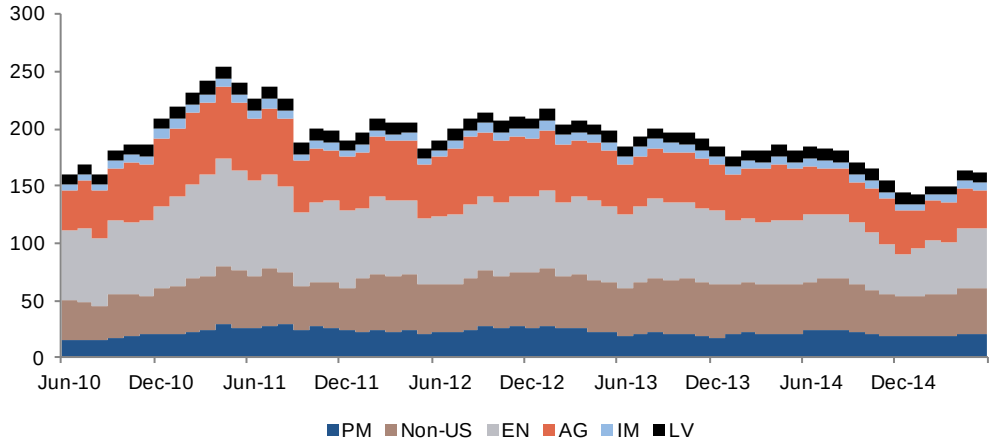
Figure 59 – Fund Total Assets (assets under management or AUM) is calculated as the NAV multiplied by the shares outstanding at the end of each month in USD. Figure 59 – Changes in Assets are driven by both changes in price and fund flows. Dollar values are implied from the change in shares multiplied by average NAV over the month. Percentage change values are calculated from the shares outstanding. ETPs include ETFs (exchange traded funds; a basket of securities), ETCs (exchange traded commodities; open-ended securities) and ETNs (exchange traded notes; debt securities). Our dataset covers all ETP products with AUM in excess on $1m listed on Bloomberg. We take the global listed ETP market into consideration. The size database can change each month with ETP launches, closures and products falling below the threshold AUM. We only take the primary share class for each product into account.

11) Commodity index notional value (CFTC)

Index assets under management (AUM) declined by $2.0bn in May, taking total AUM to $161.5bn.

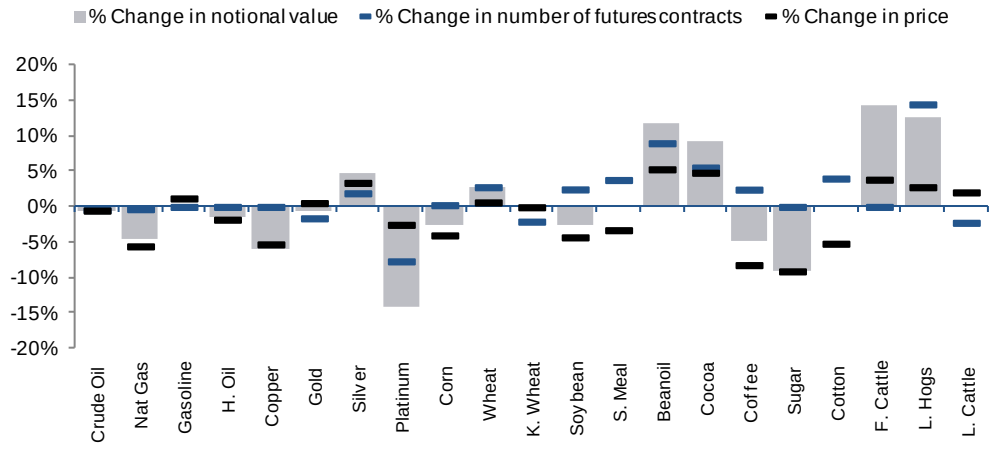
The number of underlying futures contracts – the most accurate indicator of net flows into each market – was largely mixed in May with the decline in overall AUM largely driven by negative price action. Lean hogs, soybean oil and cocoa had the greatest inflows, while platinum, live cattle and gold had the greatest outflows.

Figure 60 - Total net commodity index AUM (USD) broken down by sector ($bn)



Source: SG Cross Asset Research/Commodities, Bloomberg.

Figure 61 - Change in the number of equivalent futures contracts (%) relative to the change in the notional value (%) and price (%) of each index component, as of the last reported month



Source: SG Cross Asset Research/Commodities, Bloomberg.

Chart key: EN = Energy, IM = Industrial Metals, PM = Precious Metals, AG = Agriculture, LV = Livestock, Non-US = Non US markets (e.g. LME)
Source: http://www.cftc.gov/MarketReports/IndexInvestmentData/index.htm
Index data is published by the CFTC on a monthly basis.
Figure 61 illustrates the % change in the number of equivalent futures contracts (the equivalent number of futures and delta adjusted options contracts assuming notional is fully invested) relative to the % change in the notional value and price (%) of each underlying market. Differences are a function of net inflows.
The most recent month-end information is typically added about four to five weeks after the last reported month. Once posted, the CFTC does not generally revise this information to reflect any amended information subsequently received, but it may do so if the changes are extraordinary.

12) CFTC Commitment of Trader (COT) analysis

In this section, we highlight trends and extremes in the Money Manager (MM) and the Producer/Merchant/Processor/User (PMPU) sub-categories of the COT report. For brevity, graphs are only shown for the major commodity markets, but position data (including details on the number of traders) for all markets are detailed in Figure 78. Extreme MM positions indicate a high degree of similarity in speculative positioning and can often lead to sudden price reversals as positions unwind. Both extremes and trends in the PMPU positioning are often indicative of future price dynamics, as it is widely accepted that the PMPU category possesses an informational edge. By plotting changes in the long and short positions independently, changes in the overall net positioning become clearer, and when reconciled with price, often appear more sensible. Comments on any trends or extremes are highlighted above each chart below. It is important to note that any comments might conflict with our house views.

Figure 62 – Crude oil MM positions
Short covering pulls shorts back from record levels, while longs chop steadily higher.

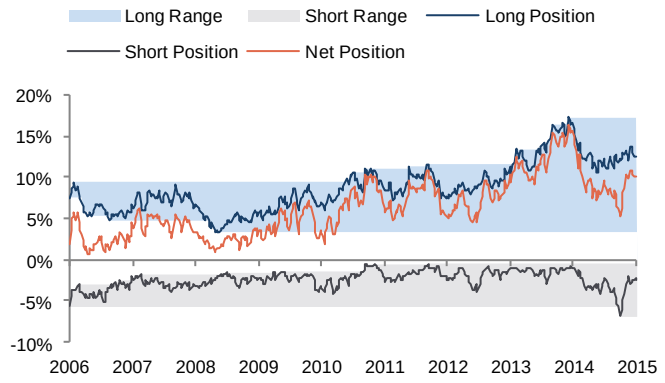


Figure 63 – Crude oil PMPU positions
Net position continues to drift lower (more short) as long liquidations broadly stabilise and shorts drift sideways to lower.

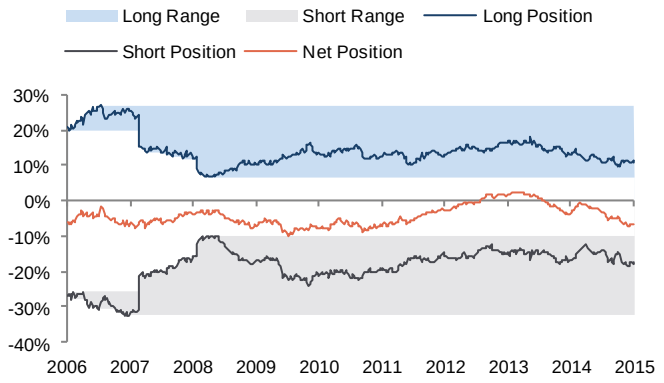


Figure 64 – Natural gas MM positions
Longs drift sideways and shorts pull back marginally from record levels. Overall, net position continues lower (more short).

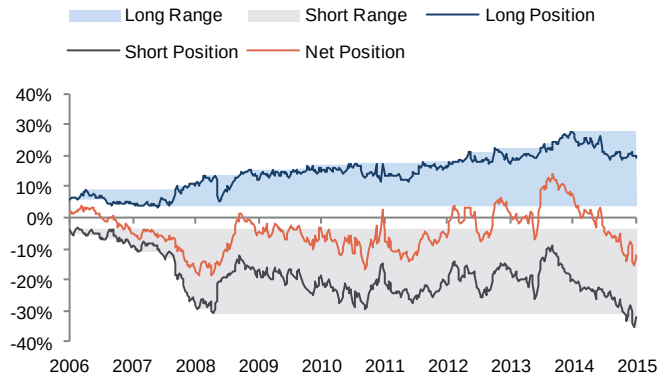
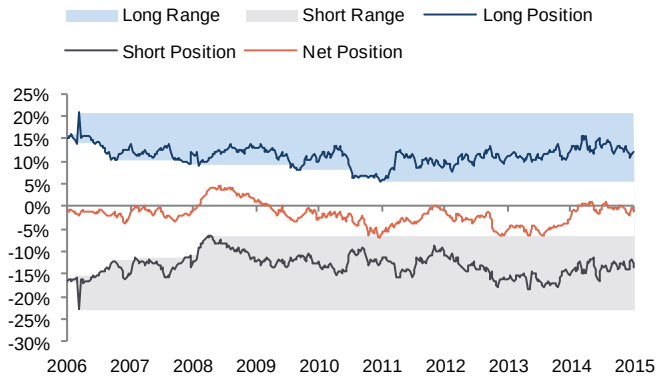


Figure 65 – Natural gas PMPU positions
Net position reverses to flat, with no clear direction from either longs or shorts.



Data is as of the most recent COT report (Figure 78) with graphs extending back to the inception of the disaggregated data (June 2006). The shaded regions in each chart show the historical range of the individual long (light blue) and short (light grey) positions. The lines on each chart show the actual historical long (dark blue) and short (dark grey) positions, with the net position shown in orange. All positions are expressed as a percentage of open interest. Data includes both futures and options (delta adjusted).
Producer/Merchant/Processor/User is an entity that predominantly engages in the production, processing, packing or handling of a physical commodity and uses the futures markets to manage or hedge risks associated with those activities. **Money Manager** for the purpose of this report is a registered commodity trading advisor (CTA); a registered commodity pool operator (CPO); or an unregistered fund identified by CFTC. These traders are engaged in managing and conducting organised futures trading on behalf of clients. Source: SG Cross Asset Research/Commodities, Bloomberg.

Figure 66 – Corn MM positions
Short position turns marginally higher, which combined with an increase in longs, pulls net position higher (less short)

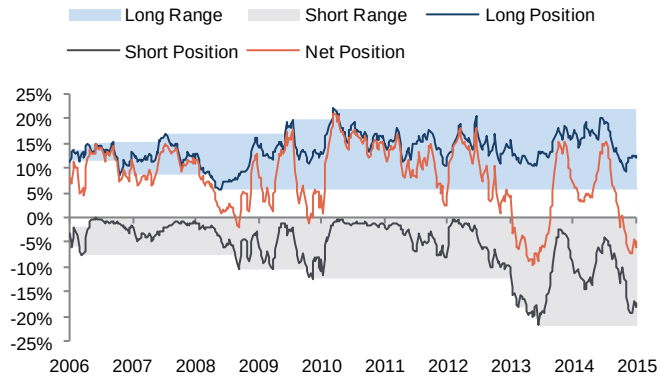


Figure 67 – Corn PMPU positions
Shorts consolidate near record lows, leading to similar consolidation in net position as longs stabilise.

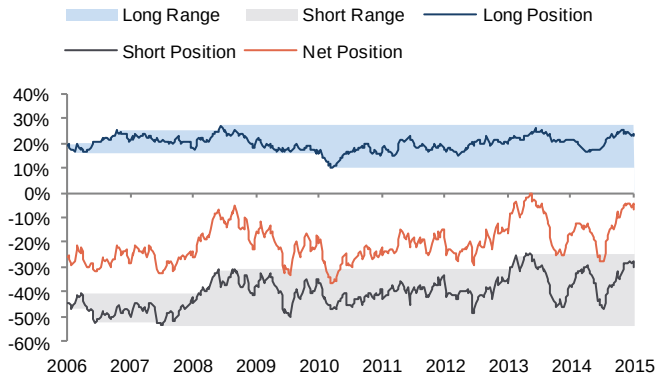


Figure 68 – Wheat MM positions
Short covering drives net position higher (less short) as longs rebound off record lows.

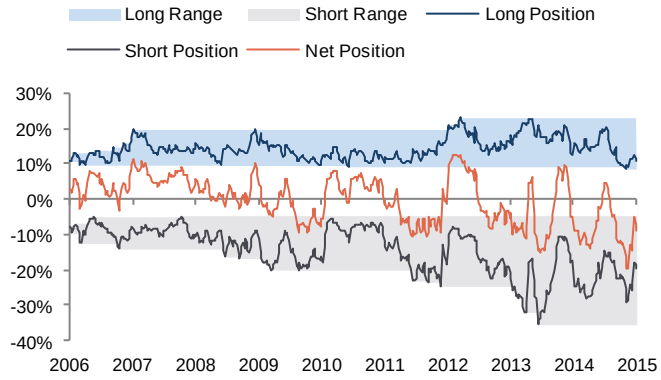


Figure 69 – Wheat PMPU positions
Net position turns lower (more short) as shorts increase from record lows and longs turn marginally lower.

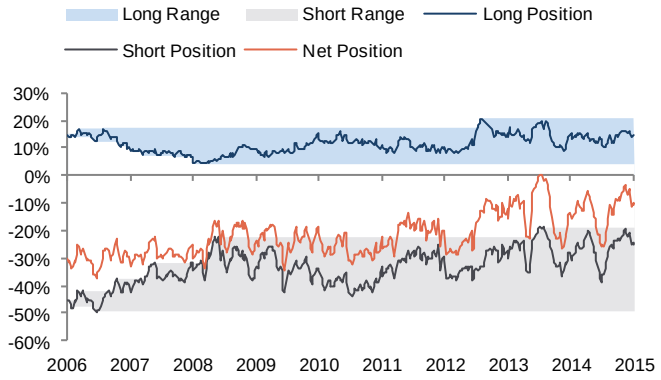


Figure 70 – Soybean MM positions
Short covering drives net position swiftly higher (less short). Longs stabilise at record lows.

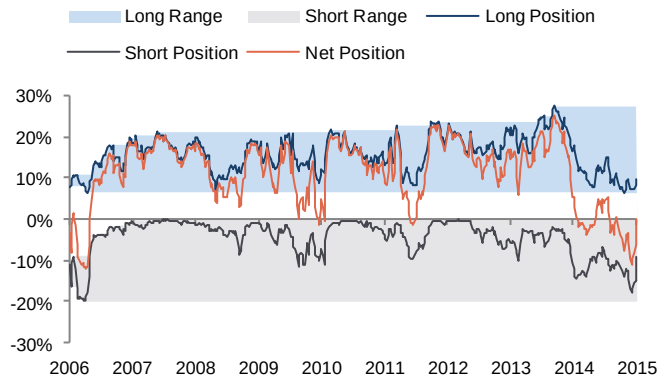
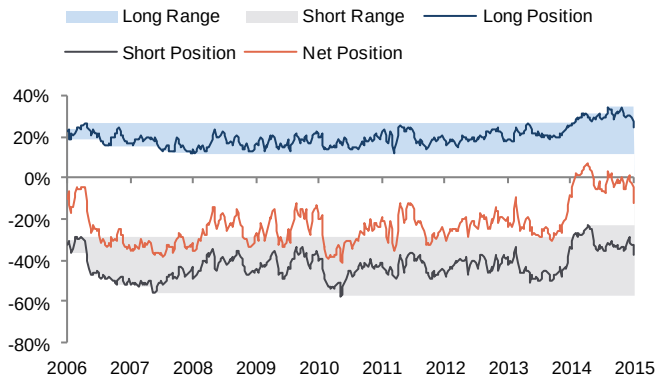


Figure 71 – Soybean PMPU positions
Long liquidations form record highs, combined with fresh shorts, drive net position short.



Data is as of the most recent COT report (Figure 78) with graphs extending back to the inception of the disaggregated data (June 2006). The shaded regions in each chart show the historical range of the individual long (light blue) and short (light grey) positions. The lines on each chart show the actual historical long (dark blue) and short (dark grey) positions, with the net position shown in orange. All positions are expressed as a percentage of open interest. Data includes both futures and options (delta adjusted).
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Figure 72 – Gold MM positions
Short positions hit record levels but no clear direction from longs. Net position remains long.

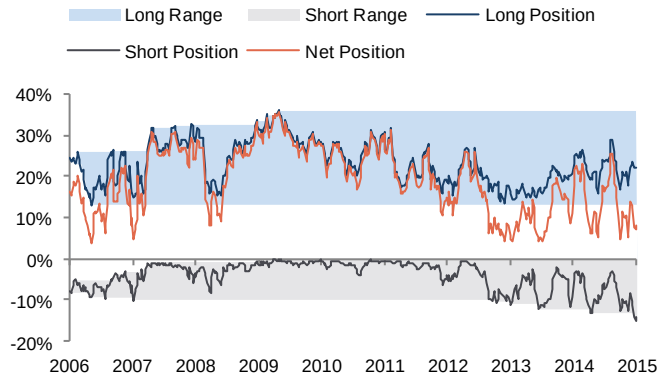


Figure 73 – Gold PMPU positions
Long positions reach record lows as shorts consolidate at recent lows. Net position drifts lower (more short).

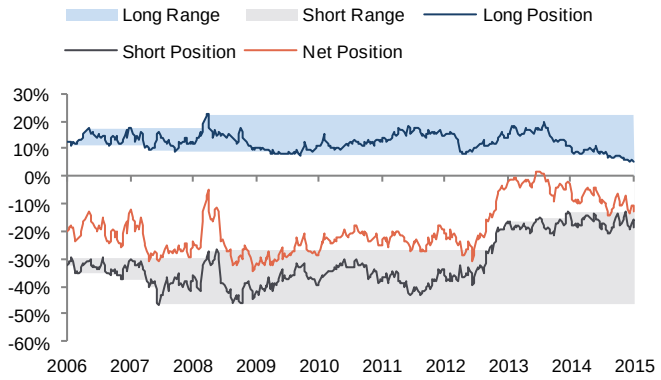


Figure 74 – Copper MM positions
Steep decline in longs combined with fresh shorts flip the net position into negative territory. Overall direction remains volatile.

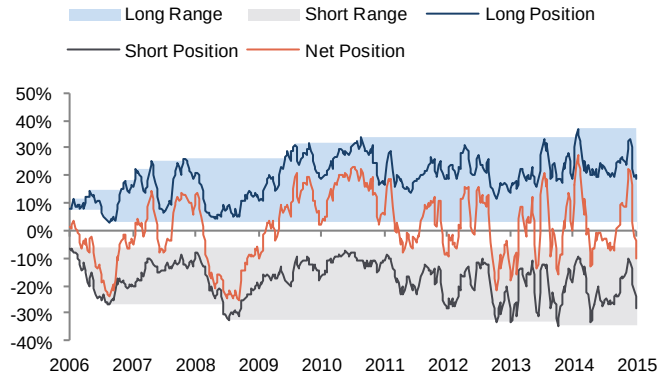


Figure 75 – Copper PMPU positions
Jump in longs and short covering pull net position higher (less short). Overall direction remains volatile.

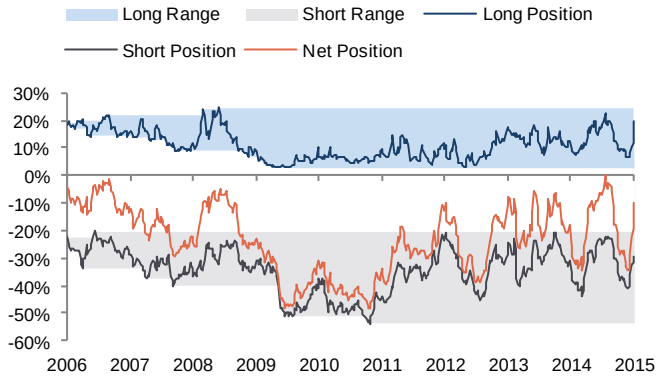


Figure 76 – Sugar MM positions
Broadly declining longs and fresh shorts (back to record level) pull net position lower (more short) towards record lows.

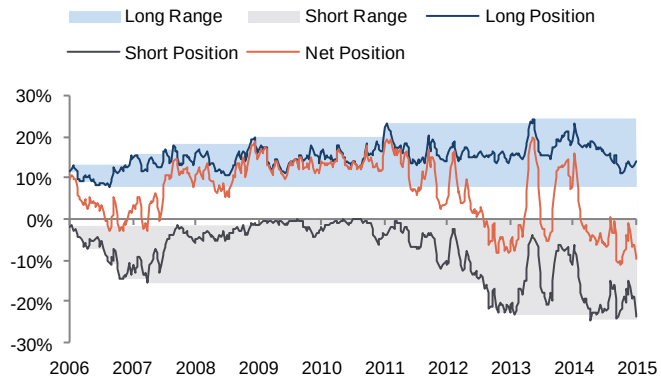
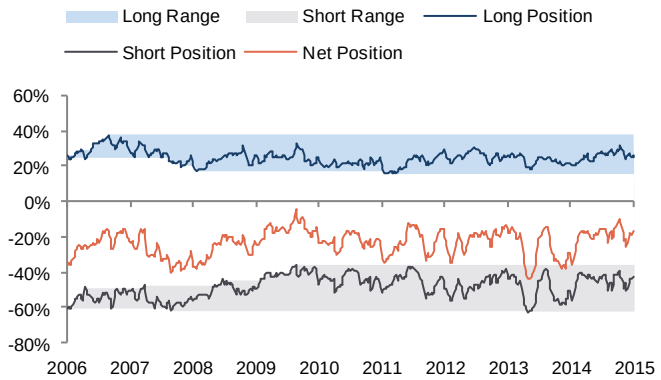


Figure 77 – Sugar PMPU positions
Net position remains short with no clear trend as longs and shorts drift sideways.



Data is as of the most recent COT report (Figure 78) with graphs extending back to the inception of the disaggregated data (June 2006). The shaded regions in each chart show the historical range of the individual long (light blue) and short (light grey) positions. The lines on each chart show the actual historical long (dark blue) and short (dark grey) positions, with the net position shown in orange. All positions are expressed as a percentage of open interest. Data includes both futures and options (delta adjusted).
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CFTC Commitment of Trader (COT) position and trader analysis

Columns 7 and 8 show the net futures position from columns 3 and 5 (positive [negative] values in dark [light] green) expressed as a percentage of the total open interest in column 1. The intensity of the red shading illustrates the largest positions. Columns 4 and 6 show the net number of traders that are holding long (short) positions in dark (light) green. Column 9 and 10 show the changes in options positions since the previous month (delta adjusted), and columns 11 and 12 show the change in the number of futures contracts with positive (negative) changes shown in dark (light) green since the previous month.

Changes in the net number of traders that are in the opposite direction to the change in the net futures position are highlighted in blue in columns 13 and 14 and are often an early sign of rising uncertainty in the market and can lead to a reversal in prices. Changes in the number of traders are typically more behavioural in nature and indicative of the sentiment in the market. They are also largely independent of capital inflows and are not skewed towards any single market participant.

Figure 78 – CFTC analysis. Month-end net positions and changes from the previous month

Commodity	Total Open Interest (Futures)	Total Number of Traders	Prod./ Merch./ Proc./ User (Futures)	Prod./ Merch./ Proc./ User (Traders)	Money Mngr (Futures)	Money Mngr (Traders)	Prod./ Merch./ Proc./ User (% of OI)	Money Mngr (% of OI)	Prod./ Merch./ Proc./ User (Options)	Money Mngr (Options)	Prod./ Merch./ Proc./ User (Futures)	Money Mngr (Futures)	Prod./ Merch./ Proc./ User (Traders)	Money Mngr (Traders)
CBOT Wheat	433941	375	-55884	1	-52484	-1	12.88%	12.09%	-8164	-2392	-26020	33011	5	20
KCB Wheat	171911	198	-6320	-6	-2478	-13	3.68%	1.44%	-1604	419	5132	-6776	-4	-6
MGE Wheat	59293	84	2916	6	-2886	-3	4.92%	4.87%	125	0	3910	-1644	-3	2
CBOT Soybean	701538	586	-102639	-44	4785	-9	14.63%	0.68%	-22783	11078	-108776	94714	-1	24
CBOT Corn	1427005	705	-145598	-22	-122968	-30	10.20%	8.62%	-16286	10483	-41337	35438	16	17
CBOT Soy. oil	400965	318	-149344	6	20119	10	37.25%	5.02%	-649	-1527	-3233	-8453	12	6
CBOT Soy. meal	411909	286	-124062	-13	27178	29	30.12%	6.60%	-2254	-119	-47897	35843	-17	37
CME F. cattle	46704	222	-6595	-29	9000	31	14.12%	19.27%	316	93	-1343	185	8	7
CME Lean hogs	219163	294	-52065	-18	14434	-13	23.76%	6.59%	1963	-1800	6655	-9299	-8	-13
CME Live cattle	276256	412	-126321	-58	84565	54	45.73%	30.61%	5271	271	12942	-6986	7	2
NYM Crude oil	1650025	349	-164086	-25	235807	21	9.94%	14.29%	3121	4354	9869	-15208	-8	6
NYM Gasoline	398399	223	-103906	-15	19681	34	26.08%	4.94%	32	-246	-1650	-3469	5	10
NYM NG	1048052	283	-15044	7	-140258	-25	1.44%	13.38%	-459	835	7741	-45842	6	-24
ICE Brent Crude	1776527		-451665	-14	193762	1	25.42%	10.91%	2532	-1499	30407	-29054	0	-12
NYM Heating oil	371685	186	-99298	-6	-1243	11	26.72%	0.33%	-130	361	-10587	2729	3	7
ICE Gasoil	825768		-177065	-7	53799	10	21.44%	6.52%	-260	7926	9445	-22791	7	-11
CMX Gold	430978	315	-75535	-4	39916	13	17.53%	9.26%	-2301	974	-1102	-26328	-4	-2
CMX Silver	200273	222	-21451	1	-7169	-4	10.71%	3.58%	-1324	3118	12661	-49767	9	-27
CMX Platinum	84121	248	-18516	6	6578	-5	22.01%	7.82%	-82	-295	4197	-11312	7	-20
CMX Palladium	34821	192	-8448	-1	10933	7	24.26%	31.40%	76	-563	5343	-4701	5	-11
CMX Copper	184635	272	-18101	-7	-18484	-22	9.80%	10.01%	73	-37	39878	-46761	9	-37
ICE Cotton	163466	243	-89078	-25	25799	10	54.49%	15.78%	423	-429	7065	1740	-3	-5
ICE Coffee	181352	364	-9815	11	-13521	-13	5.41%	7.46%	647	611	-6760	5644	-4	18
ICE Sugar	865764	261	-174493	5	-92993	-23	20.15%	10.74%	-6623	7300	32582	-32444	4	-7
ICE FCOJ	13765	69	797	13	-3015	-10	5.79%	21.90%	-258	55	-2413	1810	0	4
ICE Cocoa	215213	230	-89605	-5	47052	71	41.64%	21.86%	5327	-5211	-10454	6163	0	18
LIFFE Cocoa	287342	167	-66375	-8	46918	47	23.10%	16.33%	-564	4802	-7531	4707	1	1
LIFFE Coffee	129493	143	6865	3	17517	-6	5.30%	13.53%	-1914	983	-13299	8639	3	17

Source: SG Cross Asset Research/Commodities, Bloomberg.

Producer/Merchant/Processor/User is an entity that predominantly engages in the production, processing, packing or handling of a physical commodity and uses the futures markets to manage or hedge risks associated with those activities. **Swap Dealer** is an entity that deals primarily in swaps for a commodity and uses the futures markets to manage or hedge the risk associated with those swaps transactions. The swap dealer's counterparties may be speculative traders, like hedge funds, or traditional commercial clients that are managing risk arising from their dealings in the physical commodity. **Money Manager** for the purpose of this report is a registered commodity trading advisor (CTA); a registered commodity pool operator (CPO); or an unregistered fund identified by CFTC. These traders are engaged in managing and conducting organised futures trading on behalf of clients.

13) Short-term price forecasts vs forward prices*

	Unit	Latest**	Q3-15	vs. fwd	Q4-15	vs. fwd	Q1-16	vs. fwd	Q2-16	vs. fwd
CRUDE OIL										
Nymex WTI	$/b	59.5	60.0	0%	60.0	-1%	610	-1%	59.0	-5%
LLS	$/b	62.1	63.0	1%	63.0	-1%	64.0	0%	62.0	-4%
ICE Brent	$/b	63.6	65.0	1%	65.0	-1%	66.0	-2%	64.0	-6%
Dubai	$/b	62.6	62.5	0%	62.5	-1%	63.5	-1%	615	-5%
REFINED PRODUCTS										
Nymex Heating oil	c/g	189	193	1%	199	2%	201	2%	190	-3%
Nymex Gasoline	c/g	205	186	-5%	169	-3%	183	1%	190	-2%
ICE Gasoil	$/t	574	581	0%	589	0%	596	0%	574	-5%
Fuel Oil 3.5% Barges FOB Rotterdam	$/t	322	337	4%	337	3%	343	2%	330	-3%
Gasoil 0.05% Singapore	$/b	72.1	78.5	8%	79.5	7%	80.5	7%	77.5	1%
Fuel Oil 180 CST Singapore	$/t	351	367	3%	377	4%	383	3%	360	-4%
Fuel Oil 380 CST Singapore	$/t	341	361	5%	369	4%	375	4%	354	-3%
NATURAL GAS										
Nymex Natural Gas	$/MMBtu	2.83	2.86	1%	2.87	-4%	3.10	-4%	3.15	3%
ICE NBP	p/th	42	43	2%	50	8%	50	2%	46	5%
COAL										
Coal CIF ARA	$/t	60.3	65.4	8%	68.3	13%	68.1	12%	72.9	20%
Coal FOB Richards Bay	$/t	59.9	613	2%	613	2%	62.3	4%	66.7	12%
Coal FOB Newcastle	$/t	58.7	59.2	1%	60.8	4%	614	5%	65.3	11%
POWER										
German Power	€/MWh	315	316	0%	35.5	13%	35.5	12%	32.4	2%
UK Power	£/MWh	44.2	43.7	-1%	47.8	8%	48.0	7%	47.6	6%
French Power	€/MWh	38.4	33.8	-12%	47.7	24%	48.4	26%	34.2	-11%
CO2										
EUA	€/t CO2	7.5	7.6	2%	8.0	7%	8.2	9%	8.4	11%
AGRICULTURE										
CBOT Corn	c/bu	414	380	-10%	395	-9%	416	-6%	402	-10%
CBOT Wheat	c/bu	615	518	-16%	516	-17%	498	-21%	466	-26%
KCBT Wheat	c/bu	593	548	-10%	546	-13%	527	-18%	493	-24%
CBOT Soybean	c/bu	1056	892	-15%	943	-9%	990	-4%	976	-4%
CBOT Soybean Oil	c/lb	33.6	30.9	-8%	31.2	-8%	32.0	-6%	30.3	-11%
CBOT Soybean Meal	$/t	360	296	-16%	327	-5%	339	0%	357	7%
ICE Raw Sugar	c/lb	12.5	13.5	8%	14.0	2%	14.5	5%	14.2	3%
Euronext White Sugar	$/t	370	379	4%	391	7%	402	9%	396	6%
Coffee (Arabica-NY)	c/lb	131	140	5%	147	8%	153	9%	153	7%
ICE Cotton	c/lb	67.5	62.3	-9%	66.6	-2%	716	7%	62.6	-0.1
LIVESTOCK (CME)										
CME Feeder Cattle	c/lb	215	188	-12%	187	-10%	182	-10%	172	-15%
CME Live Cattle	c/lb	148	155	4%	150	-1%	154	1%	148	1%
CME Lean Hogs	c/lb	76	80	14%	74	14%	70	0%	79	2%
PRECIOUS METALS										
Gold	$/oz	1173	1150	-2%	1050	-11%	1025	-13%	1000	-15%
Silver	$/oz	15.6	15.0	-4%	14.0	-11%	14.0	-11%	14.0	-11%
Palladium	$/oz	674	790	19%	850	26%	875	30%	900	33%
Platinum	$/oz	1079	1180	11%	1200	11%	1225	13%	1250	15%
BASE METALS (LME)										
LME Aluminium	$/t	1659	1800	8%	1835	8%	1800	5%	1800	5%
LME Copper	$/t	5 757	5 862	2%	5 800	0%	5 500	-5%	5 800	0%
LME Zinc	$/t	1992	2 300	15%	2 570	28%	2 600	29%	2 700	34%
LME Lead	$/t	1749	1825	4%	1875	6%	1925	9%	1925	8%
LME Nickel	$/t	11940	15 000	25%	17 370	45%	19 000	58%	21000	74%
LME Tin	$/t	13 917	17 000	22%	18 642	34%	19 000	36%	20 000	43%

*Price forecast are quarterly averages for either the first-nearby future/forward or spot except for coal, power (next year calendar) & carbon (Dec contract)
The percentage comparison with forward prices is measuring SG's forecast relative to the relevant quarter's swap price.
**as of 30 June 2015
Source: SG Cross Asset Research

14) Long-term price forecasts vs forward prices*

	Unit	2015	vs. fwd	2016	vs. fwd	2017	vs. fwd	2018	vs. fwd	2019	vs. fwd	2020	vs. fwd
CRUDE OIL													
Nymex WTI	$/b	56.6	-6%	60.0	-3%	65.0	2%	70.0	7%	70.0	5%	70.0	4%
LLS	$/b	60.5	-4%	63.0	-3%	68.0	3%	73.0	8%	73.0	6%	73.0	4%
ICE Brent	$/b	62.3	-4%	65.0	-5%	70.0	0%	75.0	5%	75.0	3%	75.0	2%
Dubai	$/b	59.8	-4%	62.5	-4%	67.5	-1%	72.5	4%	72.5	2%	72.5	0%
REFINED PRODUCTS													
Nymex Heating oil	c/g	191	-1%	196	-2%	208	2%	220	6%	220	5%	220	4%
Nymex Gasoline	c/g	177	-6%	182	-1%	194	5%	206	10%	206	8%	206	7%
ICE Gasoil	$/t	571	-2%	585	-4%	620	-2%	656	1%	654	-2%	652	-4%
Fuel Oil 3.5% Barges FOB Rotterdam	$/t	320	-1%	337	-2%	362	0%	387	3%	387	-1%	387	-4%
Gasoil 0.05% Singapore	$/b	76.9	4%	79.0	2%	83.8	4%	88.5	7%	88.3	7%	88.0	5%
Fuel Oil 180 CST Singapore	$/t	358	-1%	372	-2%	397	0%	422	3%	422	-1%	422	-5%
Fuel Oil 380 CST Singapore	$/t	349	0%	365	-1%	390	1%	415	3%	415	-1%	415	-5%
NATURAL GAS													
Nymex Natural Gas	$/MMBtu	2.80	-4%	3.33	5%	4.06	21%	4.18	21%	4.25	21%	4.50	25%
ICE NBP	p/th	46	8%	49	7%	48	1%	48	0%	48	-3%	47	-6%
COAL													
Coal CIF ARA	$/t	64.4	7%	64.2	6%	66.1	110%	67.7	112%	68.3	n/a	69.3	n/a
Coal FOB Richards Bay	$/t	59.7	0%	60.3	1%	62.6	n/a	64.0	n/a	65.0	n/a	66.0	n/a
Coal FOB Newcastle	$/t	58.8	0%	58.6	0%	61.2	60%	63.2	n/a	64.6	n/a	65.6	n/a
POWER													
German Power	€/MWh	32.9	4%	32.7	3%	32.6	4%	33.6	5%	35.2	n/a	35.3	n/a
UK Power	£/MWh	45.7	3%	45.7	2%	47.1	n/a	47.9	n/a	49.3	n/a	49.3	n/a
French Power	€/MWh	40.7	6%	40.1	5%	40.5	6%	41.8	n/a	42.9	n/a	43.1	n/a
CO2													
EUA	€/t CO2	8.3	12%	8.5	13%	8.7	14%	9.0	16%	9.3	17%	9.6	17%
AGRICULTURE													
CBOT Corn	c/bu	383	-9%	398	-9%	417	-4%	424	-1%	399	-4%	403	-4%
CBOT Wheat	c/bu	513	-15%	525	-17%	546	-12%	547	-10%	523	-15%	528	-14%
KCBT Wheat	c/bu	542	-11%	555	-15%	578	-13%	579	-11%	553	-15%	559	-14%
CBOT Soybean	c/bu	952	-8%	982	-2%	999	2%	1028	7%	1028	8%	1038	8%
CBOT Soybean Oil	c/lb	31.4	-7%	31.6	-7%	31.6	-6%	30.1	-11%	29.7	-12%	30.0	-11%
CBOT Soybean Meal	$/t	319	-7%	324	-2%	340	5%	362	11%	362	11%	365	12%
ICE Raw Sugar	c/lb	13.7	6%	14.4	3%	16.1	9%	16.9	13%	15.6	4%	15.7	5%
Euronext White Sugar	$/t	382	5%	376	0%	415	7%	433	12%	404	5%	408	6%
Coffee (Arabica-NY)	c/lb	144	7%	152	6%	144	-6%	147	-7%	145	-8%	147	-8%
ICE Cotton	c/lb	64.0	-6%	68.2	2%	74.5	12%	81.5	23%	85.5	28%	86.3	29%
LIVESTOCK (CME)													
CME Feeder Cattle	c/lb	198	-7%	178	-12%	185	-12%	190	-10%	186	-12%	188	-11%
CME Live Cattle	c/lb	153	2%	149	2%	154	7%	159	11%	158	11%	159	12%
CME Lean Hogs	c/lb	81	17%	78	10%	76	8%	72	-6%	64	-16%	65	-15%
PRECIOUS METALS													
Gold	$/oz	1155	-2%	1000	-15%	950	-20%	900	-26%	850	-31%	800	-37%
Silver	$/oz	16.0	2%	14.0	-11%	14.0	-12%	13.0	-20%	13.0	-22%	12.0	-30%
Palladium	$/oz	800	18%	910	34%	950	38%	1000	43%	1000	39%	1100	50%
Platinum	$/oz	1180	10%	1250	15%	1275	16%	1300	16%	1325	15%	1350	13%
BASE METALS (LME)													
LME Aluminium	$/t	1815	8%	1775	2%	1850	2%	1900	1%	1950	1%	2 000	1%
LME Copper	$/t	5 900	2%	5 950	3%	6 200	6%	6 500	11%	7 000	19%	7 500	28%
LME Zinc	$/t	2 300	14%	2 675	33%	2 700	33%	2 800	38%	2 900	43%	3 000	48%
LME Lead	$/t	1865	5%	1925	8%	2 100	17%	2 200	21%	2 300	26%	2 400	31%
LME Nickel	$/t	15 000	24%	22 000	82%	23 000	88%	24 000	96%	23 000	88%	22 000	79%
LME Tin	$/t	17 500	24%	20 000	43%	22 000	57%	23 000	65%	24 000	72%	25 000	79%
IRON ORE & STEEL													
HRC Carbon Steel**	$/t	459	n/a	469	n/a	479	n/a	482	n/a	485	n/a	488	n/a
Stainless Steel CRC 304**	€/t	2 450	n/a	2 761	n/a	2 843	n/a	2 843	n/a	2 786	n/a	2 786	n/a
Metallurgical coal**	$/t	107	n/a	105	n/a	110	n/a	110	n/a	110	n/a	110	n/a
Iron Ore**	$/t	58	n/a	55	n/a	55	n/a	55	n/a	55	n/a	55	n/a

*Price forecasts are annual averages for either the first-nearby future/forward or spot, except for coal, power (next year calendar) & carbon (Dec contract).
The percentage comparison with forward prices is measuring SG's forecast relative to the relevant calendar year's swap price.
Source: SG Cross Asset Research

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