April 10, 2013

Turn in gold cycle accelerating: positioning for lower prices

Commodities Research

Lowering our gold price forecast further and recommending a short COMEX gold position

Gold unfazed by Cyprus, recent slowdown in US recovery

Over the past month, events in Cyprus have triggered a resurgence in Euro area risk aversion while US economic data has started to disappoint. Remarkably, gold prices are unchanged over that period, despite US 10-year TIPS yields back at their lowest level since late 2012, highlighting how conviction in holding gold is quickly waning. This is particularly visible at the ETF level with gold holdings continuing to decline quickly. Importantly, our economists expect that ramifications from Cyprus will be contained and that the recent US slowdown, so far consistent with their forecast, will not derail the faster recovery they expect in 2H13. Net, a large rebound in gold prices is unlikely barring an unexpected sharp turn in the US recovery.

Turn in gold prices accelerating; closing our long gold position

Given gold's recent lackluster price action and our economists' expectation that the acceleration in US growth later this year to above-trend pace will support US real rates, we are lowering our USD-denominated gold price forecast once again. Our new forecast is further below the forward curve with year-end targets of $1,450/toz in 2013 and $1,270/toz in 2014. As a result, we recommend closing the long COMEX gold position that we first initiated on October 11, 2010 for a potential gain of $219/toz, with the risk reversal overlay expired on March 25. Our long-term gold price forecast (2017+) remains at $1,200/toz: while higher inflation may be the catalyst for the next gold cycle, this is likely several years away.

Initiating a short COMEX gold position as our ECS Top Trade #8

While there are risks for modest near-term upside to gold prices should US growth continue to slow down, we see risks to current prices as skewed to the downside as we move through 2013. In fact, should our expectation for lower gold prices continue to prove correct, the fall in prices could end up being faster and larger than our forecast, as aggregate speculative net long positions across COMEX futures and gold ETFs remain near record highs. We therefore recommend initiating a short COMEX gold position as our ECS Top Trade #8, implemented through an S&P GSCI® front-month rolling index to further benefit from the contango in the COMEX future curve, targeting a move to $1,450/toz with a stop at $1,650/toz. While we may be end up too early in entering this trade, we prefer that to being late given our belief that the skew to current prices is to the downside.

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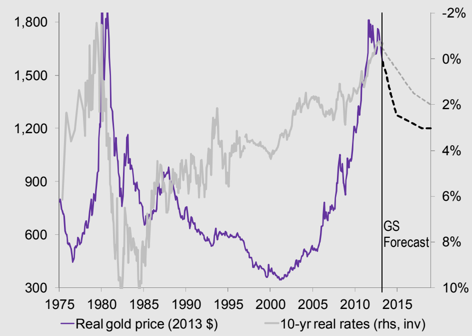
WE EXPECT HIGHER REAL RATES TO PRECIPITATE THE TURN IN THE GOLD CYCLE



SOURCE: COMEX, FRB, GS GLOBAL ECS RESEARCH ESTIMATES.

Turn in gold cycle accelerating

Despite resurgence in Euro area risk aversion and disappointing US economic data, gold prices are unchanged over the past month, highlighting how conviction in holding gold is quickly waning. With our economists expecting few ramifications from Cyprus and that the recent US slowdown will not derail the faster recovery they forecast in 2H13, we believe a sharp rebound in gold prices is unlikely. Given gold's recent lackluster price action and our economists' expectation for higher US real rates, we are lowering our USD-denominated gold price forecast once again. This revision further increases our conviction that the turn in the gold cycle is materializing and our new forecast is further below the forward curve with year-end targets of $1,450/toz in 2013 and $1,270/toz in 2014. As a result, we recommend closing the long COMEX gold position that we first initiated on October 11, 2010 for a potential gain of $219/toz, with the risk reversal overlay expired on March 25. While there are risks for modest near-term upside to gold prices should US growth continue to slow down, we see risks to current prices as increasingly skewed to the downside as we move through 2013. In fact, should our expectation for lower gold prices continue to prove correct, the fall in prices could end up being faster and larger than our forecast, as aggregate speculative net long positions across COMEX futures and gold ETFs remain near record highs. As a result, we recommend initiating a short COMEX gold position as our ECS Top Trade #8, implemented through an S&P GSCI® front-month rolling index to benefit from the contango in the COMEX curve.

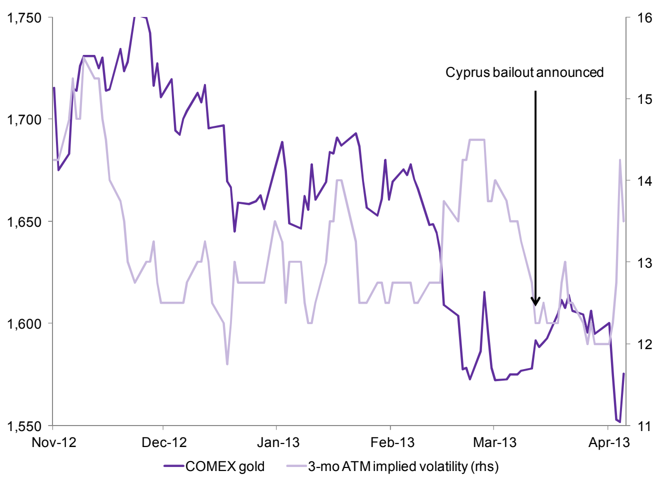
We entered 2013 expecting that an improving US economic recovery would eventually offset further Fed easing and trigger a decline in gold prices in the second half of the year. The decline in gold prices started earlier than we expected, however, on the combination of better-than-expected US economic data, a more hawkish interpretation of recent Fed communication and a lower level of US fiscal and European sovereign risks. Net, COMEX gold prices declined $115/toz between December 5, 2012 when we published our gold outlook (*Gold cycle set to turn on improving US recovery*) and mid-March. With this move lower triggered by the unexpected sharp improvement in the three risks that we initially thought could support gold prices in 1Q13, events since mid-March have finally offered potential catalysts for a rebound in gold prices. And yet, gold prices have remained unfazed by the recent resurgence in Euro area risk aversion and disappointing US economic data, currently trading at their level from a month ago, $1,585/toz.

Gold prices unfazed by Cyprus…

While gold prices rallied initially on news of the Cyprus bailout, this move was modest at only $22.5/toz (1.4%) between the close of Friday, March 15 before the bailout announcement and the intraday highs of $1,615/toz on Tuesday March 19, with gold prices range bound after that despite the uncertainty surrounding a revised package. Further, the EUR declined twice as much as USD gold prices, in sharp contrast to the larger USD gold moves observed during the last quarter of 2011 when fears that Greece would leave the Euro area were at their highest (as measured against the two-year standard deviation of rolling three-day returns).

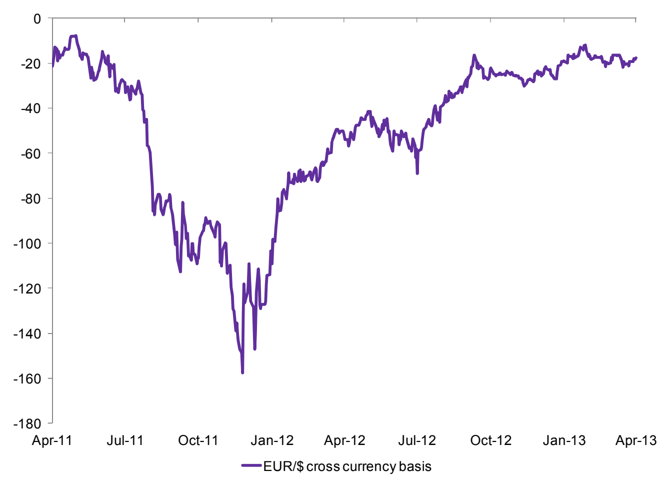
We believe this price response was warranted: although events in Cyprus have triggered a resurgence of Euro area risk aversion, our economists believe that ramifications will be contained. Cyprus is significantly less systemic than Greece and the ECB's OMT has substantially reduced the tail risk of crisis escalation into the systemically relevant bond markets of major EMU countries. And so far, the EUR/$ cross currency basis – a proxy for Euro area bank funding pressures – has been unaffected by these events. Further, the progress in containing the Euro area crisis has reduced the risk of financial spillovers from Europe to other regions, especially the US.

Exhibit 1: Gold prices and volatility failed to rally on the failed Cyprus bailout to sell-off sharply after its resolution
$/toz (lhs); % (rhs)



Source: COMEX.

Exhibit 2: The EUR/$ cross currency basis – a proxy for Euro area bank funding pressures – has been unaffected
bps



Source: Bloomberg.

… and shrugging off weakness in US economic releases so far

After selling off on the Cyprus resolution to reach intraday lows of $1,540/toz on April 4, gold prices finally started to respond to the recent weakness in US economic releases, with last Friday's (April 4) much weaker than expected Non-Farm Payroll report bringing gold back to its month-ago level of $1,585/toz. But while Friday's rally was as large as past responses to such large NFP misses, it was short lived, with gold prices back to declining on Monday, April 8. This extends the pattern of gold prices shrugging off disappointing US economic data since late March (Exhibit 3).

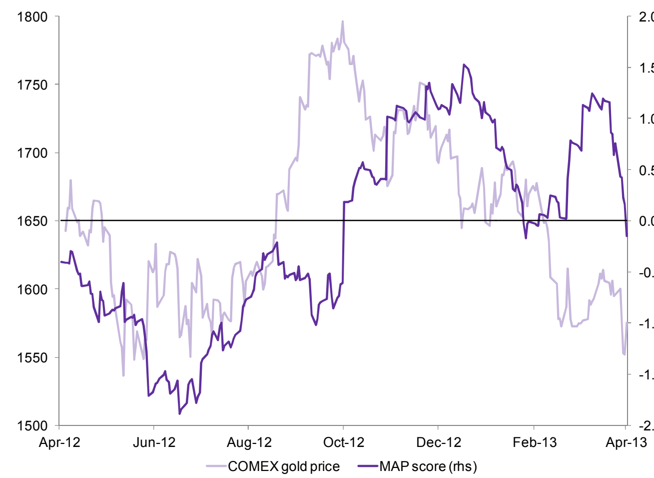
While US economic data has started to disappoint relative to consensus expectations, this slowdown has so far been consistent with our economists' expectations that economic data will slow over the next few months, due to the reversal of one-off factors boosting Q1 growth – in particular the high rate of inventory accumulation – and the negative impact of the sequester. And while the ISM Manufacturing and Non-Farm Payroll were weaker than our economists had expected, they do not see these releases as enough evidence to significantly downgrade their broader view of near-term manufacturing activity. In particular, they believe that signs of resilience from the US consumer to the increase in payroll and income taxes so far in 2013 will likely prevent a sharp slowdown in the US recovery. As a result, while weaker than expected retail sales this week could support gold prices near term, we believe that a large recovery in prices is unlikely barring an unexpected sharp reversal of the US recovery in coming months.

Exhibit 3: Gold prices have shrugged of most of the recent disappointing US economic data…
MAP Index of economic surprises (standard deviation)

Date	GS US Economics Headline	MAP score	1-day gold return
5-Apr	Smaller-than-Expected March Payrolls Gain	-10	1.5%
4-Apr	Initial Claims Much Higher than Expected, But Seasonal Distortion Likely	-2	-0.1%
3-Apr	March ISM Nonmanufacturing Weaker than Expected, with Soft Details	-3	-1.4%
3-Apr	March ADP Report Weaker than Expected	-3	-1.4%
2-Apr	Auto Sales Down Slightly	n.a.	-1.6%
2-Apr	February Factory Orders Report Generally On Expectations	n.a.	-1.6%
1-Apr	ISM Manufacturing Weaker than Expected, February Construction Spending In Line	-10	0.3%
29-Mar	Income and Spending Post Solid Gains in February, U Mich Consumer Sentiment Revised Up for March	2	
28-Mar	Chicago PMI Weakens	-4	-0.7%
28-Mar	Q4 GDP Revision Slightly Less Positive than Expected, Claims Rise	-2	-0.7%
27-Mar	Pending Home Sales Tick Down in February	0	0.7%
26-Mar	Consumer Confidence Fell Sharply in March, Richmond Fed and New Home Sales Slightly Weaker	-9	-0.6%

Source: Goldman Sachs Global ECS Research.

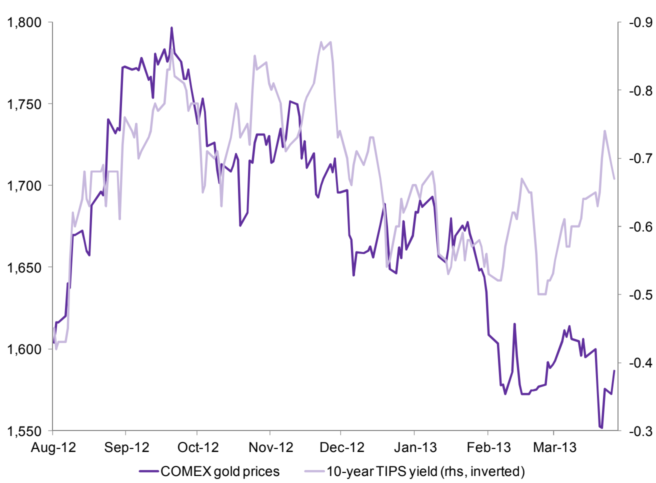
Exhibit 4: … with gold prices declining despite the US growth slowdown
Index of economic surprises (standard deviation); $/toz (rhs)



Source: COMEX, Goldman Sachs Global ECS Research.

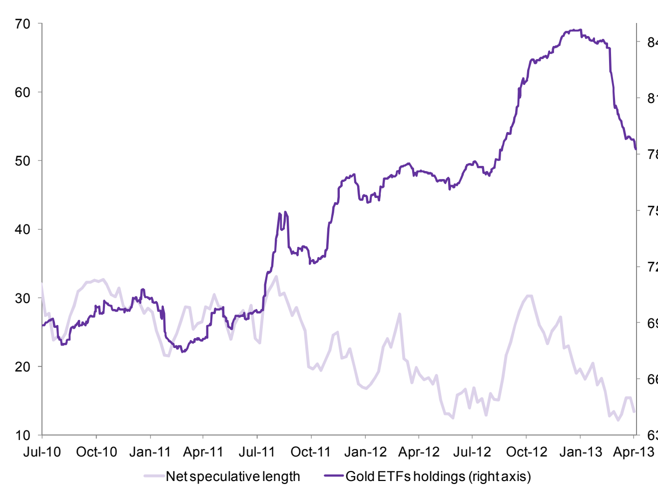
Importantly, this recent range bound trading pattern of gold prices stands in stark contrast to the large decline in US real rates, as measured by 10-year TIPS yields, which are back to their late-2012 lows. We believe this further highlights the quickly waning conviction in holding gold and is best illustrated by the sharp and steady decline in ETF gold holdings.

Exhibit 5: Gold prices have faded the decline in US real rates…
$/toz (lhs); % (rhs)



Source: COMEX, Federal Reserve Board (FRB).

Exhibit 6: … likely pressured by steady large outflows from physically backed gold ETFs
Million toz

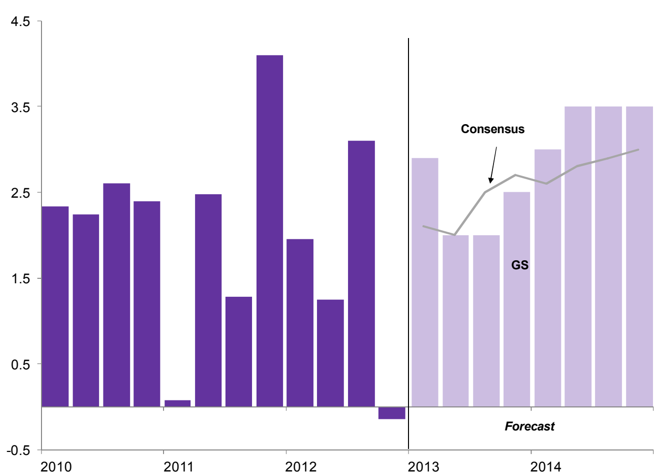


Source: Bloomberg, CFTC.

Resilient US consumer to support US economic growth

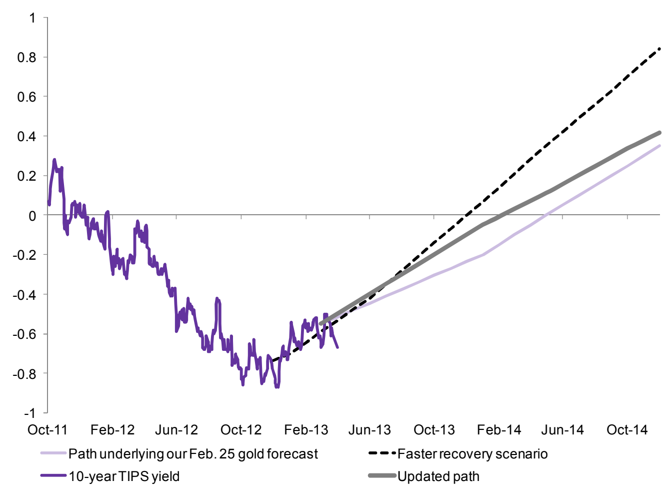
Beyond the near-term slowdown in the US recovery, our economists expect that the normalization in the private sector financial balance will progressively overcome the drag from fiscal retrenchment and push growth from the below-trend pace of the past few years to an above-trend pace by 2014, above consensus expectations. While their expectation for the size of QE3 remains larger than consensus, they reduced it recently and as a result lifted their 10-year Treasury yield forecast by 0.25%, to 2.5% by the end of 2013 and 3.0% by the end of 2014 (see *The Meaning of "Substantial"*, March 15, 2013). As they continue to expect subdued core inflation over the next couple of years, this revision implies a commensurate upward revision to US real rates (Exhibit 8). This represents a faster increase in US real rates than we adopted in our last downward revision of our gold price forecast (see *The turn in the gold cycle is likely already underway*, February 25, 2013).

Exhibit 7: Our US GDP growth forecast is below consensus expectations in 2013 but well above in 2014
% change, annual rate



Source: Blue Chip, Dept. of Commerce, Goldman Sachs Global ECS Research.

Exhibit 8: Our economists expect higher US real rates on better growth and a smaller size of QE3
10-year TIPS yield (%)



Source: FRB, Goldman Sachs Global ECS Research estimates.

Finally, while the US fiscal and policy risk premium has already come down sharply this year, our economists don't expect its resurgence in coming months. In particular, the House passed the spending bill removing the threat of a government shutdown, and spending cuts under sequestration have already taken effect. This leaves the next potential issue as the debt ceiling this summer, and while our economists expect this next debt ceiling increase may be harder than the previous one, it will nonetheless be easier than the 2011 one.

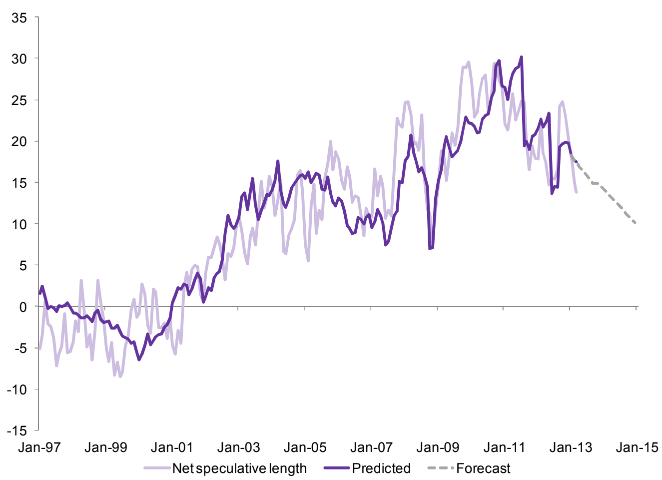
The turn in the gold price cycle is accelerating

Under our updated gold framework, higher real interest rates and a smaller expansion of the Fed balance sheet accelerate the decline in gold prices that we have been forecasting through lower COMEX speculative length and lower ETF gold holdings (for details on our modeling of gold prices please refer to *Gold cycle set to turn on improving US recovery*, December 5, 2012). Specifically:

- **Lower COMEX net speculative length**. The decline in net speculative length from October to March was significant and larger than implied by the observed rise in real rates. However, our updated modeling showed that COMEX positioning also reflects changes in the size of the Fed balance sheet, upon announcement of purchases/sales. And our model suggests that the downward revision to the expected size of QE3, both by consensus and our economists, helps explain most of the additional decline in COMEX net speculative positions. Net, while COMEX net speculative length may have declined slightly too much given their steady level in the face of the recent decline in US real rates, the magnitude of this undershoot remains modest with our real rate path pointing to further declines in net speculative length.

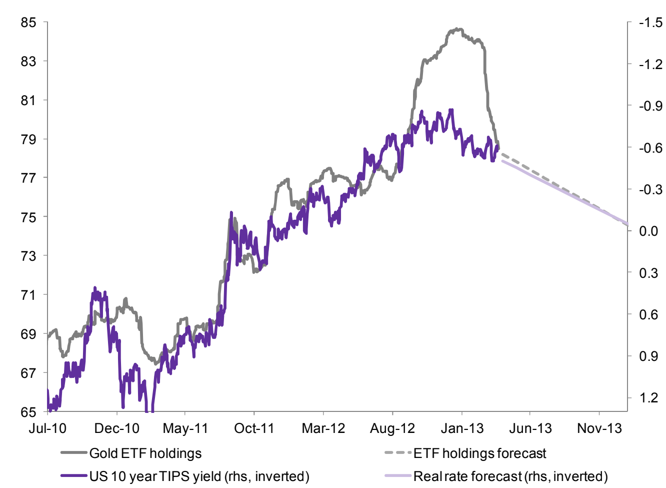
- **A further decline in ETF gold holdings**. In our last forecast revision, we shifted to forecasting that ETF gold holdings would decline as real rates increased but the recent decline in holdings has been significantly faster than we had expected (see *The turn in the gold cycle is likely already underway*, February 25, 2013). While it is harder to establish whether the level of ETF holdings is fair relative to real rates, our updated real rate path points to further declines in holdings and at a faster pace than we had previously expected. Should the month-long decline in gold ETF holdings extend at its current pace, this would present downside risk to our ETF gold holding path and in turn our gold price forecast.

Exhibit 9: Higher real rates and a downward revision to expectations for the size of QE3 explain most of the decline in COMEX net speculative positioning
Million toz



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

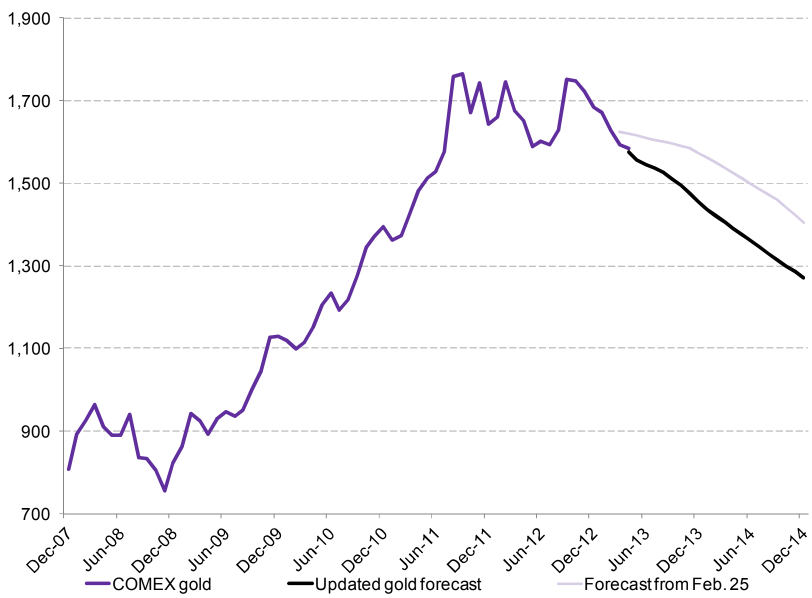
Exhibit 10: We expect that ETF gold holdings will continue to decline
Million toz (left); % (right)



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

Net, we are lowering our COMEX gold price forecast with our 3-, 6- and 12-mo forecast now $1,530/toz, $1,490/toz and $1,390/toz from $1,615/toz, $1,600/toz, and $1,550/toz previously. Our 2013 average gold price forecast (including realized first quarter prices) declines to $1,545/toz from $1,610/toz and for 2014 to $1,350/toz from $1,490/toz (Exhibit 11). While gold prices have so far declined along the "faster recovery" path set in our December outlook, our updated forecast remains slightly above this "faster recovery", as our economists still expect a slowdown in growth in 2Q-3Q13 and more expansion of the Fed balance than consensus.

Exhibit 11: We expect a larger and faster decline in gold prices than previously
$/toz



Source: COMEX, Goldman Sachs Global ECS Research estimates.

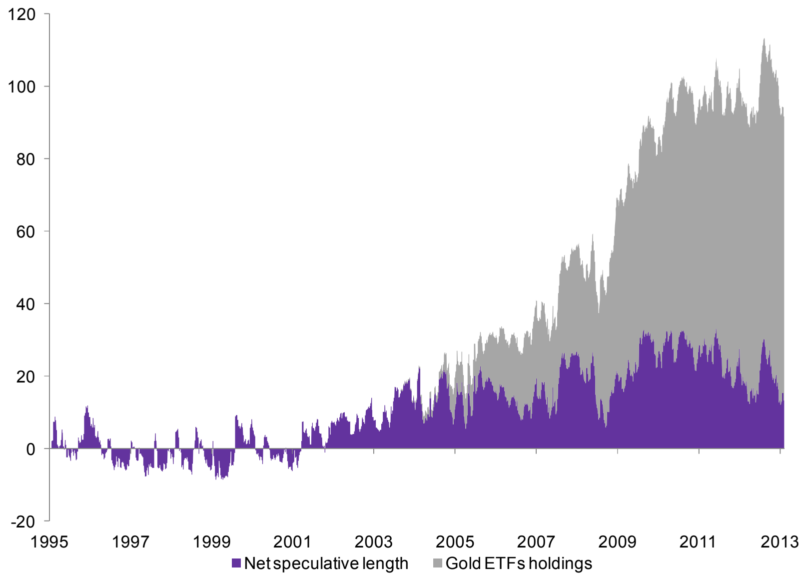
As a result, we recommend closing the long COMEX gold position that we first initiated on October 11, 2010 for a potential gain of $219.3/toz. We last rolled this trade on December 5, 2012 into a long COMEX Apr-13 position overlaid with a short Apr-13 $1,850/toz call and a long Apr-13 $1,575/toz put, with the risk reversal overlay expired on March 25.

Positioning for lower gold prices as our ECS Top Trade #8

We see risk to our updated forecast as modestly to the upside in the short-term should US data continue to disappoint but increasingly to the downside as we move through 2013. With investor conviction in holding gold waning and aggregate net long positions across COMEX futures and physically backed ETFs near record highs, we suspect that if our forecast for lower gold prices proves correct, the fall in prices could end up being faster and larger than we expect (Exhibit 12). In addition, a break through the $1,535/toz base to gold prices over the past eighteen months could further accelerate such a decline in prices.

Given our forecast for lower gold prices and the downside risks to our forecast later in 2013, we recommend initiating a short COMEX gold position as our ECS Top Trade #8, implemented through an S&P GSCI® front-month rolling index to further benefit from the contango in the COMEX future curve (1% per year). We are targeting a move to $1,450/toz compared to the current price of $1,585/toz with a stop at $1,650/toz. While we may be end up too early in entering this trade, we prefer that to being late given our belief that the skew to prices is to the downside.

Exhibit 12: Further unwind of near-record long positions could precipitate and exacerbate a decline in gold prices
Million toz



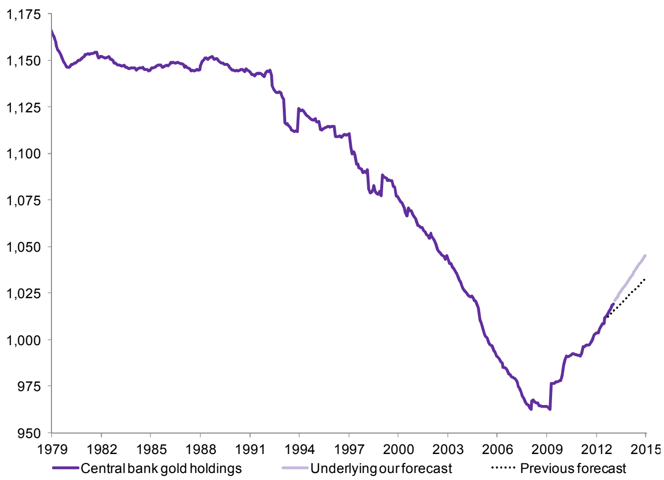
Source: Bloomberg, CFTC.

Gold prices to decline despite stronger central bank purchases and further Fed balance sheet expansion

Importantly, our lower gold price forecast accounts for continued central bank gold purchases. In fact, while we had adopted a 2009-12 trend pace for purchases, we are increasing this pace in light of strong central bank buying over the past three months (Exhibit 13). While this assumption may prove too high should central banks slow their gold purchases if our price forecast materializes, we prefer to be conservative. Such an upward revision to the expected pace of central bank purchases only slows the decline in gold prices implied by our real rates and the Fed's QE3 forecasts by $10/toz per annum. This is consistent with our view that central bank gold purchases would have to be significantly stronger to stabilize gold prices.

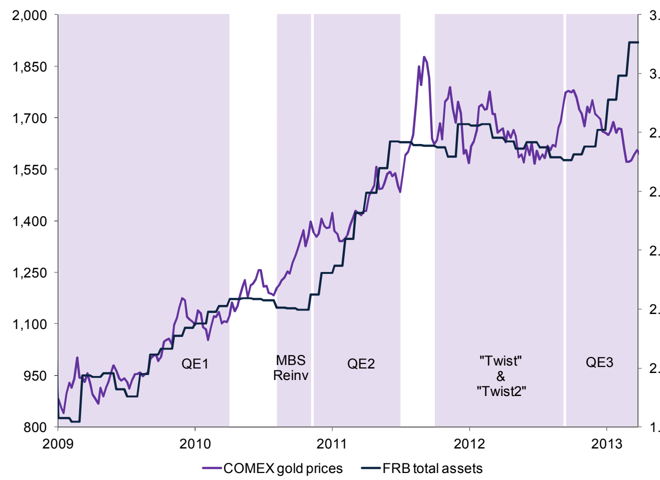
In addition, our forecast for gold prices to decline during QE3 continues to stand in sharp contrast with the pattern since 2009 of gold prices increasing in line with the size of the Fed balance sheet (Exhibit 14). This view is based on our expectations that: (1) real rates will increase despite further asset purchases, and that (2) it is upon announcement that future expansion of the Fed balance sheet supports gold prices, with the rally in the fall of 2012 already fully accounting for QE3 (see *Additional Fed balance sheet expansion already priced in by gold prices*, December 12, 2012). As a result, we expect the divergence observed since October 2012 to continue.

Exhibit 13: Continued central bank purchases, even at their recent strong pace, only slightly slow the decline in gold prices implied by rising real rates
Million toz



Source: IMF, Goldman Sachs Global ECS Research estimates.

Exhibit 14: QE is priced by gold at announcement: we expect further divergence between gold prices and the size of the Fed balance sheet
$/toz (left axis); trillion US dollars (right axis)

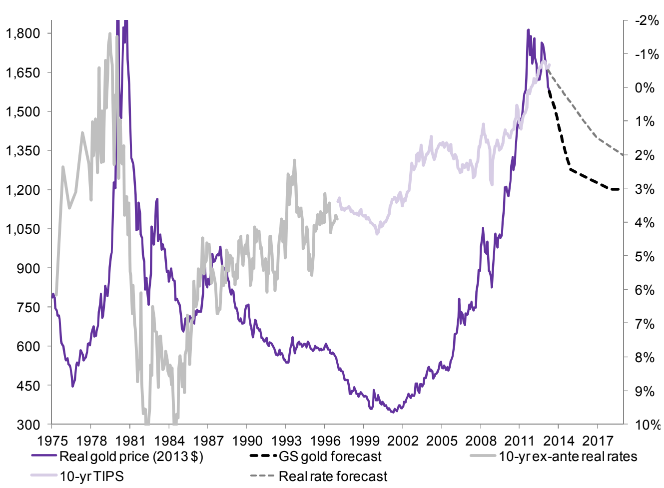


Source: FRB, COMEX.

Subdued inflation to keep next gold cycle several years away

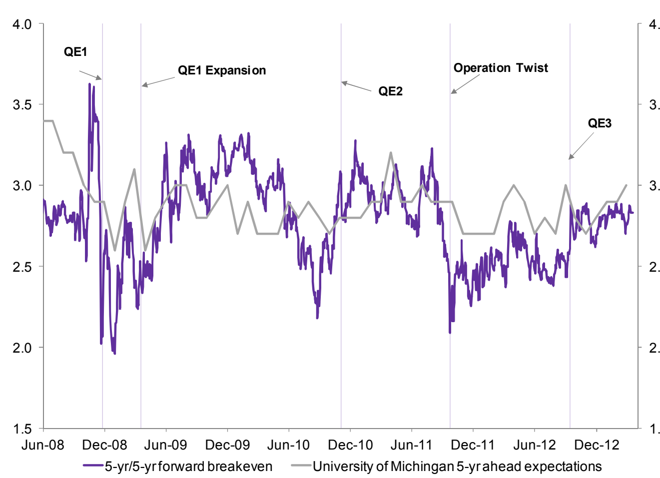
Finally, our long-term gold price forecast (2017 and beyond) remains at $1,200/toz (Exhibit 15). Over that horizon forecast, we expect US real rates to stabilize and see risks to US inflation as more symmetrical. And while higher inflation may be the catalyst for the next cycle in gold prices, this is likely several years away: inflation expectations remain well anchored and our economists expect subdued inflationary pressures in coming years (Exhibit 16). 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 15: Our long-term gold prices forecast remains at $1,200/toz
Gold prices in 2013 $ (lhs), 10-year US real rates (rhs, inv)



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

Exhibit 16: While higher inflation may be the catalyst for the next gold cycle, this is likely several years away
%



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

Hedging and trading recommendations

Hedging recommendations

Consumers: We expect that gold prices will continue to decline in 2013. We see risk to our updated forecast as modestly to the upside in the short-term but increasingly to the downside as we move through 2013. This outlook suggests that gold consumers looking to hedge purchase call spreads, a low cost 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 our forecast horizon, we recommend producers lock in current gold prices for 2013 and beyond. With our long-term gold price forecast at $1,200/toz, 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 closing our long COMEX gold position, first recommended on October 11, 2010, for a potential gain of $219.3/toz. We last rolled this trade on December 5, 2012 into a long COMEX Apr-13 position overlaid with a short Apr-13 $1,850/toz call and a long Apr-13 $1,575/toz put, with the risk reversal overlay expired on March 25. As we forecast lower gold prices, we recommend initiating a short COMEX gold position, implemented through an S&P GSCI® front-month rolling index to further benefit from the contango in the COMEX gold forward curve (c.1% per year).

Current trading recommendations

Current trades	First recommended	Initial value	Current Value	Current profit/(loss)[1]
Opening: Short Gold Short the S&P GSCI Gold total return index	April 10, 2013 - *Precious Metals*	100.00		
Closing: Long Gold Buy April 2013 COMEX Gold, sell $1,850/toz Apr-13 call, buy $1,575/toz Apr-13 put	October 11, 2010 - *Precious Metals*	$1,698.9/toz	$1,600.4/toz	**$219.3/toz**
Rolled from a long Dec-12 COMEX Gold future position on 4-Dec-12 with a potential gain of $317.8/toz				
Long Sep-13 NYMEX WTI crude vs. short Sep-13 ICE Brent crude Buy 1 Sep-13 NYMEX WTI crude, sell 1 Sep-13 ICE Brent	August 21, 2012 - *Energy Weekly*	($10.33/bbl)	($10.33/bbl)	**$1.19/bbl**
Rolled from a Long Jun-13 NYMEX WTI crude vs. short Jun-13 ICE Brent crude position on 7 April 2013 with a potential gain of $1.19bbl				
Long NYMEX natural gas call options Buy $4.20 Nov-13 NYMEX natural gas call option	April 4, 2013 - Natural Gas Watch	$0.30	0.38	**$0.08**
Long Copper Buy LME September 2013 copper future	March 1, 2013 - *Metal Detector*	$7,718/t	$7,468/t	**($251/t)**
The Commodity Carry Basket: Crude, Corn and Base (CCB) Long the S&P GSCI Petroleum, Corn and Copper total return indices, short the S&P GSCI F3 Aluminium total return index, equally weighted	December 5, 2012 - *2013-2014 Outlook*	100.00	95.69	**(4.31)**
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 - *Energy Weekly*	1,174.26	1,138.10	**(13.85%)**
Rolled from a long September 2012 NYMEX WTI Crude Oil position on 21-Aug-12 , carrying forward a potential loss of 10.77%				

[1]As of close on April 8, 2013. 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	08 Apr	Change	Implied[2]	Change	Realized[2]	Change	3Q 11	4Q 11	1Q 12	2Q 12	3Q 12	4Q 12	3m	6m	12m
Energy																
WTI Crude Oil	$/bbl	92.70	↑ 1.14	19.1	-2.54	16.9	1.4	89.54	94.06	103.03	93.35	92.20	88.23	**105.00**	**100.00**	**97.00**
Brent Crude Oil	$/bbl	104.12	↓ -7.03	18.2	-2.16	17.8	4.3	112.09	109.02	118.45	108.76	109.42	110.13	**110.00**	**105.00**	**105.00**
RBOB Gasoline	$/gal	2.86	↓ -0.26	21.9	1.35	24.6	-11.8	2.89	2.62	3.06	2.95	2.95	2.73	**2.85**	**2.55**	**2.73**
NYMEX Heating Oil	$/gal	2.91	↓ -0.07	18.7	-1.14	24.5	8.6	2.98	2.98	3.16	2.89	3.00	3.05	**3.09**	**3.00**	**2.98**
NYMEX Nat. Gas	$/mmBtu	4.13	↑ 0.54	28.8	-1.22	29.0	-5.9	4.06	3.48	2.50	2.35	2.89	3.54	**4.50**	**4.50**	**4.25**
UK NBP Nat. Gas	p/th	68.00	↓ -0.95	13.2	0.55	35.7	22.9	57.03	61.56	57.46	55.89	56.92	66.12	**76.80**	**81.30**	**70.60**
Industrial Metals[4]																
LME Aluminum	$/mt	1,887	↓ -93	18.4	0.24	13.5	-1.6	2,430	2,115	2,219	2,019	1,950	2,018	**2,000**	**2,000**	**2,100**
LME Copper	$/mt	7,407	↓ -358	17.3	-0.51	13.8	1.5	8,993	7,530	8,329	7,829	7,721	7,924	**8,000**	**9,000**	**8,000**
LME Nickel	$/mt	15,950	↓ -700	21.4	-0.69	19.5	-3.1	22,037	18,396	19,709	17,211	16,396	17,025	**16,500**	**16,500**	**17,000**
LME Zinc	$/mt	1,884	↓ -106	19.6	-0.58	16.7	2.4	2,247	1,917	2,042	1,932	1,905	1,978	**1,950**	**2,000**	**2,100**
LME Lead	$/mt	2,058	↑ 0	21.6	-1.07	19.2	4.1	2,449	2,009	2,117	1,986	1,989	2,200	**2,150**	**2,150**	**2,300**
Precious Metals																
COMEX Gold	$/troy oz	1,575	↑ 0	12.7	-0.82	11.2	-1.3	1,704	1,685	1,693	1,612	1,654	1,719	**1,530**	**1,490**	**1,390**
COMEX Silver	$/troy oz	27.2	↓ -1.5	21.0	-2.19	16.6	-1.8	38.8	31.8	32.7	29.4	29.9	32.6	**25.5**	**24.9**	**23.2**
Agriculture																
CBOT Wheat	Cent/bu	699	↑ 4	27.0	0.68	35.9	13.6	690	615	643	641	871	846	**650**	**625**	**625**
CBOT Soybean	Cent/bu	1,344	↓ -110	20.2	-0.41	16.1	-1.1	1,356	1,175	1,272	1,426	1,677	1,484	**1,350**	**1,250**	**1,250**
CBOT Corn	Cent/bu	629	↓ -83	28.0	3.11	37.8	19.4	696	620	641	618	783	737	**650**	**525**	**525**
ICE Cotton	Cent/lb	87	↑ 0	22.4	1.43	21.2	4.0	106	95	93	80	73	73	**75**	**75**	**75**
ICE Coffee	Cent/lb	140	↓ -2	27.2	-1.17	18.7	-3.5	256	229	205	170	172	152	**155**	**165**	**175**
ICE Cocoa	$/mt	2,132	↑ 68	23.6	0.51	18.4	-2.4	2962	2,383	2,308	2,222	2,438	2,421	**2,300**	**2,400**	**2,500**
ICE Sugar	Cent/lb	17.7	↓ -1.1	19.1	-1.56	18.0	-6.5	29	25	25	21	21	20	**18.5**	**18.5**	**19.0**
CME Live Cattle	Cent/lb	126.0	↓ -2.3	9.5	0.00	11.5	0.3	115	121	125	117	122	127	**130.0**	**128.0**	**130.0**
CME Lean Hog	Cent/lb	80.0	↓ -1.8	13.8	-0.05	17.6	-3.0	94	88	87	88	83	82	**82.0**	**91.0**	**83.0**

[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.

Disclosure Appendix

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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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