

Global

Precious Metals

Commodities Research

Gold cycle set to turn on improving US recovery

Is this a top-call for the secular bull market in gold?

Gold prices range bound in 2012 despite perfect set up

Gold prices have remained range bound in 2012, despite a steady decline in US real rates and rise in central bank holdings that would ordinarily be supportive. To understand this dislocation we expand our modeling of gold prices to include the impact of the US Federal Reserve easing. We find that gold prices “look through” easing that does not require Fed balance sheet expansion –like Operation Twist – increasing instead on announcements of easing through **expansion on the Fed’s balance sheet.**

Improving US growth outlook offsets further Fed easing

Our economists forecast that the US economic recovery will slow early in 2013 before reaccelerating in the second half. They also expect additional expansion of the Fed’s balance sheet. Near term, the combination of more easing and weaker growth should prove supportive to gold prices. Medium term however, the gold outlook is caught between the opposing forces of more Fed easing and a gradual increase in US real rates on better US economic growth. Our expanded modeling suggests that the improving US growth outlook will outweigh further Fed balance sheet expansion and that the cycle in gold prices will likely turn in 2013. Risks to our growth outlook remain elevated however, especially given the uncertainty around the fiscal cliff, making calling the peak in gold prices a difficult exercise.

Gold cycle likely to turn in 2013; lowering gold price forecasts

We lower our 3-, 6- and 12-mo gold price forecasts to \$1,825/toz, \$1,805/toz and \$1,800/toz and introduce a \$1,750/toz 2014 forecast. While we see potential for higher gold prices in early 2013, we see growing downside risks. As a result, we find that the risk-reward of holding a long gold position is diminishing and recommend rolling our long Dec-12 COMEX gold position into a long Apr-13 position and selling a \$1,850/toz call to finance a \$1,575/toz put to protect against a decline in gold prices. Since 2009, this strategy achieved a better Sharpe ratio than a long gold position.

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Gold cycle set to turn on improving US recovery

Although up year-to-date, gold prices have remained range bound since October 2011, gyrating widely between lows near \$1,550/toz and highs of \$1,800/toz. This trading pattern stands in sharp contrast to: (1) the remarkable trend higher in gold prices that occurred over the previous decade, (2) continued support from what we view as the two drivers to higher gold prices: the steady decline in US real rates to new record lows and increase in central bank gold holdings, and (3) the US Federal Reserve embarking on additional quantitative easing through Operation Twist and QE3. The breakdown of these trends raises important questions for the outlook of gold prices: what has been the impact of QE on gold prices? Has the relationship between gold and real rates ended? Is the recent strong correlation between gold prices and the US dollar the new normal? And most importantly, is the multi-year rally in gold prices ending?

To answer these questions, we expand our modeling of USD denominated gold prices on US real interest rates and physical monetary demand for gold to include the impact of Fed easing since late 2008. We find that (1) QE announcements matter most for gold prices while QE flows have little impact, (2) gold prices respond to easing through expansion on the Fed balance sheet while looking through non-expansionary easing like Operation Twist, and (3) lower US real rates remain the key driver to higher gold prices when accounting for the response of gold prices to the various iterations of QE.

Looking forward, our economists forecast a slowdown in US economic growth in the first half of 2013 with an acceleration in the second half of the year to trend growth levels. They expect an announcement of further expansion of the Fed's balance sheet at the upcoming December FOMC meeting as well as more easing than consensus in 2014-15. In the short term, the combination of more easing and weaker growth should prove supportive to gold prices although our modeling suggests that these catalysts are to some extent already priced in. Medium term however, the gold outlook is caught between the opposing forces of more Fed easing and a gradual increase in US real rates on better US economic growth. Our expanded modeling suggests that the improving US growth outlook will outweigh further Fed balance sheet expansion and that the cycle in gold prices will likely turn in 2013. Risks to our growth outlook remain elevated however, especially given uncertainty around the fiscal cliff, making calling the peak in gold prices a difficult exercise.

Consequently, we lower our 3-, 6- and 12-mo COMEX gold price forecasts to \$1,825/toz, \$1,805/toz and \$1,800/toz, from \$1,840/toz, \$1,940/toz and \$1,940/toz previously. We expect gold prices to average \$1,810/toz in 2013 and introduce a \$1,750/toz 2014 average gold price forecast. Importantly, even under a weaker US recovery than our economists forecast, our modeling still points to only modest upside with gold prices reaching \$1,900/toz late in 2013. Net, while we see potential for higher gold prices in early 2013, especially should a resolution of the fiscal cliff remain elusive, we see growing downside risks. As a result, we find that the risk-reward of holding a long gold position is diminishing. We instead recommend rolling our long Dec-12 COMEX gold position into a long Apr-13 COMEX gold position and selling a \$1,850/toz call to fully finance a \$1,575/toz put to protect from a decline in gold prices. Since 2009, such a strategy has achieved a better Sharpe ratio than an outright long gold position.

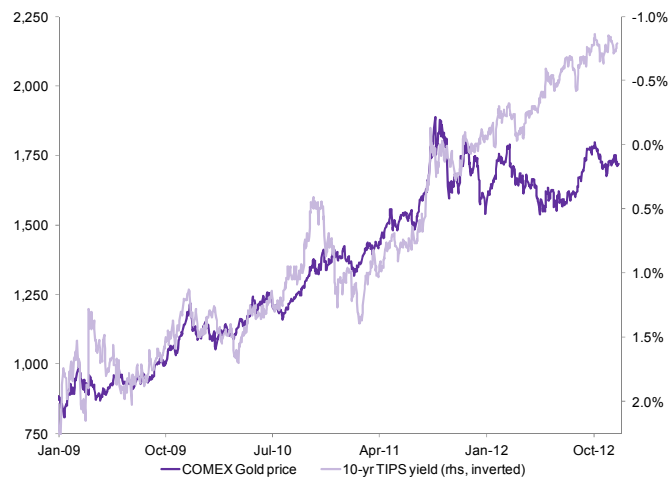
Gold prices range bound in 2012 despite perfect set up

Our forecast for higher gold prices over the past few years has been motivated by the continued decline in US real rates – on weak US growth and aggressive easing by the US Federal Reserve – and steady central bank gold buying. Over the past year however, USD denominated gold prices have traded in a range-bound pattern between lows near \$1,550/toz and highs of \$1,800/toz (Exhibit 1). This stands in sharp contrast to 10-year TIPS yields declining by 1% to set new-record lows and central bank gold holdings increasing by a near-record 14 mtoz over this same period. Interestingly, gold prices have instead exhibited a strong correlation to both the US dollar and the size of the US Federal Reserve balance sheet, putting our modeling of gold prices in doubt (Exhibit 2).

We believe that the Fed’s unconventional easing since late 2008 has been the key catalyst behind these dislocations. While our initial approach was to assume that QE would impact real rate levels and in turn gold prices, it is now apparent that while each QE iteration helped push real rates lower, not all QE iterations ended up supporting gold prices. For example, the sharp decline in real rates that occurred during Operation Twist was in fact accompanied by a decline in gold prices with the September FOMC nearly setting the highs in gold prices.

Exhibit 1: Gold prices have remained range bound despite sharply lower US real rates ...

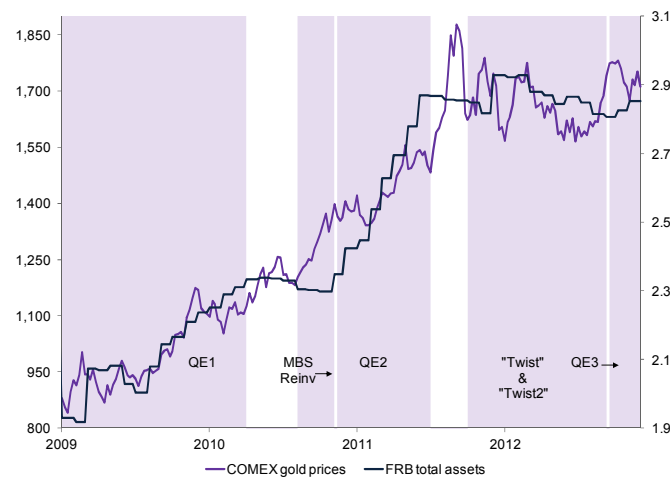
\$/toz (left axis); % yield (right axis, inverted)



Source: Federal Reserve Board (FRB), COMEX.

Exhibit 2: ... exhibiting instead a strong correlation to the size of the Fed’s security holdings

\$/toz (left axis); trillion of US dollars (right axis)



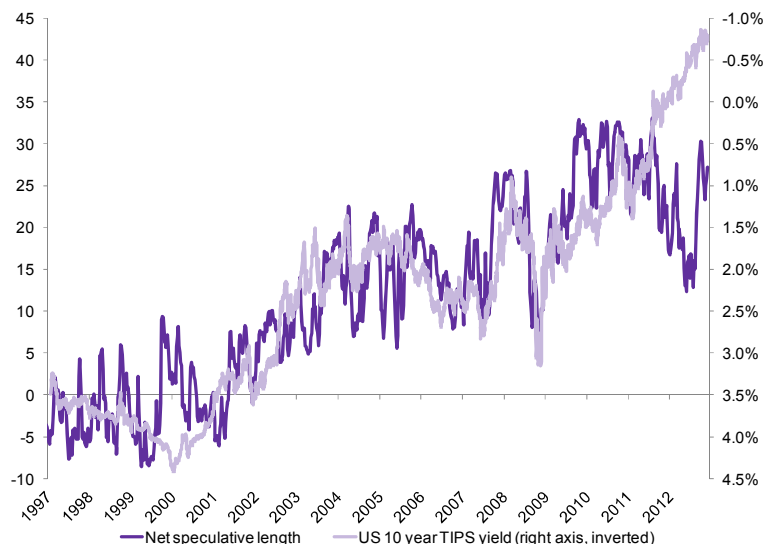
Source: Federal Reserve Board (FRB), COMEX.

Not all QE created equal

To try to understand these interactions, we turn to the CFTC’s COMEX gold net speculative length data, as it has exhibited the most straightforward sensitivity to real rates over the past decades, rising with declines in real rates. This relationship started breaking down in 2009 with net speculative length increasing sharply around the announcement of QE1 and outperforming the decline in real rates. In turn, net speculative length declined sharply in the fall of 2011 around the announcement of Operation Twist (Exhibit 3). Understanding these dislocations is key to our gold outlook as net speculative length is the primary driver of our gold price forecast.

Exhibit 3: COMEX net speculative length declined throughout 2012 despite sharply lower real rates

Million toz (left axis); % (right axis, inverted)



Source: CFTC, FRB and Goldman Sachs Global ECS Research.

We expand our modeling of COMEX net speculative positioning to assess the impact of the Fed’s QE. Specifically, we regress net speculative length on: (1) US real rates, as proxied by 10-year TIPS yields, (2) the stock of announced Treasury, MBS and agency debt purchases in 10-year equivalent notional, and (3) the actual weekly flow of these purchases. Finally, as gold prices failed to rally when asset purchases did not require Fed balance sheet expansion (Exhibit 2), we differentiate the stock notionals between instances where the Fed asset purchases were funded with reserve creation rather than sales of shorter-term securities (Operation Twist). We present the results of this regression in Exhibits 4 and 5 and show the stock announcement path in the Appendix.

Exhibit 4: Stock announcements associated with Fed balance sheet expansion impact gold net length

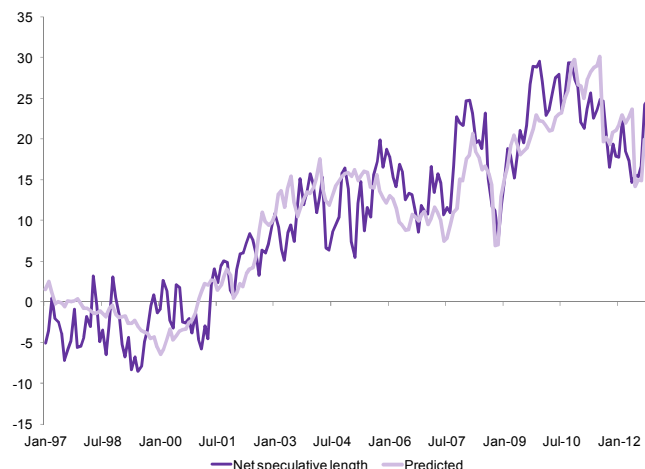
Regression results

Parameter	Estimate	t-Statistic
Intercept	29.56	25.7
10-year TIPS yield	-821.74	-20.9
Stock announcement (ex. Operation Twist)	0.0049	3.8
Operation Twist 1 & 2	-0.037	-11.1
QE flow	-0.006	-0.6
Standard Error	4.2	
Adjusted R-square	83%	

Source: FRB, CFTC, Goldman Sachs Global ECS Research estimate.

Exhibit 5: Net speculative length is well explained by real rates and Fed easing

million toz



Source: FRB, CFTC, Goldman Sachs Global ECS Research.

The key results from this modeling are:

- COMEX net speculative positioning is better explained by this model than by real rates alone. In particular, it captures the fall in positioning after Operation Twist. Further, even when accounting for the impact of QE, US real rates remain the key driver for gold positioning, with lower rates supporting net speculative length.
- Positioning responds to the announced stock of purchases, pricing in the size of the purchase program at announcement while showing little response to the subsequent flow of purchases. This means that when the flow of Fed purchases is discontinued – but the stock of Fed asset holdings is unchanged – there should be little effect on gold prices. This sensitivity is in line with our US economists’ finding that it is the expected stock of Fed asset purchases and not the flow that matters for bond yields.
- Stock announcements of asset purchases that require Fed balance sheet expansion push positioning higher. In turn, stock announcements that do not require balance sheet expansion push positioning lower, with this negative coefficient correcting for the decline in real rates that occurs around such announcements. This differentiated response stands in sharp contrast with the systematic decline in Treasury yields around QE announcements and suggests that gold prices “look through” easing that does not require potentially inflationary Fed balance sheet expansion. Conceptually, while Operation Twist had an impact on yields through an increase in Fed holding duration, it did not affect the monetary base as it did not require reserve creation.
- Although not featured in Exhibit 4, we found little evidence of an impact from the Fed’s forward guidance on gold prices. One likely issue is that guidance extensions have occurred around announcements on Operation Twist, limiting the ability of our regression to capture their impact. However, while our economists believe that credible forward guidance translates into expectations for further Fed balance sheet expansion, the corresponding cumulative magnitude remains modest.

Under our gold price modeling introduced in March 2009, net speculative positioning and physical monetary demand for gold are the two key drivers to real gold prices. Having expanded our positioning model to better account for both the impact of real rates and the various iterations of QE, we reassess the outlook for gold prices in 2013 and 2014.

Why is the coefficient assigned to Operation Twist in our regression significantly larger than the coefficient for other stock announcements?

While real rates were mostly unchanged in August-September 2011, net speculative length declined by 13 mtoz. As the Twist stock announcement is the only changing variable during that time frame, it captures most of this move. Specifically, our regression implies that the 10-year equivalent \$400 bn stock announcement of Operation Twist lowered net speculative length by 15 mtoz, a surprisingly large impact. However, if gold prices indeed look through easing that does not require Fed balance sheet expansion, then the impact of Operation Twist on gold net length needs to correct for the large moves in real rates and net speculative length that occurred earlier in the summer of 2011 in anticipation of easing by the Fed.

Specifically, our economists believe that the impact of Operation Twist on Treasury yields was c.20 bp. The 80 bp decline in 10-year TIPS yields that summer would then represent a 60 bp overshoot, worth 5 mtoz according to our regression. Further, asset market responses around the announcement of Operation Twist suggest that expectations were likely for bolder action by the Fed. If we assume for example that expectations were for \$400 bn of easing with Fed balance sheet expansion, then our regression suggests that net speculative length should have increased by 2 mtoz. Combined, correcting for these anticipatory moves in real rates and net speculative positioning suggest an Operation Twist impact of c.7 mtoz, slightly less than half of the model’s estimate of 15 mtoz.

While very simplistic, this exercise suggests that such a larger coefficient is not unreasonable and that the run up and subsequent decline in net speculative length around Operation Twist was likely excessive.

Gold prices to peak in 2013 as US growth recovery takes hold

Looking forward, our economists forecast a slowdown in US economic growth early in 2013 when the impact from the fiscal drag is expected to be at its most negative. US economic growth is then expected to accelerate back to trend growth in the second half of 2013 as fiscal restraint slows. An agreement to avert the fiscal cliff before year-end remains their central assumption but if a resolution is elusive and/or the size of the fiscal tightening agreed is larger than assumed, a new recession could result. Under their base case forecast, our economists expect that the open-ended QE program will last until early 2015, a more aggressive Fed easing profile than consensus expectations.

While the combination of more easing at the December FOMC and weaker growth early in 2013 should prove supportive to gold prices in the short term, our modeling suggests that these catalysts are to some extent already priced in by the market.

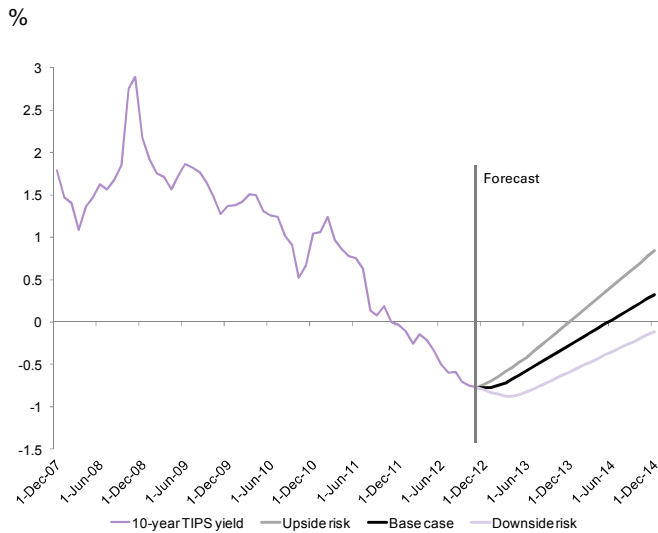
Medium term however, the gold outlook is caught between the opposing forces of more Fed easing and a gradual increase in US real rates – and decline in net speculative length – on better US economic growth. Our expanded modeling suggests that the improving US growth outlook will outweigh further Fed balance sheet expansion and that the cycle in gold prices is near an inflection point. Risks to our growth outlook remain elevated however, especially given the uncertainty around the fiscal cliff, making calling the peak in gold prices a difficult exercise.

Laying out a path for real rates and QE3 Fed stock announcements

In order to lay out our gold price forecast, we establish a path for US real rates as well as for QE3 Fed stock announcements:

- We consider three paths for US 10-year TIPS yields, a base-case recovery in line with our strategists' projected path of 10-year nominal rates as well as real rate paths under a slower or faster US economic recovery (Exhibit 6).
- The announcement of open-ended easing through balance sheet expansion at the September FOMC creates uncertainty on the size of the corresponding stock announcement: should the economy surprise expectations, the program could either be curtailed early or extended. For now, our economists estimate an overall size of QE3 of about \$1.2 tn under the FOMC's economic forecast while they expect purchases will ultimately total \$2 tn. To further complicate this assessment, although the September FOMC only featured open-ended MBS purchases, consensus expectations already reflect that "Operation Twist" will be replaced at the December FOMC by Treasury purchases at their current pace of \$45 billion per month in 2013, as indicated in the NY Fed's October Survey of Primary Dealers. As a result, to model the impact of the Fed's stock announcement on gold positioning, we assign the full \$1.2 tn stock announcement as of the September FOMC, with no additional increase for the December FOMC (\$900 bn in 10-year equivalents). Finally, we proxy our economists forecast for further easing by an \$800 bn stock announcement evenly split between the October to December 2013 FOMC meetings (\$600 bn in 10-year equivalents). Under our faster US economic recovery scenario, we assume no further easing in late 2013.

Exhibit 6: We consider three paths for a recovery in real rates in 2013 and 2014



Source: FRB, Goldman Sachs Global ECS Research estimates.

Exhibit 7: Our economists expect a larger Fed balance sheet expansion than consensus in 2014 and 2015



Source: New York FRB, Goldman Sachs Global ECS Research estimates.

Starting point – current gold prices likely near fair value

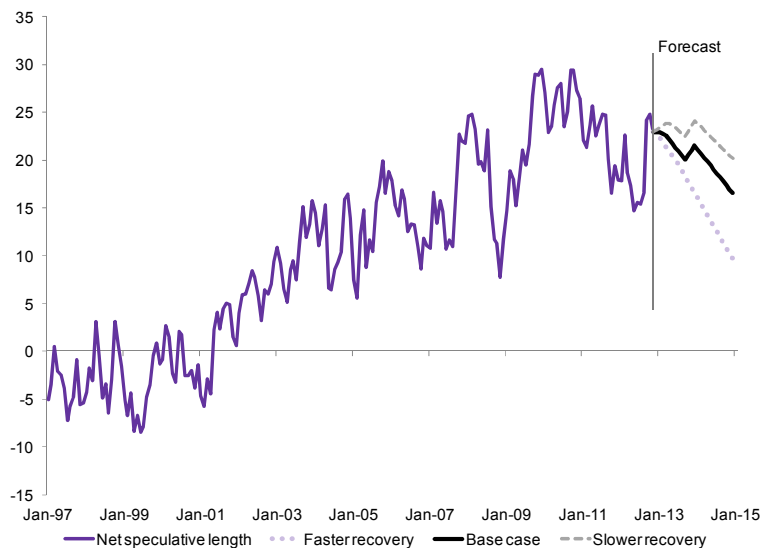
Given these real rates and Fed stock announcement paths, the first question we need to answer is what was currently priced in by COMEX gold prices near \$1,725/toz in late November. We find that net speculative length in November was slightly above our model’s forecast, given current 10-year TIPS yield levels and assuming a \$900 bn QE3 stock announcement in September. This holds if we calibrate our net positioning model stopping in July 2012 to remove potential influence of pre-positioning ahead of QE3. Given the uncertainty created by the looming fiscal cliff and US elections, the slightly higher level of observed speculative length is not surprising.

Another way to assess the current level of net speculative length is to compare the run up to QE2 and QE3: real rates declined by 50 bp in the two months leading to the QE2 announcement and 30 bp ahead of QE3. Over the same period, net speculative length increased by 6 mtoz leading to the QE2 announcement and 11 mtoz leading to the announcement of QE3 – a 1.8x larger move, slightly less than the relative sizes of the Fed’s stock announcement of \$400 bn and \$900 bn (10-year equivalents). Net, both the real rate and spec moves ahead of QE3 were modestly smaller than around QE2, but still of similar magnitude given the relative size of the stock announcements.

Either metric suggests that current gold positioning in late November is likely not too far from pricing in the current level of real rates, consensus expectations for additional easing at the December FOMC decision and potentially some fiscal cliff premium. As a result, we feel comfortable starting our projection of net speculative length from current levels. The three paths for gold net speculative positioning implied by our real rate assumptions are featured in Exhibit 8. Interestingly, even under our economists forecast for further easing and our slow recovery scenario for real rates, net speculative length would remain range bound in 2013 before declining in 2014, suggesting that the improving US growth outlook more than offsets the potential for further Fed balance sheet expansion.

Exhibit 8: We expect net speculative length to decline by 2014, even under a slow recovery scenario combined with further easing late 2013

Mtoz



Source: CFTC, FRB, Goldman Sachs Global ECS Research estimates.

Gold prices to trend slightly higher before declining from mid 2013

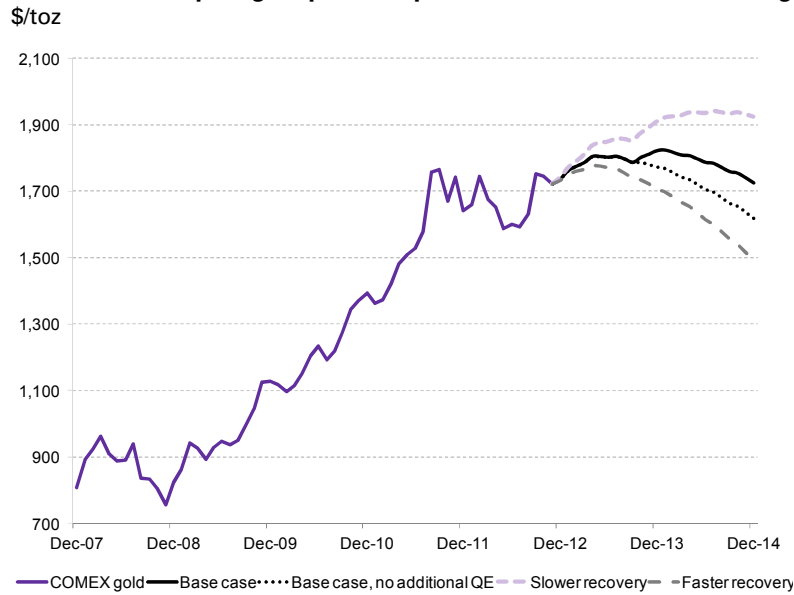
Under our pricing model, gold prices are driven by the level of net speculative length – itself determined by the level of real rates – with short-term real gold prices moves influenced by physical gold buying by ETFs and net central banks (see *Frameworks - Forecasting gold as a commodity*, March 25, 2009). Given our assumptions for net speculative length, Fed easing and assuming that growth in monetary physical demand continues at its 2009-12 pace, we forecast gold prices out to 2014, as shown in Exhibit 9:

- Under our economists' forecasts, gold prices will trend slightly higher over the next three months to reach \$1,825/toz, before declining gradually. While additional easing in late 2013 offers some support to prices, the decline in gold prices accelerates in 2014. Importantly, this forecast for limited upside to gold prices accounts for our economists' expectation for further Fed easing later in 2013 suggesting that an improving US growth outlook more than offsets the potential for further Fed balance sheet expansion. Absent additional easing in late 2013, we expect gold prices to decline at a faster pace in 2014 to reach \$1,625/toz by year end.
- Under a weaker US growth outlook, gold prices will likely trend higher reaching \$1,900/toz by end of 2013, only slightly above their summer 2011 highs. In turn, a better growth outlook would likely see gold prices stall near current levels, before declining more quickly to reach \$1,500/toz by the end of 2014.

Net, we lower our 3-, 6- and 12-mo COMEX gold price forecast of \$1,825/toz, \$1,805/toz and \$1,800/toz, from \$1,840/toz, \$1,940/toz and \$1,940/toz previously. We expect gold prices to average \$1,810/toz in 2013 and introduce a \$1,750/toz 2014 average gold price forecast. While we see potential for higher gold prices in early 2013, especially should a resolution of the fiscal cliff remain elusive, we expect that gold prices will likely peak in 2013 as the US real interest rate cycle turns. Given the uncertainty surrounding the US economic outlook and in particular the outcome of the fiscal cliff, risks to this forecast remain elevated. Nonetheless, even under a weaker recovery path than our economists forecast, we still only see limited upside to gold prices while a faster recovery would keep prices

below their current levels throughout 2013. As a result, we believe that the turn in the gold price cycle will likely occur in 2013, with the peak in gold prices potentially set back in 2011.

Exhibit 9: We expect gold prices to peak in 2013 as US real rates begin to increase

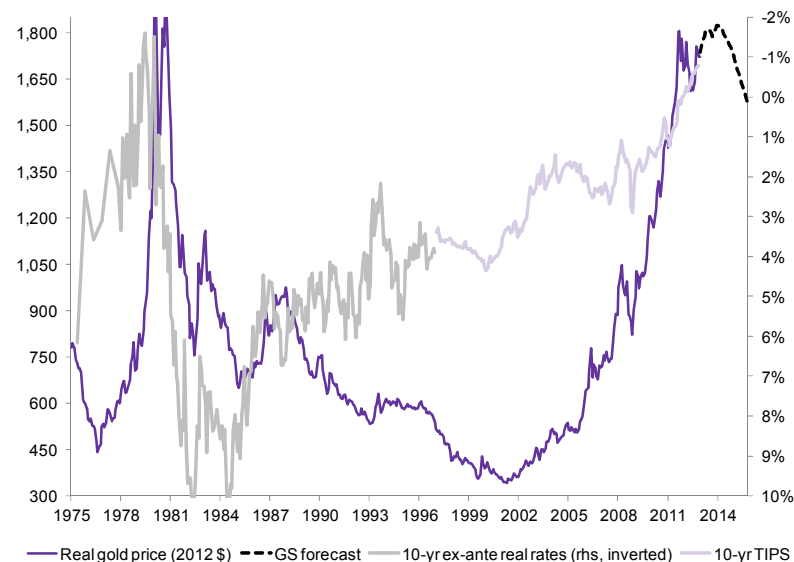


Source: COMEX, FRB, IMF, Goldman Sachs Global ECS Research estimates.

On net, our US economic outlook implies that the gold price cycle will turn similarly to that of late 1980, though not as severely. As shown in Exhibit 10, real gold prices fell dramatically after the rise in US real interest rates in the early 1980s. However, this rise in US real rates was exceptionally sharp given the intent of the US Federal Reserve under Chairman Volcker to choke off inflation. This time we expect the rise will likely be far more gradual, driven by a gradually recovering US economy.

Exhibit 10: We expect the gold cycle to turn 2013 as US real rates begin to increase

Gold prices in 2012 \$ (lhs), 10-year US real rates (rhs, inverted)



Source: COMEX, FRB, Goldman Sachs Global ECS Research estimates.

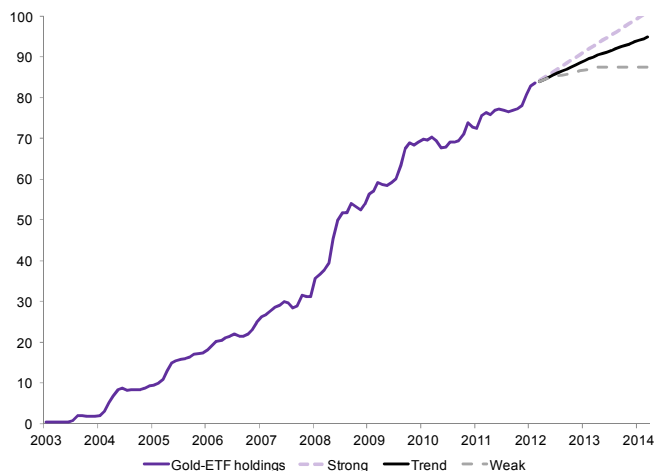
So not a top, exactly, -- a leveling off!

Actually, what deserves a better forecast than gold, then?

Monetary demand for gold expected to limit decline in prices

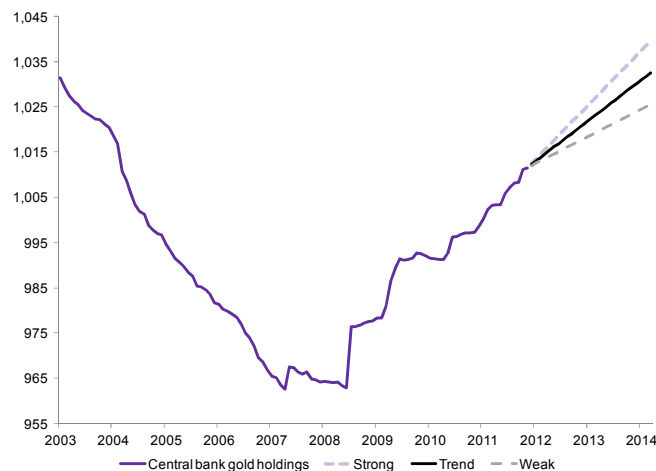
Beyond real interest rates, fluctuations in the monetary demand for gold also exert an influence on gold prices. So far, we have simply assumed that physical gold demand from ETFs and central banks would grow in 2013 at the 2009-12 pace, with ETF purchases slowing down in 2014. Given the risk around this assumption, we also consider alternative paths for physical gold demand as illustrated in Exhibits 11 and 12, with both stronger and weaker demand than our base case. In all three scenarios we assume that aggregate monetary demand continues to grow in 2013-14. While potentially optimistic, it is worth highlighting that central bank gold and ETF gold holdings have trended higher since the Fed began easing in late 2008. As a result, further Fed balance sheet expansion in 2013 suggests further support to monetary physical gold demand.

Exhibit 11: Under our base-case scenario, ETF gold holdings continue to rise to new record highs ...
Million toz



Source: Bloomberg, Goldman Sachs Global ECS Research estimates.

Exhibit 12: ... while the turnaround in central bank purchases continues unabated
Million toz



Source: IMF, Goldman Sachs Global ECS Research estimates.

The sensitivity of our 2013 average gold price forecast to these various levels of monetary gold demand is shown in Exhibit 13. While not negligible, the impact of gold prices to stronger or weaker monetary demand for gold remains modest compared to the influence exerted by real rates and the Fed's QE. Importantly, even under the combination of a slower US recovery and strong monetary demand for gold, our modeling suggests that the upside to gold prices remains limited in 2013.

Exhibit 13: Upside to current gold prices remains limited even under strong monetary gold demand from ETFs and central banks

Forecast 2013 average gold prices (in \$/toz) under various scenarios of monetary purchases of gold (in million toz per month)

Recovery	Monetary demand	ETF demand	Central Bank demand	2013 average gold forecast
Slow	strong	+0.65 mtoz/mo	+1.0 mtoz/mo	\$1,865/toz
Base	strong	+0.65 mtoz/mo	+1.0 mtoz/mo	\$1,825/toz
Base	trend	+0.45 mtoz/mo	+0.75 mtoz/mo	\$1,810/toz
Base	weakening	+0.25 mtoz/mo	+0.5 mtoz/mo	\$1,795/toz
Fast	weakening	+0.25 mtoz/mo	+0.5 mtoz/mo	\$1,745/toz

Source: COMEX, Bloomberg, IMF and Goldman Sachs Global ECS Research.

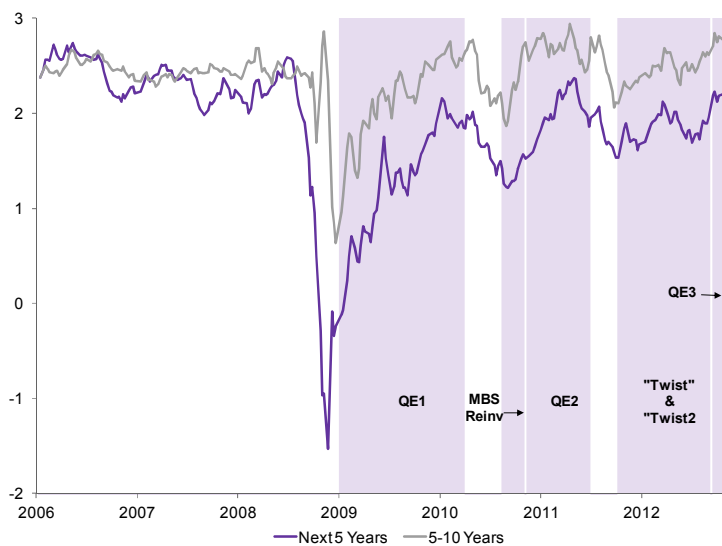
What about inflation?

Our framework for evaluating gold prices relates the real (inflation-adjusted) price of gold to real interest rates and the monetary demand for gold. As a result, a higher rate of inflation would inflate our forecasted gold price in proportion to the overall US Consumer Price Index (CPI), for a given level of US real interest rates and monetary demand for gold. For example, should CPI growth reach 4% in 2014 vs. our economists 1.7% forecast, our 2014 gold price forecast would rise from \$1,750/toz to \$1,790/toz.

For now, we view higher inflation as a low probability risk to our gold forecast. Our economists forecast inflation slightly below the Fed’s target level of 2% out to 2016 given: (1) well anchored inflation expectations despite significant expansion of the Fed’s balance sheet, and (2) their unemployment forecast declining slowly, reducing the margin of economic slack only gradually. We further forecast that commodity prices will remain more stable than in prior years. Finally, even if higher inflation materializes, its impact on gold prices could be offset by: (1) US real interest rates rising more quickly than we anticipate if the economic recovery is accelerating, or (2) an end to the Fed’s aggressive balance sheet expansion if inflation expectations become unhinged.

Exhibit 14: Inflation expectations have remained anchored despite significant Fed balance sheet expansion

Market-implied inflation expectations (%)



Source: FRB.

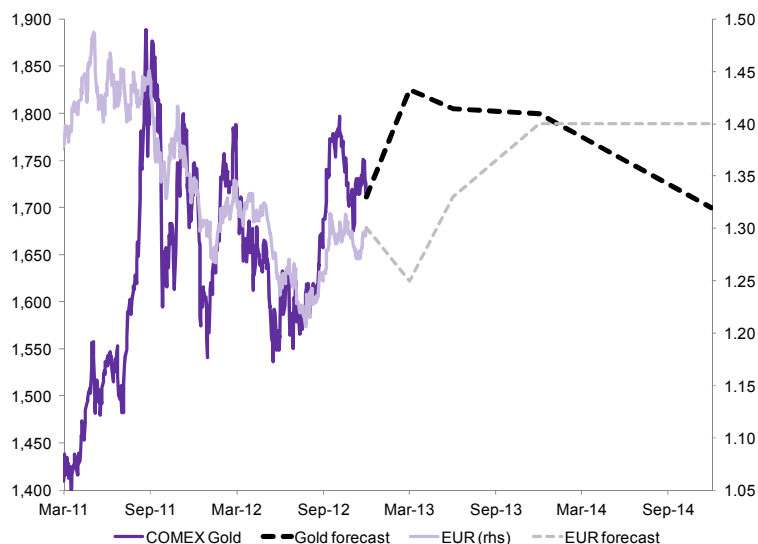
Lower gold prices despite our FX forecast for a weaker USD?

While USD denominated gold prices have exhibited a strong correlation to the EUR/USD since the summer of 2011, our forecast for lower gold prices with a 12-mo forecast of \$1,800/toz stands in contrast to our FX strategists’ expectation for further EUR strength and a 12-mo forecast of 1.40. The key to this divergence is that under our economists’ forecasts, acceleration in US growth occurs alongside a reduction in the euro fiscal risk premium.

Specifically, our strategists see three distinct drivers of EUR/USD: (1) the euro fiscal risk premium, measured as the GDP-weighted spread on 10-year government bonds in the periphery over Bunds; (2) the interest differential, a reflection of growth and monetary policy expectations in the Euro zone and the US; and (3) broader risk appetite with the VIX as a proxy. While better US growth should prove supportive to both US interest rates and risk appetite, our strategists expect that this will be largely offset by a continued reduction

of the euro fiscal risk premium over the medium term. In addition, the decline in the euro fiscal risk premium will likely coincide with better growth prospects and rising government bond yields in the core, further offsetting the rise in US yields and tilting the scale to EUR appreciation.

Exhibit 15: Although our gold and EUR forecasts share our economists outlook, they imply diverging paths going forward
\$/toz (left axis)



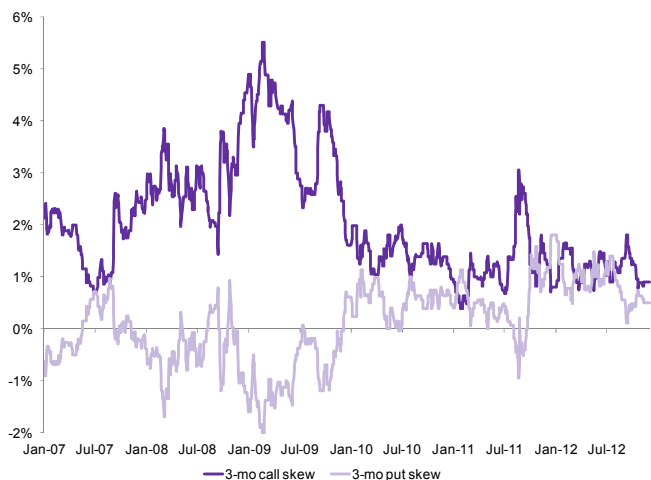
Source: COMEX, Goldman Sachs Global ECS Research estimates.

Shifting trade recommendation given fewer catalysts and growing downside risk

We have recommended a long COMEX gold position since October 11, 2010, for an accumulated gain of \$317.8/toz. However, while we forecast higher gold prices early in 2013, the upside remains limited, suggesting a lower risk-reward in rolling this position into 2013. With fewer catalysts for sharp gold price moves to the upside, and our view that downside risks will likely increase heading into 2013, we therefore recommend rolling our existing long Dec-12 COMEX gold position into a long COMEX Apr-13 position, overwriting this long position with selling an Apr-13 \$1,850/toz call and using the proceeds to finance the purchase of an Apr-13 \$1,575/toz put. This collar strategy should be appealing for gold as its options market continues to exhibit higher call than put skew (see Exhibit 16). We further find that systematically rolling such a strategy would have worked well since January 2009, with a long gold, short 3-mo 110% call and long 90% put portfolio offering similar performance as a naked long gold position while experiencing meaningfully lower volatility for an annual average Sharpe ratio of 1.6 vs. 1.0 (Exhibit 17)

Exhibit 16: Gold options still exhibit a higher call than put skew

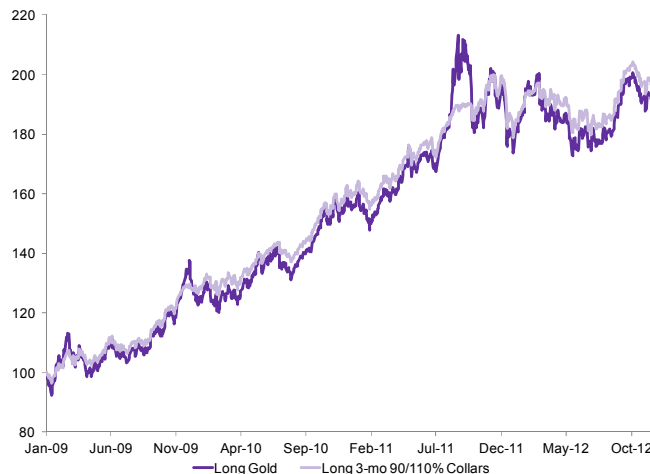
Spread of 25-delta call/put to ATM implied volatility (percent)



Source: Goldman Sachs.

Exhibit 17: Overlaying risk reversals to long gold position has performed well since 2009

Strategies indexed to 100 as of 1-Jan-09. Long gold ETF, short 3-mo 110% call and long 90% put

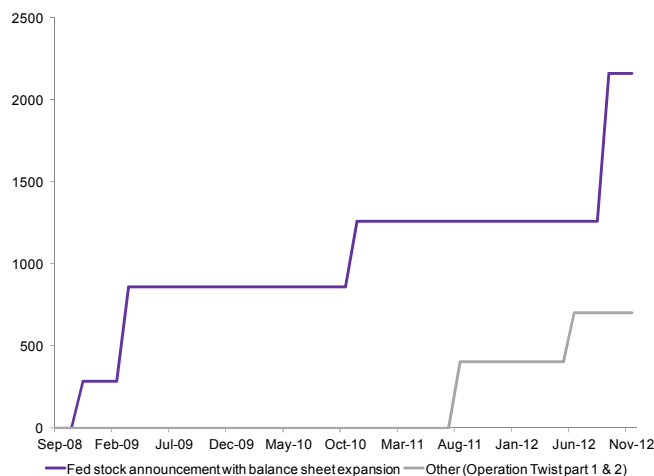


Source: Goldman Sachs Global ECS Research.

Appendix

Exhibit 18: Stock announcement of Fed asset purchases, 10-year equivalent

Billions of US dollars



Source: FRB, Goldman Sachs Global ECS Research.

Exhibit 19: The Fed's asset purchases and easing announcements

QE1	
25-Nov-08	Fed announces it will buy \$500bn of MBS and \$100bn of agency
18-Mar-09	Fed announces it will buy \$300bn of Treasuries, an additional \$750bn of MBS and an additional \$100bn of agencies
QE2	
01-Oct-10	Dudley mentions \$500bn purchase of Treasuries in Speech
03-Nov-10	Fed announces it will buy \$600bn of Treasuries
Operation Twist (part 1 & 2)	
09-Aug-11	Fed says that it sees low rates until mid-2013
21-Sep-11	Fed announces it will sell \$400bn in short-term Treasuries in exchange for the same amount of longer-term Treasuries
25-Jan-12	Fed extends forward rate guidance until end-2014
20-Jun-12	Fed announces it will continue purchases under the Maturity Extension Program until end-2012, selling the remaining \$267bn of short-term Treasuries to buy longer-term Treasuries
QE3	
13-Sep-12	Fed announces it will purchase MBS at a rate of (at least) \$40bn per month until there is substantial improvement in the labour market. Fed extends forward rate guidance through to mid-2015

Source: FRB, Goldman Sachs Global ECS Research.

Hedging and trading recommendations

Hedging recommendations

Consumers: Our base case forecast is for modest upside to gold prices early in 2013 followed by a gradual decline in prices into 2014. While risks to this outlook remain elevated especially given the fiscal cliff uncertainty, the upside in gold prices is likely limited even under a weaker US growth recovery. This outlook suggests that gold consumers purchase call spreads, a hedge that further takes advantage of the low gold implied volatility levels and positive call skew.

Producers: Given our forecast for lower gold prices over the medium term, we recommend producers lock in current gold prices for 2014 and beyond. Given the near-term upside risks and the likely only gradual decline in gold prices that we forecast, we believe that put-spread hedges are compelling, a hedge that further takes advantage of the low gold implied volatility levels and positive put skew.

Trading recommendations

We recommend rolling our existing long Dec-12 COMEX gold position, initiated on October 11, 2010 and with an accumulated gain of \$317.8/toz, into a long COMEX Apr-13 position, overwriting this long position with selling an Apr-13 \$1,850/toz call and using the proceeds to fully finance the purchase of an Apr-13 \$1,575/toz put.

Current trading recommendations

Current trades	First recommended	Initial value	Current Value	Current profit/(loss) ¹
Rolling: Long Gold				
Buy April 2013 COMEX Gold, sell \$1,850/toz Apr-13 call, buy \$1,575/toz Apr-13 put	October 11, 2010 - <i>Precious Metals</i>	\$1,698.9/toz	\$1,698.9/toz	\$317.8/toz
Rollover from a long Dec-12 COMEX Gold future position on 4-Dec-12 with a potential gain of \$317.8/toz				
Long NYMEX natural gas one-by-two call spread				
Long one Jul-13 NYMEX natural gas \$3.85/mmBtu call, short two Jul-13 NYMEX natural gas \$4.70/mmBtu calls	November 11, 2012 - <i>Natural Gas Watch</i>	\$0.12/mmBtu	\$0.13/mmBtu	\$0.01/mmBtu
Long Jun-13 NYMEX WTI crude vs. short Jun-13 ICE Brent crude				
Buy 1 Jun-13 NYMEX WTI crude, sell 1 Jun-13 ICE Brent	August 21, 2012 - <i>Energy Weekly</i>	(\$12.33/bbl)	(\$15.81/bbl)	(\$3.48/bbl)
Long S&P GSCI Brent crude oil total return index				
Long S&P GSCI Brent crude oil total return index at initial index value of 1,174.26	August 21, 2012 - <i>Energy Weekly</i>	1,174.26	1,151.18	(12.74%)
Rollover from a long September 2012 NYMEX WTI Crude Oil position on 21-Aug-12, carrying forward a potential loss of 10.77%				
Long Mar-13 MATIF Wheat vs. short Mar-13 CBOT Wheat				
Buy 1 Mar-13 MATIF Wheat, sell 1 Mar-13 CBOT Wheat, hedge EUR/\$ exposure on entry	August 7, 2012 - <i>Agriculture Update</i>	(\$17.47/MT)	\$32.91/MT	\$50.38/MT

¹As of close on December 4, 2012. Inclusive of all previous rolling profits/losses.

Source: Goldman Sachs Global ECS Research.

Price actions, volatilities and forecasts

	Prices and monthly changes ¹			Volatilities (%) and monthly changes ²				Historical Prices						Price Forecasts ³		
	units	03 Dec	Change	Implied ²	Change	Realized ²	Change	2Q 11	3Q 11	4Q 11	1Q 12	2Q 12	3Q 12	3m	6m	12m
Energy																
WTI Crude Oil	\$/bbl	89.09	↑ 4.23	30.0	-1.77	30.6	4.2	102.34	89.54	94.06	103.03	93.35	92.20	111.00	106.00	99.50
Brent Crude Oil	\$/bbl	110.92	↑ 5.24	27.1	-2.40	26.8	4.1	116.99	112.09	109.02	118.45	108.76	109.42	115.00	110.00	105.00
RBOB Gasoline	\$/gal	2.73	↑ 0.15	28.0	-2.86	32.7	-2.0	3.10	2.89	2.62	3.06	2.95	2.95	2.86	2.68	2.52
NYMEX Heating Oil	\$/gal	3.06	↑ 0.11	25.3	-1.77	24.0	0.9	3.05	2.98	2.98	3.16	2.89	3.00	3.19	2.91	3.06
NYMEX Nat. Gas	\$/mmBtu	3.59	↑ 0.04	35.5	0.31	37.2	-3.9	4.38	4.06	3.48	2.50	2.35	2.89	4.00	4.25	4.50
UK NBP Nat. Gas	p/th	69.05	↑ 3.36	21.3	0.53	17.9	-6.0	58.04	57.03	61.56	57.46	55.89	56.92	75.30	73.20	76.20
Industrial Metals⁴																
LME Aluminum	\$/mt	2,120	↑ 195	19.7	-0.90	19.4	1.3	2,618	2,430	2,115	2,219	2,019	1,950	2,000	2,150	2,200
LME Copper	\$/mt	8,005	↑ 340	22.5	-0.76	16.5	0.4	9,163	8,993	7,530	8,329	7,829	7,721	8,000	9,000	8,000
LME Nickel	\$/mt	17,500	↑ 1525	26.4	-1.86	24.0	2.5	24,191	22,037	18,396	19,709	17,211	16,396	16,500	16,500	17,000
LME Zinc	\$/mt	2,041	↑ 167	22.4	-2.06	19.2	2.1	2,271	2,247	1,917	2,042	1,932	1,905	1,950	2,000	2,100
Precious Metals																
COMEX Gold	\$/troy oz	1,720	↑ 44	14.0	-0.97	15.2	2.9	1,508	1,704	1,685	1,693	1,612	1,654	1,825	1,805	1,800
COMEX Silver	\$/troy oz	33.7	↑ 2.8	24.2	-2.50	29.1	5.5	38.3	38.8	31.8	32.7	29.4	29.9	30.5	30.1	30.1
Agriculture																
CBOT Wheat	Cent/bu	861	↓ -4	26.0	-0.60	23.0	3.4	745	690	615	643	641	871	950	950	800
CBOT Soybean	Cent/bu	1,417	↓ -37	19.8	-1.54	18.2	-8.7	1,361	1,356	1,175	1,272	1,426	1,677	1,650	1,550	1,350
CBOT Corn	Cent/bu	749	↑ 10	23.6	-1.17	16.5	-9.1	731	696	620	641	618	783	825	825	650
NYBOT Cotton	Cent/lb	74	↑ 4	22.7	-1.90	14.0	-13.3	156	106	95	93	80	73	70	75	75
NYBOT Coffee	Cent/lb	142	↓ -13	28.1	-1.60	34.7	5.9	271	256	229	205	170	172	175	175	175
NYBOT Cocoa	\$/mt	2,562	↑ 115	26.7	-1.27	22.4	-3.3	3043	2,962	2,383	2,308	2,222	2,438	2,300	2,300	2,450
NYBOT Sugar	Cent/lb	19.8	↑ 0.3	22.1	-0.47	24.8	4.2	24	29	25	25	21	21	22.0	22.0	22.0
CME Live Cattle	Cent/lb	127.0	↑ 1.6	11.0	-0.15	7.6	-0.3	111	115	121	125	117	122	115.0	120.0	130.0
CME Lean Hog	Cent/lb	83.9	↑ 6.2	15.9	-1.95	14.7	-7.7	94	94	88	87	88	83	79.0	76.0	95.0

¹ Monthly change is difference of close on last business day and close a month ago.

² Monthly volatility change is difference of average volatility over the past month and that of the prior month (3-mo ATM implied, 1-mo realized).

³ Price forecasts refer to prompt contract price forecasts in 3-, 6-, and 12-months time.

⁴ Based on LME three month prices.

Source: Goldman Sachs Global ECS Research estimates.

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We, Damien Courvalin and Jeffrey Currie, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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