SOCIETE GENERALE
Cross Asset Research

CROSS ASSET STRATEGY
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SPECIAL REPORT

The end of the gold era

We have a bearish gold outlook but what would it take for a crash?

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Our expectations for rising interest rates, driven in part by a positive view of the US economy with an associated improvement in the dollar, could be the perfect storm to start a longer-term bear market. Professional sentiment, as evidenced by heavy redemptions in ETFs and the increasing willingness of managed money investors to trade from the short side, confirms our view that gold may have had its “last hurrah”.

Our base case 2013 forecast for gold is for $1500/oz on average, and $1375/oz by year’s end. This report outlines the bear case for gold and explores what it would take for a dramatic decline in gold prices beyond our forecast.

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We expect gold prices to fall 15% by the end of 2013 under current conditions/outlook. A further fall (tail risk) would require the perfect positive macro storm.

Our view on gold is considerably more bearish than consensus. In our recent Commodity review "Are we there yet?" we highlight our central scenario of gold price activity over 2013. Specifically we forecast that gold prices will average $1500/oz over the course of 2013 and will gradually drop to $1375/oz by the end of the year. This 15% fall is quite dramatic especially compared to the Bloomberg consensus forecast of $1752/oz by the end of 2013. The gold price is, in our view, in bubble territory. Investors have pushed the gold price sharply higher over the past 10 years with the past five-year rally driven by fears that aggressive central bank QE would lead to very high inflation. But inflation has so far stayed low (US inflation has been trending lower since late 2011) and now we are beginning to see: 1) the economic conditions that would justify an end to the Fed's QE; 2) fiscal stabilisation that has passed its inflection point; and 3) a US dollar that has begun trending higher. It seems unlikely that investors would want to add much to their long gold positions in this context. If so, the gold price would trend lower at pace as the physical gold market is seriously oversupplied without continued large-scale investor buying. Selling by investors would add fuel to the fire.

Our central scenario calls for a gentle bear market over the next several years. The question we address here is: what could cause an even greater decline even further than our forecast? Specifically, what would it take to send gold prices dramatically down: 20–30% (a crash) in a much shorter period of time? Simply put, we need the perfect positive macro storm to impact the market which would then influence gold's 'fundamentals' and currently this is a tail risk and is not terribly likely (see our base and bull case scorecard on next page). Nevertheless, we outline what it would take in this report.

For the tail risk to be realised we would require higher Global GDP, real interest rates to rise significantly, fast US fiscal stabilisation, a stronger dollar, and muted inflation expectations. Gold's 'fundamentals' would then react.

Gold is perhaps the most unique 'commodity' since its fundamentals are a mixture of non-traditional influences on commodities: real interest rates, expected inflation, dollar moves, fiscal outlook, fed balance sheet (and asset purchases) have a much greater impact on gold than other commodities. The fundamentals – mine supply, scrap supply, central bank buying/selling, bar hoarding, producer hedging, ETF flows, etc. would then react. The price drop will have to come from a macro improvement, not from the fundamental side. Specifically, we need global GDP growth to be quite significant, real interest rates to rise quite significantly (certainly an end to QE), fast US fiscal stabilisation, the dollar to significantly strengthen, inflation expectations to be muted, food inflation to be non-problematic, and then, as a result we would expect to see increased selling of ETFs, significant liquidation on Comex futures, reduced central bank buying, bar dis-hoarding, and a huge revival in producer hedging.

While our base case scenario ($1375/oz by year end) is predicated on our current economic outlook and how the 'fundamentals' would react, our extreme bear case (crash) is based on the perfect macro storm. We believe that this crash scenario is less than a 20% probability. While the possibility of this positive macro storm for a crash remains a tail risk, a near positive macro risk could be enough to start the large decline. As such, we recommend three trade recommendations to benefit from declining gold prices (see trade recommendation section for more depth):

1) We recommend selling a 1-year call gold option with an $1800 strike and use the received premium to buy a 1-year gold put option with a strike at $1440. At the time of writing, this option structure had zero upfront cost (spot gold price of $1600).

2) An alternative zero net premium option structure would be: short a 1-year gold call option with a $1700 strike and buy a 1-year put option with a $1510 strike.

3) A third strategy would be to go short gold against palladium. We forecast the palladium price to average $850 in the fourth quarter of 2013 and to have reached $1,000 by the end of 2014. The palladium/gold price ratio should trend higher at pace over coming quarters and years.

The base case and bear case scenarios for gold

		Probability					Price Impact					
							Bullish		Neutral		Bearish	Comments
		20%	40%	60%	80%	100%	1	2	3	4	5	
	"Non-Fundamental" Influences on Gold											
Base	Rising US interest rates				X					X		We expect 10 year yields to rise to 2.75% by year end from 2.0% now
Bear	Rising US interest rates > 3%	X									X	This scenario assumes a faster return to fair value than expected
Base	Strong USD				X					X		USD is expected to appreciate against most currencies over 2013
Bear	Much stronger USD	X									X	Rising rates could send USD to record highs
Base	Moderate global GDP growth			X					X			World GDP at 2.9% in 2013 rising to 3.3% in 2014
Bear	Strong global GDP growth		X								X	Global growth of 4 – 5% would be a huge headwind for gold
Base	Fed balance sheet does not shrink				X			X				Fed's guidance indicates no asset sales at least until 2015
Bear	Fed balance sheet shrinks	X									X	This is very unlikely and would only happen if inflation expectations move sharply higher
Base	Fiscal Policy - US debt stabilised around 75%				X					X		This is already the case: after the sequester, debt will stabilise around 75% of GDP
Bear	Fiscal Policy – US debt on a declining trajectory	X									X	This scenario would require entitlement and tax reform, or further spending cuts
Base	Inflation expectations muted				X					X		Long-term inflation expectations as measured by TIPS fall within 2–3%
Bear	Inflation expectations low	X									X	Inflation expectations falling between 1-2% would be very bearish gold
	"Fundamental" Influences on Gold											
Base	Mine supply: moderate increases			X						X		Our expectation is 30 mt increase in 2013, and an additional 55 mt in 2014
Bear	Mine supply significant	X									X	Takes several years for mine supply to come online
Base	ETF investment: stable/mild withdrawals			X						X		The uptrend has ceased and without buying, gold market will have a larger surplus
Bear	ETF investment: significant withdrawals					X					X	ETF flows are sticky but will reverse with improved macro outlook
Base	Central banks buying				X				X			Central Bank buying is small compared to ETF holdings
Bear	Central banks selling	X									X	Unlikely to be net sellers but buying should diminish
Base	Hedge funds: net long			X						X		Have been long since 2002, but have been getting progressively more short
Bear	Hedge funds: net short		X								X	Unlikely to see a net short but net selling should be bearish
Base	Limited producer hedging			X						X		With relatively high prices miners still hesitant to hedge
Bear	Significant producer hedging		X								X	A strong trend down driven by macro could trigger producer selling
Base	Bar dishoarding limited			X						X		Tail risks diminishing; superior returns elsewhere and storage costs should rise.
Bear	Significant bar dishoarding		X								X	Rising rates discourages storage

Source: SG Cross Asset Research

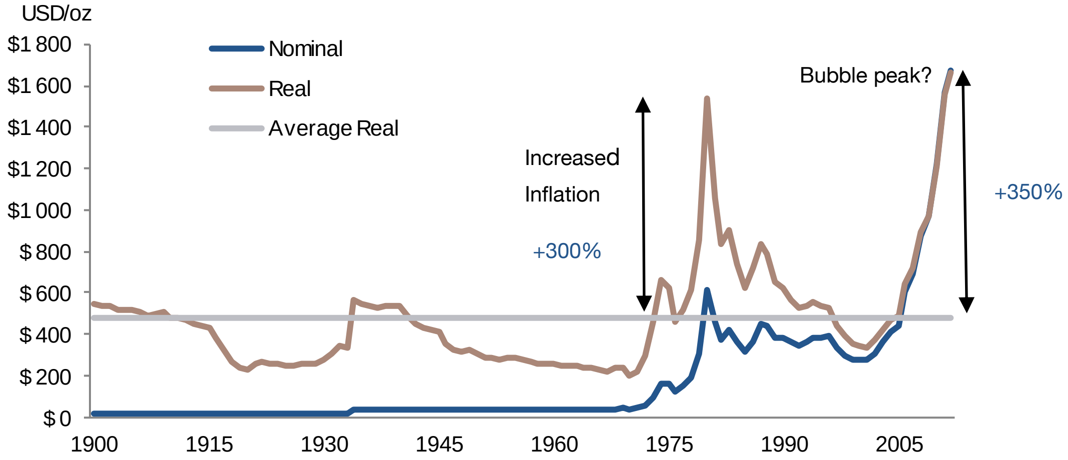
GOLD

Gold prices have doubled since 2007 but have fallen from (real) historic highs

Since 1971, negative returns for gold has occurred 38% of the time and large losses (under -10%) occurred with a 18% frequency.

To provide some context: over the past six years the world has seen striking economic and financial instability, witnessing the deepest recession since the 1930s, resulting in declines in many financial assets. In this environment, gold has performed strongly, doubling in price since 2007. As a store of value which is relatively immune to inflation, credit, and financial defaults, gold has appealed to many as a store of wealth. In recent months however gold prices have seen less strength and have dropped. Over the past century gold supply has been relatively fixed with annual mine production representing a small share of the total stock of gold outstanding, with a limited ability for annual production to increase in response to changes in gold prices. Since 2000, gold returns have been much higher compared to the rest of the century, and if we look at the one-year rolling returns of gold (in USD) since the end of the Bretton Woods system in 1971, negative returns occurred around 38% of the time and large losses (under -10%) occurred with a 18% frequency.

Prices are still around the peak witnessed in Sept 1980 (in today's real terms)



Source: SG Cross Asset Research

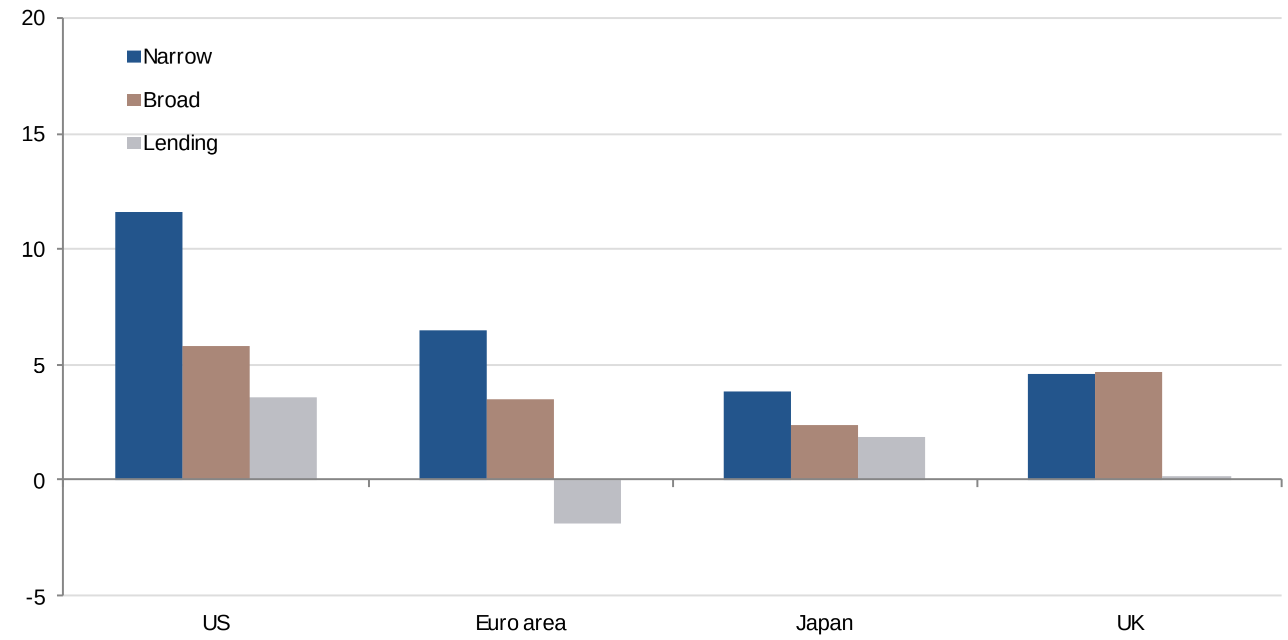
Macro outlook

A positive economic outlook (risk appetite returns), all else being equal, would dent gold's price outlook but pull up other commodity prices.

There are many 'non-fundamental' elements influencing gold but, like all commodities, the demand outlook, underpinned by the macro environment is critical. However, the relationship with gold is different. Specifically, in recent years, economic uncertainties and risk sentiment have elevated gold prices while global GDP growth has remained moderate at best. Copper, arguably the most cyclical commodity, has had its price remain roughly unchanged from its post-Lehman (19 September 2008) price ($7060/mt) vs today's price ($7518/mt). Gold's price has in comparison almost doubled from $873/oz to $1,600/oz today. A negative outlook (GDP constrained through crisis) is clearly positive for gold but not for all commodities. Similarly a positive economic outlook (risk appetite returns), all else being equal, would dent gold's price outlook but pull up other commodity prices.

With the gradual lifting of policy uncertainty, a roadmap to sustainable recovery is taking shape. The state of post-crisis repair, however, varies greatly across the advanced economies. As governments take their economies for a first spring spin, some will discover gleaming engines while others will lift the hoods to a still decidedly rusty sight. We identify five prerequisites for sustainable recovery: (1) well advanced deleveraging; (2) repair of credit channels; (3) reduced policy uncertainty; (4) no significant housing overhang; and (5) no supply-side constraint. When it comes to gold, channels of credit transmission hold particular relevance. One illustration (albeit far from the only one) of still challenging credit conditions in the major advanced economies is shown in the chart below. As seen, the traditional links between monetary aggregates and lending are rebuilding in the US, but remain weak in the other advanced economies pointing to still weak credit multipliers.

Monetary aggregates (February 2013)



Source: Bloomberg, Datastream, SG Cross Asset Research/Economics

In the US, our GDP forecasts clock in slightly above consensus which is negative for gold.

In the **US**, the forecasts in our new Global Economic Outlook clock in slightly above consensus and the critical assumption is one of a combined recovery in housing and jobs. This is very negative for gold. While our **euro area** forecast for 2014 is notably below consensus, we emphasise that this is nonetheless a scenario of gradual repair and recovery, again negative for gold. Three factors drive our below consensus view: (1) additional austerity in the pipeline, notably for Spain and France, (2) a slower pace of repair on credit supply conditions and (3) a prolonged period of political uncertainty in Italy with a new pro-reform government coming to office in early 2014. As the **UK** prepares to hold a referendum on the EU in 2017, euro convergence discussion is creeping back in **Eastern Europe**. A common factor for the region is the headwind from the euro debt crisis, but different states of post-crisis repair and domestic policy choices explain divergent trends across the region. The gold market appears to be 'fatigued' with Europe's bumpy past and outlook and has been trading in a range-bound manner even after the recent Cypriot issues of late March.

The gold market appears to be 'fatigued' with Europe's bumpy past and outlook.

Having enjoyed a period of resilient growth, the **Russian** economy has been slowing and policy accommodation is now on the cards. Turning to **Asia**, our policy accommodation forecast is materialising in **Japan**, boosting growth near-term. Medium term, however, the sustainability of this recovery remains questionable. **China** has demonstrated a will to steer its economy to a new growth model and we look for acceleration of reform in 2013. Structurally, we retain our call for a declining trend in potential output growth. In this first GEO of 2013, we are pleased to introduce coverage of **Taiwan** and **Brazil**; both of which have their own special ties to China.

Chart 1: SG forecasts – Mixed views versus the benchmarks

Growth Forecasts	SG				Consensus		EU Commission		IMF	
	2013	P	2014	P	2013	2014	2013	2014	2013	2014
G5										
Euro area	-0.5	*-0.3*	0.5	*0.5*	-0.2	1.0	-0.3	1.4	0.2	1.2
Germany	0.8	*0.8*	1.5	*1.2*	0.7	1.7	0.5	2.0	0.9	1.4
France	-0.2	*0.0*	0.4	*0.3*	0.1	0.8	0.1	1.2	0.4	1.1
Italy	-2.0	*-1.3*	-0.6	*-0.1*	-0.9	0.6	-1.0	0.8	-0.7	0.5
Spain	-1.4	*-1.7*	-0.8	*-0.8*	-1.5	0.3	-1.4	0.8	-1.3	1.0
United States	2.1	*2.4*	3.0	*2.8*	1.9	2.8	1.9	2.6	2.1	2.9
China	7.8	*7.8*	7.2	*7.2*	8.2	8.2	8.0	8.1	8.2	8.5
Japan	1.5	*1.5*	2.0	*1.4*	1.2	1.2	1.0	1.6	1.2	1.1
United Kingdom	0.8	*0.8*	1.4	*1.4*	0.9	1.7	0.9	1.9	1.1	2.2
Other advanced										
Sweden	1.4	*1.3*	2.3	*2.4*	1.2	2.6	1.3	2.7	2.2	2.5
Norway (Mainland)	2.6	*2.6*	2.7	*2.7*	2.7	2.8	2.6*	2.5*	2.4	2.0
Switzerland	1.1	*1.1*	1.8	*1.8*	1.1	1.6	1.4	1.9	1.4	1.8
Australia	2.7	*2.7*	3.1	*3.1*	2.6	3.1	3.0	2.9	3.0	3.2
S. Korea	2.8	*3.0*	3.3	*3.2*	3.0	3.7	3.3	3.5	3.6	4.0
Taiwan	3.3		3.3		3.6	4.1	-	-	3.9	4.5
Emerging economies										
Brazil	2.7		3.5		3.3	3.9	3.5	4.0	4.0	4.2
Russia	2.9	*3.3*	3.9	*3.9*	3.3	3.8	3.7	3.9	3.8	3.9
Poland	1.5	*1.9*	3.0	*3.0*	1.5	2.9	1.2	2.2	2.1	2.7
Czech Republic	-0.1	*0.3*	1.4	*1.7*	0.3	1.9	0.0	1.9	0.8	2.8
Slovakia	1.4	*2.0*	3.2	*3.0*	1.5	2.7	1.1	2.9	2.8	3.6
Romania	1.3	*2.0*	2.1	*2.6*	1.5	2.6	1.6	2.5	2.5	3.0
Ukraine	1.7	*2.8*	3.3	*3.3*	2.2	3.6	-	-	3.5	3.5
Kazakhstan	5.3	*5.3*	5.8	*5.8*	5.8	6.3	-	-	5.7	6.0

*Total economy instead of "Mainland" GDP
P=Previous

Source: IMF, EU Commission, Consensus Economics, SG Cross Asset Research/Economics

Considering the risks to our central scenario in the optic of defining those that could trigger further price decline in gold, we look to upside risks to inflation and growth.

Inflation is a bullish risk to our base case scenario, but inflation expectations remain muted.

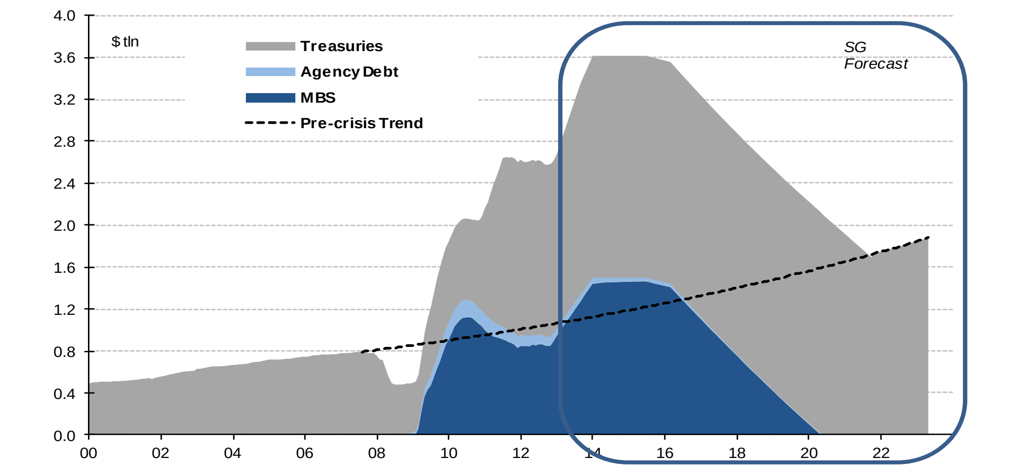
Return of inflation: We identify three main channels through which an excessively accommodative monetary policy could trigger inflation. Top of the list is credit - this is the main channel of monetary policy to the real economy. The risk would thus be to see a credit boom drive demand to levels that then ultimately result in inflation. Second, is the currency channel – i.e. an excessively weak currency fuels imported inflation. The risk of second round effects from this channel is modest given still large spare capacity in the major economies. The final channel is inflation expectations. This is tantamount to a loss of credibility for the central bank with a sharp increase in both short and medium-term inflation expectations. Such a backdrop could trigger a change in corporate and consumer behaviours that could then drive actual inflation - for example corporate stockpiling in anticipation of future price increases. The result would be shorter and more volatile economic cycles. Inflation expectations at present remain muted and hence supportive of lower gold prices (see dedicated inflation section below).

Stronger-than-expected global recovery: Faster-than-expected global growth would drive steeper yield curves around the world. In response, we would expect central banks to tighten policy, reigning in excess liquidity, and driving interest rates higher, which is clearly bearish for gold (see below for further depth). The US economy currently offers the best potential for stronger-than-expected growth. This suggests a stronger US dollar in such a scenario with its obvious impact on gold discussed in detail below.

The Federal Reserve balance sheet and outlook for asset purchases

Our base case – depicted in the chart below – is that the Fed's balance sheet will continue to expand at $85bn/month through September, at which point purchases may be tapered modestly to $65bn/month until being fully terminated at the end of the year. We believe this to be consistent with the Fed's guidance which has tied the termination of asset purchases to a "significant improvement in the outlook for employment". In our book, meeting this objective will require at least two consecutive quarters of above-trend GDP growth, a condition that is unlikely to be met until the end of the year.

The Fed's security holdings and their projections



Source: Federal Reserve, SG Cross Asset Research

The most obvious factor that could lead to an earlier termination of asset purchases is faster-than-expected improvement in the outlook for employment. A steeper drop in the unemployment rate would not be a sufficient condition in our view; it would have to be corroborated by strong demand data. Notably, the economy would probably have to register above-trend growth in the first half of the year. Given the fiscal contraction currently underway, this would require a significant acceleration in private sector demand. Our baseline forecast sees Q1 GDP averaging near-trend, so this scenario is not far-fetched.

The Fed has also outlined potential costs of further asset purchases and has reserved the right to taper or stop the asset buying program if any of these costs are deemed too high. The Fed sees three key risks associated with ultra-easy monetary policy:

An earlier termination of asset purchases would occur with a steep drop in unemployment and strong demand data.

1. Market concerns about the Fed's ability to manage an exit could lead to a rise in long-term inflation expectations.

2. Eventual asset sales can lead to capital losses and to a suspension of remittances to the Treasury. While this would not impact the conduct of monetary policy, it could cause a political headache for the Fed.

3. Ultra-easy liquidity conditions could lead to excessive risk taking and asset bubbles.

If a significant rise in long-term inflation expectations were to materialize, we believe the Fed would react rapidly and forcefully and this would send gold prices down further.

For the Fed to end its asset purchases prematurely, i.e. before the economic objectives are met, at least one of the above costs would have to materialise. Because the latter two items are not directly observable and would require a significant judgement call on the part of the Fed, we believe it is highly unlikely that they will be a factor behind an early termination of asset purchases. However, if a significant rise in long-term inflation expectations were to materialise, we believe that the Fed would react rapidly and forcefully and this should send gold prices down further.

Outlook for asset sales

We do not anticipate any shrinkage of the Fed's balance sheet in the near future. The Fed's exit principles outlined in 2011 suggest that the first step in the exit process will be to end the reinvestment policy and allow natural runoff of the MBS portfolio. Outright asset sales will begin only after the first rate hike, or in 2015 at the earlier based on the Fed's latest economic projections. The Fed will then target a 3-5 year period to normalise the balance sheet which by our estimates will require roughly $25bn of sales per month. There are two conditions under which the timeline could be brought forward:

The Fed has tied the first rate hike to a 6.5% unemployment rate, which we forecast to occur in mid 2015.

1. A faster-than-expected recovery could bring forward the timing of the first rate hike and with it the timing of asset sales. The Fed has tied the first rate hike to a 6.5% unemployment rate which, based on its current projections, is expected to be reached in the second half of 2015. The Fed's forecast "gets there" with average GDP growth of 3.1% over the next three years. We estimate that a 1% upward shock relative to the baseline would bring the 6.5% unemployment rate forward by a little over a year, thus potentially triggering asset sales in mid-2014. *An important caveat here is that the Fed has recently been hinting at potentially extending the timeframe for asset sales and may even decide not to sell assets at all. All else being equal, normalising the balance sheet via natural runoff of maturing securities would take longer than we currently assume.*

Rising inflation, while positive for gold, would be offset by the Fed raising rates.

2. A rise in long-term inflation expectations could not only lead to a premature end of asset purchases, as noted above, but at an extreme could force the Fed to start shrinking its balance sheet. In this scenario, the Fed could also resort to raising interest rates earlier than planned, which would also be negative for gold.

We expect open ended QE to actually stop by the end of the year but expectations of when they stop are more important for gold prices.

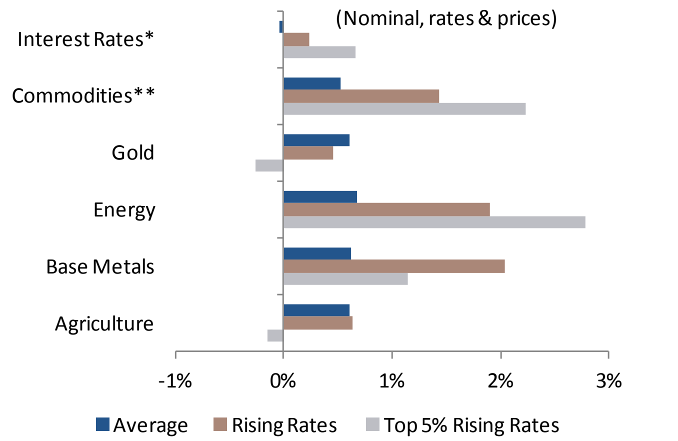
Importantly, the outlook for gold may be determined not by the absolute level of the Fed's balance sheet, but what happens relative to expectations. A Reuters survey of primary dealers conducted on 8 March 2013 suggests that all primary dealers expect asset purchases to continue at least through year-end, and 11 out of 17 dealers believe that they will continue well into 2014. We believe there is significant risk that these expectations will have to be re-priced at some stage. Our above-consensus outlook for the US economy in the second half of the year suggests that open-ended QE is likely to stop at year-end, and is likely to be tapered before then (Q3 in our base case). Even if it seems too premature for the Fed to talk about exit strategies immediately, the topic will likely come sooner rather than later and when it does, gold should drop further. When the Fed turns more hawkish (the end of QE will be the first step) the markets should immediately factor in rate hikes. In all, our economists predict a substantial Treasury sell-off in H2 (target 2.75% for 10-year UST by year end). Our economists however believe that this 'too gradual' view is typical in economic forecasting and therefore have examined fair value as a guidepost. Current low yields are the result of large-scale Federal Reserve purchases. Once they remove this factor, we see fair value Treasury yields at 3.50% - a significant step up from the current 2.0% and certainly enough to scare the gold market and invoke a large sell off. Long-term inflation expectations are currently in the 2.5-3.% range and according to our economists, unlikely to rise. Therefore, with rising real long-term rates, a stronger dollar with muted inflation in an environment of robust growth, we would say this is very negative for gold.

Real interest rates and gold prices – let's dig into the relationship

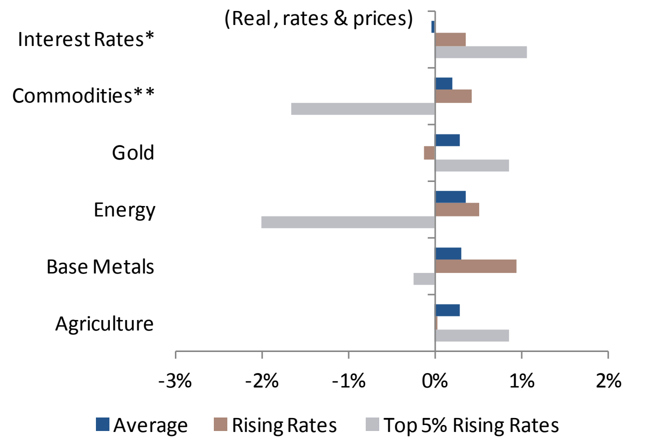
Negative interest rates are positive gold. With rising rates, gold drops but with sharply rising rates, inflation fears surface and gold spikes.

One often hears of the link between real interest rates and gold prices. Gold does not have a yield of its own, so the opportunity cost of holding decreases with a decline in real rates and increases with a rise in rates. Periods of negative real rates, should, all else being equal, be especially positive for gold prices and this was witnessed during the 1970s. On a nominal basis, the level of interest rates have empirically shown a negative relationship on the price level of commodities over the past three decades using the S&P GSCI index (correlation coefficient of -0.65). However looking at a higher order, using the interest rates minus the 90-day moving average versus the commodity prices as a percentage of the 90-day moving average, the correlation becomes positive (+0.21), likely reflecting the inflation aspect in a rising nominal interest rates environment. If the commodity-bullish inflation factor is removed, through CPI deflating both rates and commodity prices, the correlation becomes negative again.

Factors that drive interest rates often drive commodity prices



Commodities rise with rising real rates, except gold

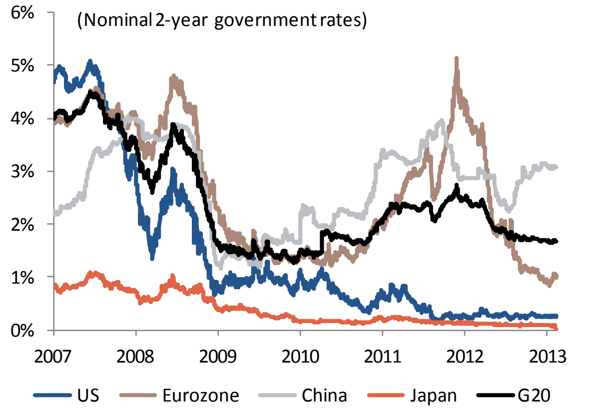


Note: Interest Rates–90dma, Commodity Prices/90dma-1; * US 2-year government bond rates; ** S&P GSCI benchmark index
Source: SG Cross Asset Research

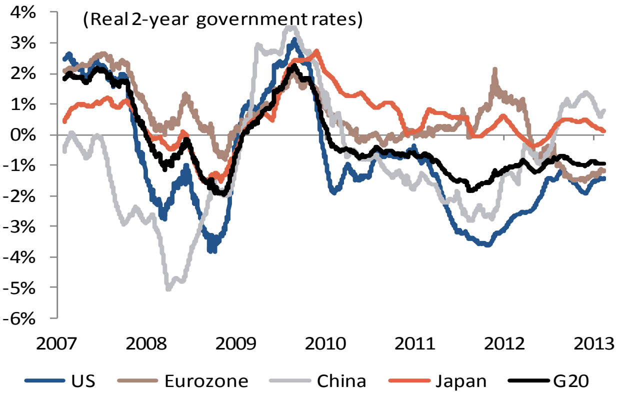
Rising rates are supportive of commodities except gold.

Also, the above two charts show the average change in commodity prices through periods of rising interest rates over the past three decades and the strong role that inflation plays in the response to a rising interest rate period. Focusing on the upper right hand side it is clear that rising rates are negative for gold but once rates get very high (inflationary expectations pick up considerably or the economy is reaching a tipping point) gold can actually accelerate. Meanwhile with rising rates commodities may actually rise before selling off considerably.

Nominal interest rates continue to drift lower for now



Real rates continue to move sideways but we expect rises



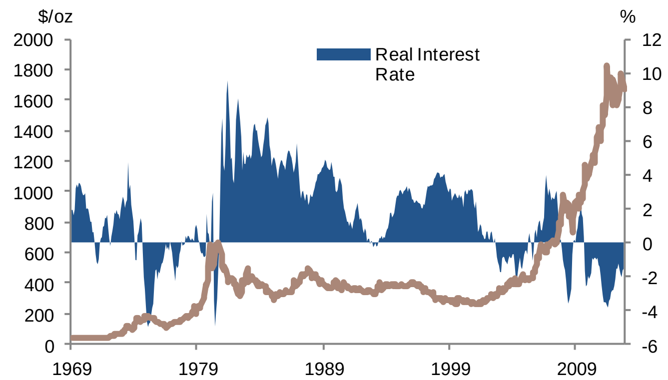
Source: Bloomberg, SG Cross Asset Research. Note: 2 year rates deflated by CPI.

History has shown that with interest rate (spike) announcements gold prices do not 'plummet'.

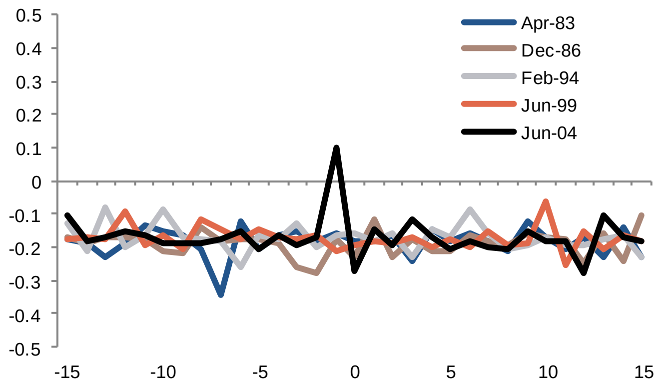
More recently, short-term rates are currently close to zero with moderate inflation, but higher inflationary expectations have resulted in moderately negative real rates, and this has supported the demand for gold. Current negative real rates have added fuel to the fire for the recent bull-run for gold. Going forward, we expect negative real rates to turn positive. The relationship is strong but can we expect gold to plummet around interest rates announcements? The short answer is no. We empirically back up this assertion by employing a DCC model by focusing on the relationship between gold prices and real interest rates 15 months prior to and after significant interest rate hikes throughout history. We study five US interest rate-hike periods: April 1983, December 1986, February 1994, June 1999, and June 2004. Interestingly, our results illustrate that the correlations are relatively stable. A gradual rise in rates (i.e. while the Fed keeps rates low) is going to be bearish gold.

Our fixed income strategists believe that the 2013 environment will be bearish for bonds overall, particularly so in H2 when the US economy should accelerate. We see 10-year US rates to close the year at 2.75%, a rather aggressive call compared to consensus. This will not

Gold prices and real interest rates



Dynamic correlation between US real interest rates and gold prices – around interest rate hikes in interest rates

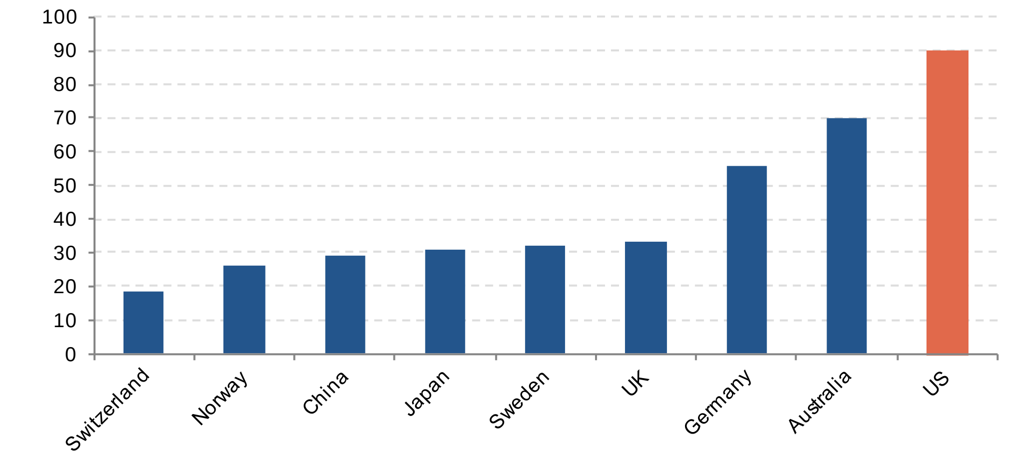


Source: SG Cross Asset Research

be a one-way road, however. They predict another euro-area (EA) shockwave this spring, albeit a smaller one than in spring 2012. First, foreign holdings of peripheral bonds are much smaller than a year ago. Second, the global economy, and the US economy in particular, is on stronger footing. Third, central banks are guarding the temple of risk assets. Still, the Italian debacle, the ongoing recession in the EU, and the US sequester should protect Treasuries and Bunds over Q2. This would be supportive of gold for now. But the upward pressure on bond yields should return this summer, as the US economy accelerates. US Treasuries will be taking the lead in this move, as they have in the three months to March. The US increasingly appears as the leader of the global economic upswing. Whether the Fed turns hawkish or not will not stop the Treasury sell-off. Initially, a complacent Fed will push inflation expectations higher, which should limit the downside for gold prices. When the Fed starts moving toward the exit, however, the sell off should come from a surge in real rates, which will very much expose the gold complex.

The upward pressure on bond yields should return this summer.

SG 10 year bond yield changes forecast by year end



Source: SG Cross Asset Research

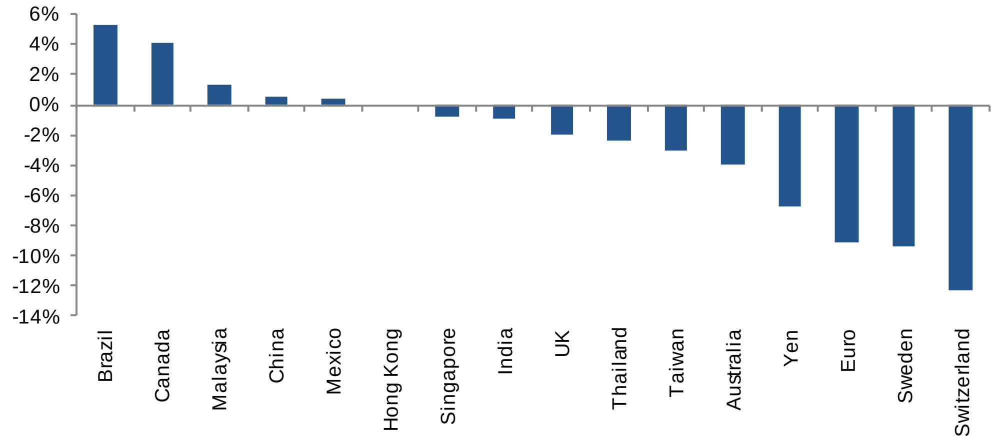
Dollar and gold

We expect the USD to appreciate vs G10 throughout 2013. The euro/US dollar should finish the year in the low 1.20s according to our FX strategists. More broadly speaking, we expect the US dollar to appreciate against the Swiss Franc, euro and other G10 currencies on the back of higher US Treasury yields and an improvement in the US national balance sheet. Looking beyond a normalisation of the treasury curve as US households, their employers and eventually the government reduce their reliance on debt, the credit quality of the country improves and the USD should go from strength to strength. In particular our FX strategists highlight the change of regime that is currently developing. The dollar used to rally in risk-off markets, thanks to its safe-haven role. It used to sell-off in risk-on markets. Not any more. With the US currently leading the global (moderate) upswing, the dollar is now starting to benefit from stronger US data. Those dynamics should prevail through 2013, with the dollar enjoying an extra boost from the euro area shockwave in Q2. Finally, our FX strategists also stress that the better US performance should reduce US appetite for participating to the currency war, to the benefit of the USD.[1]

We expect the dollar to strengthen considerably throughout 2013 – extremely bearish gold.

[1] Currency War Redux
https://publication.sgresearch.com//en/3/0/9551/121918.html?sid=95f23f3b3455cd4f49e3b6886a03d54a

SG FX forecasts for USD: US Dollar expected to appreciate

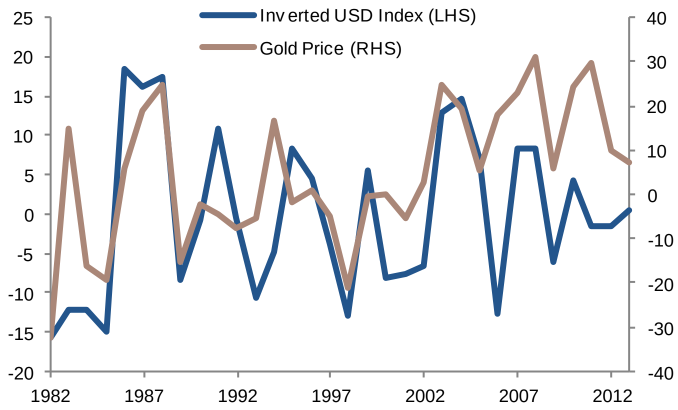


Source: SG Cross Asset Research

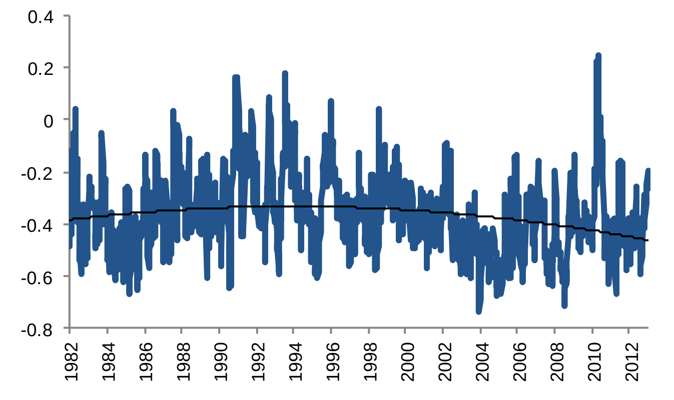
According to our DCC model, the dollar and gold prices are negatively correlated and if the relationship turns positive it is for a very short time.

In the charts below we show the important relationship between gold prices and the USD, going back to the early 1980s. The relationship is strong and consistent. Our DCC (Dynamic Conditional Correlation) analysis illustrates that the relationship is typically negative – on average – 0.40 since the early 1980s. Even when the correlation turns positive it is only for very fleeting periods of time – the negative relationship is restored almost immediately.

The USD exerts a powerful influence over the gold price (annual percentage change)



DCC between USD and gold prices – typically a negative relationship but also erratic (Weekly data)

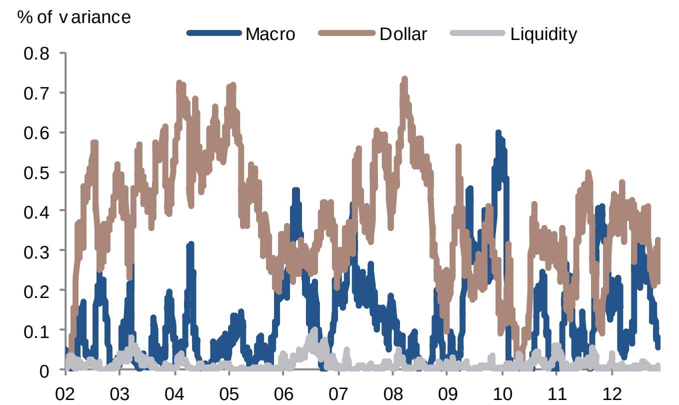


Source: SG Cross Asset Research

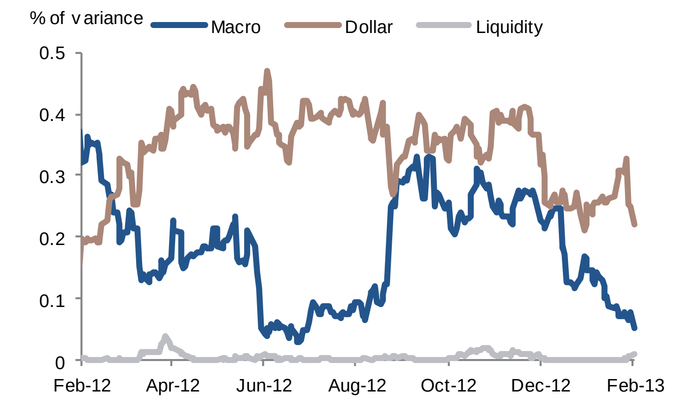
Before Lehman, the dollar explained as much as 70% of gold price variability. Over 2012 this dropped to 30%.

Here we illustrate the relationship between interest rates, the dollar, and macro on the gold market (how much the gold price variation can be explained by these factors). The technical details are excluded to conserve space but interested readers are invited to review the details published in the Commodities Review: House of Cards? Clearly the role of the dollar remains the critical element outside of gold's 'fundamentals'. Before the Lehman crisis, dollar moves could explain as much as 70% of gold price variability, but since Lehman, its explanatory power has diminished but has certainly not become trivial. Over the past year, the dollar has explained roughly 30% of gold price variability. If we return to 'normalcy' – i.e. a pre-Lehman environment, we would anticipate that the dollar once again becomes the significant driver and hence an appreciating dollar will become more and more of a bearish catalyst for the metal.

The influence of the US dollar, interest rates and macro on gold. Before Lehman, dollar moves could explain 70% of gold…



Since September 2012 the role of the dollar and macro on gold has diminished



The end of the US dollar downtrend is clearly a very bearish catalyst, and possibly the most bearish catalyst to pop gold's bubble.

Fiscal policy and gold

To demonstrate the link between fiscal policy and gold, we borrow a quote from Paul Ryan, the Chairman of the US House Budget Committee. In his latest budget proposal, which calls for another round of steep spending cuts, Ryan warns that *"Unless we change course, we will have a debt crisis. Pressed for cash, the government will take the easy way out: It will crank up the printing presses. The final stage of this intergenerational theft will be the debasement of our currency. Government will cheat us of our just rewards. Our finances will collapse. The economy will stall. The safety net will unravel."* Want to hedge yourself against this catastrophic scenario? Buy gold! For those less inclined to believe in catastrophic outcomes, there are fundamental reasons that tie fiscal policy to inflation, and by extension to gold. Large deficits, if sustained, imply that the government will be competing for funding with businesses and households. To the extent that this "crowds out" private investment, it will erode productivity and transform the economy to one that is more inflation-prone.

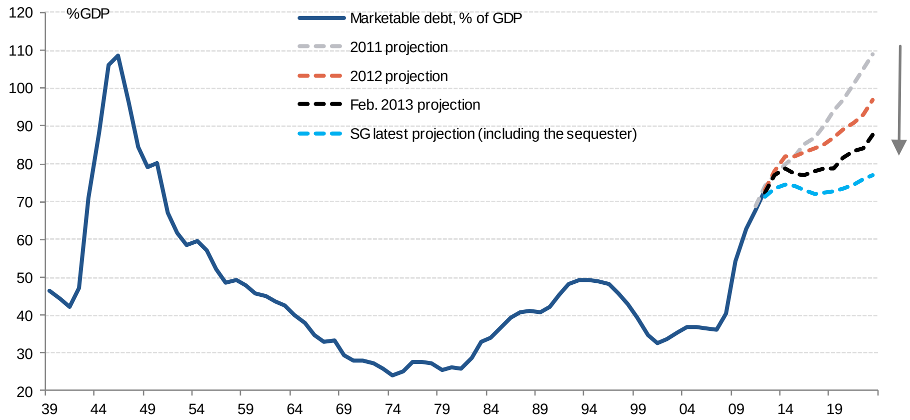
The explosion in public debt has coincided with the gold bull market.

In the United States, the fiscal outlook has been deteriorating for some time. It began with the 2001 recession which erased the then-prevailing budget surplus and quickly pushed the government into a deficit position. The subsequent Bush tax cuts, the wars in Iraq and Afghanistan, and the expansion of the Medicare program all contributed to further deterioration. Between FY 2000 and 2003, the budget flipped from a 2.4% surplus to a 3.4% deficit. The 2002-2006 expansion failed to restore the budget back into balance, though it came close: the deficit returned to -1.2% in FY 2007, only to deteriorate very sharply on the back of the Great Recession and the stimulus programs that followed. During the entire post-2000 period, the debt-to-GDP ratio increased from 32% of GDP to 73% where it stands currently. This explosion in public debt roughly coincides with the bull market in gold.

Stabilising the US debt trajectory would represent significant headwinds to gold and the inflection point may already be behind us.

In the context of the above analysis, stabilising the US debt trajectory would represent a significant headwind to gold prices. Indeed, the inflection point may already be behind us. While more needs to be done to put the US on a sustainable fiscal path, the policies already enacted – from the spending cuts legislated in 2011 to the tax increases legislated in early 2013 – have significantly improved the debt trajectory relative to their worst projections. The chart below shows the evolution of the debt projections that were made at various points in time assuming a continuation of the then-prevailing fiscal policies. Viewed in this way, the projected debt levels peaked in the first half of 2011, when the CBO was forecasting a debt/GDP ratio of 109% as of 2023. After the Budget Control Act of 2011 (which cut spending) and the Taxpayer Relief Act of 2013 (which actually raised taxes, despite its name) the projected ratio had declined notably. The implementation of the sequester has reduced it further, and by our estimate, it is now on track to stabilise in the 75%-80% range over the coming decade.

US public debt projections have declined considerably since peaking in 2011



Debt projections are from the Congressional Budget Office (CBO) and are made assuming a continuation of the fiscal policies prevailing at the time of the forecast. For example, the 2011 projection assumed that the Bush tax cuts would be made permanent and spending would continue to rise with GDP.

Source: US Treasury, Congressional Budget Office, SG Cross Asset Research

If Washington surprises on the upside and delivers a ‘grand bargain’ by this summer, we believe such an outcome would be extremely bearish for gold.

To be sure, more work needs to be done to put public debt on a sustainable trajectory. Current projections still show a debt “explosion” during the 2020-2050 period on the back of an ageing population. Credit rating agencies would like to see the ratio reduced to 70% as of 2023, along with entitlement reform that will stabilise the trajectory thereafter. This would require an additional $1.2bn in deficit savings over the next 10 years. Politically, this last step would probably require a “grand bargain" with Democrats agreeing on entitlement reform and Republicans agreeing on additional tax revenue. Such a compromise seems difficult to achieve given the current political backdrop and is probably not the most likely scenario. However, if Washington surprises on the upside and delivers a “grand bargain” by the summer, we believe such an outcome would be extremely bearish for gold.

Inflation and Gold

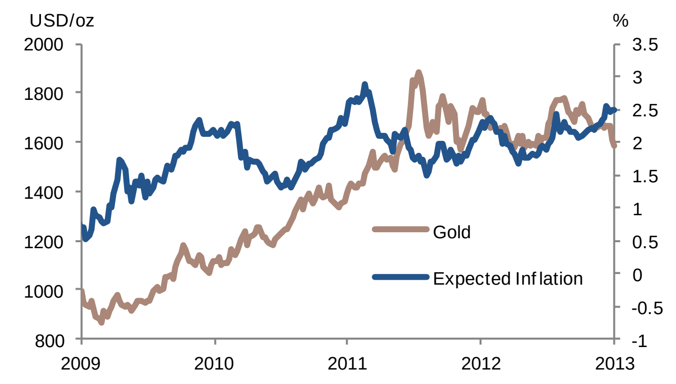
Gold rallied in the 1970s on inflation fears from the oil supply shock and collapsed when inflation fears did not materialise.

One of the main motivations of holding gold is to hedge inflation risks, as gold is generally seen as a good hedge against the debasement of fiat money. During the last big gold rally in the 1970s, investors pushed the gold price sharply higher in the context of very high inflation partly driven by the oil supply crisis. This time around, the gold rally was, as back then, initially driven by high commodity price inflation (driven by a super-cycle generating inflation due to a shortage of commodities caused by exceptionally strong demand from emerging markets) followed by inflation concerns stemming from extraordinarily aggressive central bank quantitative easing since the 2008 financial crash.

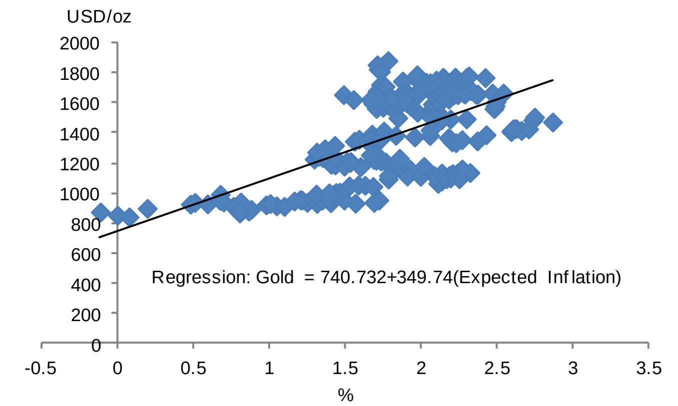
Gold prices rallied at a much faster pace than inflation in the 1970s and as the discounted inflation fears did not materialise, the gold price collapsed from its 1980s peak.

Inflation (expected) and gold is critical for investors. Gold thrives on inflationary expectations (as inflation expectations can be self-fulfilling) and as interest rates move out of the negative territory, gold may lose its support. As we show below, the relationship between gold and expected inflation is quite strong – a correlation of 0.61. A simple regression model, at current expected inflation values, predicts a price of $1615, very close to the current spot price of gold.

Gold and expected inflation – correlation: +0.61



Regression model: current expected inflation level of 2.5 forecasts $1615/oz gold. Current price:$1595



Source: SG Cross Asset Research

We would need an overwhelming 45% per annum inflation rate over the next five years to justify the current gold price.

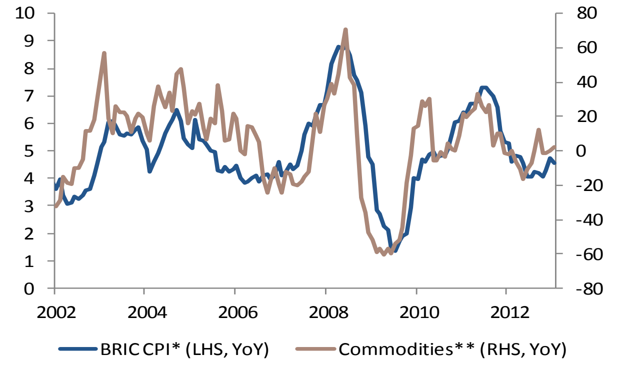
According to our economists, inflation expectations as measured by TIPS could fall within the range of 2-3%. If we achieve the lower rate (sustained) of 2%, this oversimplified model would suggest a gold price of $1439/oz. Gold prices have soared in recent years despite the fact that US CPI has stayed below 4% for the bulk of the time. Simply put, the current gold price appears to be discounting a huge, sustained increase in inflation over the coming years. For example, we can calculate the required annual US inflation rate over the next five years that would justify the current gold price (using 1968 as the starting point): US inflation would have to run at an overwhelming 45% per annum for the next five years.

If food inflation remains under control, gold will not be supported

Food accounts for almost 50% of China's CPI. In the US it is roughly 15%

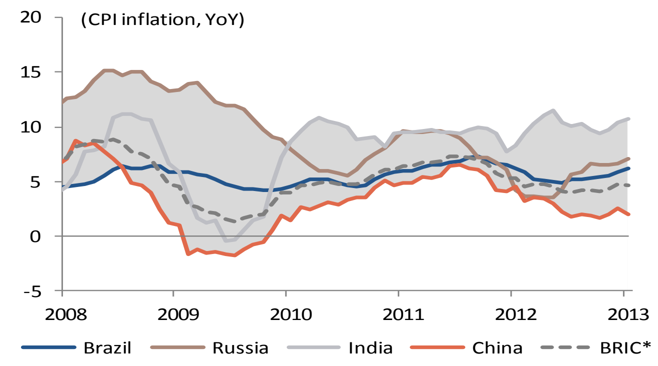
Having an inflation rate at 45% per annum is clearly out of the question; however any expectation of inflation, no matter how small, should support gold prices. Food scares, rather than loose monetary policy may be as critical for gold prices. However, the link between food prices and gold prices may not be initially intuitive. However, as gold is often regarded as an inflation hedge, a country where CPI is heavily skewed toward food may be interested in gold as a hedge, and if that country is large enough, purchases of gold may indeed influence the global price of gold. For example, whereas food and beverages comprise approximately 15% of the CPI in the US, in China the percentage associated with food is almost 50%.

BRIC CPI inflation has tracked commodity price inflation



Source: SG Cross Asset Research. *BRIC: NGDP-weighted consumer price index; **Commodities: S&P GSCI Index

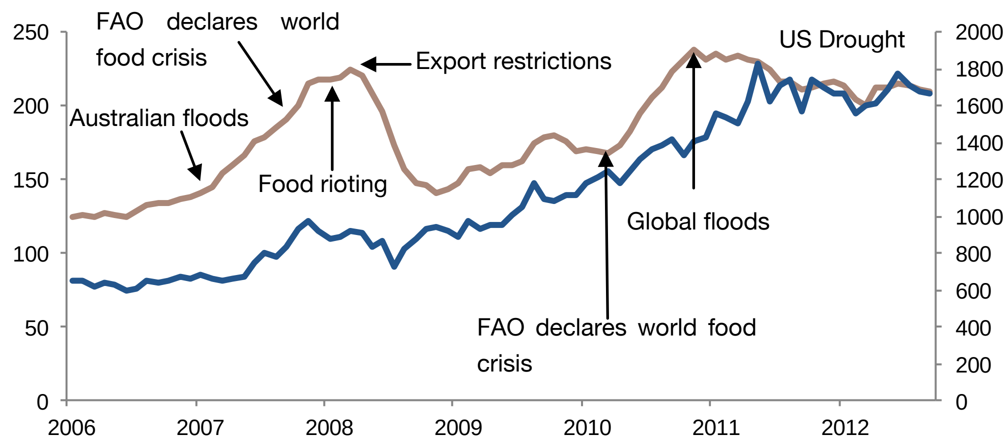
But China is showing the lowest inflation in the BRICs



*BRIC: NGDP –weighted consumer price index

Clearly rising food prices is a significant factor for China and India – the largest consumers of gold and rising food prices – creating realised inflation which could trigger gold buying. Here we test, purely from a statistical standpoint, the assertion that food prices and gold prices are linked and moreover, if the relationship between the two strengthens in environments where food price spikes create inflation and trigger gold buying.

UN FAO food price index (in brown, LHS) and gold in USD/oz (in blue, RHS)



Source: SG Cross Asset Research

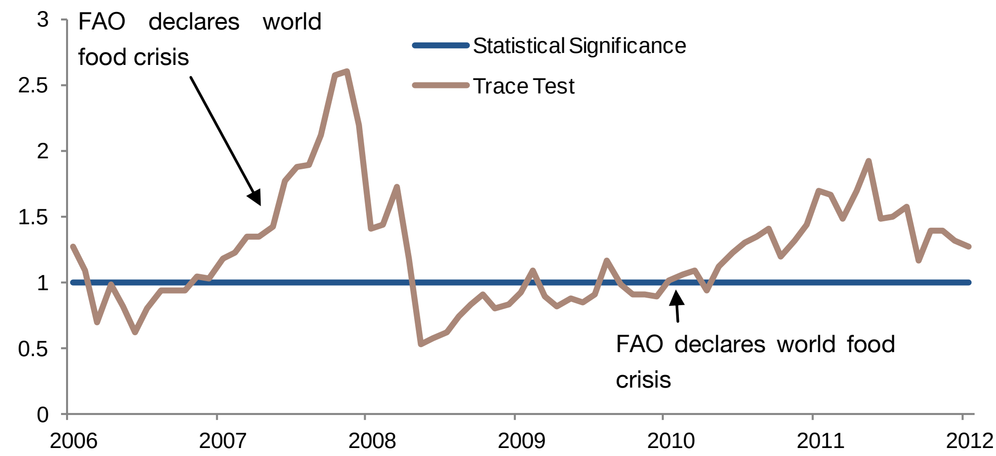
Gold prices and food prices have a very strong link during food scares.

From a visual standpoint, it is clear that the food prices, as measured by the UN FAO food price index are intricately linked (chart below). It is not entirely clear if the relationship between food prices and the gold price is very strong and getting stronger over time. The trace statistic illustrated below has been statistically significant since early 2010.[2] Prior to this, the trace statistic was significant during the period April 2007 to mid 2008 – the FAO-declared food

[2] To see whether there exists a co-integrating vector among our variables, the slope of re-scaled trace statistic determines the direction of co-movements between our variables. Upward slope indicates rising co-movement while downward slope of trace statistics reveals declining co-movement between our variables. A trace value greater than one confirms co-integration.

crisis. From a visual (and statistical) standpoint it is clear that gold prices and food prices grow stronger in linkage during food price run ups.

Trace statistic confirms that the link between gold and food prices increases during crisis

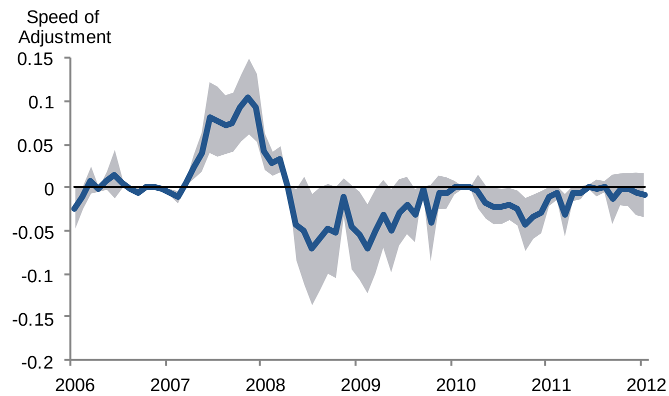


Source: SG Cross Asset Research, FAO, Bloomberg

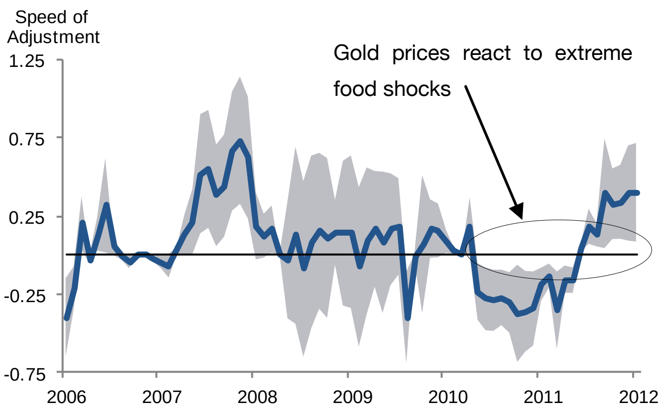
Gold prices react to food price spikes but not vice versa.

What is not clear from merely glancing at a time series plot is whether food does indeed 'lead' the gold price (as gold demand increases as food inflation picks up). Therefore we are interested in assessing whether food price increases can predict turning points to gold prices. As such, to address questions concerning causal linkages we recover, from the recursive co-integration model, the so-called 'speed of adjustment' parameters. These two parameters (one for gold and one for food) can, in simple terms, be interpreted as an indicator of whether or not one series reacts to the other series. Naturally, it can be interpreted as a causality indicator. For example, if the gold adjustment parameter is statistically significant (different from zero) but food's adjustment parameter is not, we can say that the gold price reacts to food prices and not the other way around.

Food prices do not react to gold price movements



Gold reacts to extreme food price shocks



Source: SG Cross Asset Research, IMF, Bloomberg

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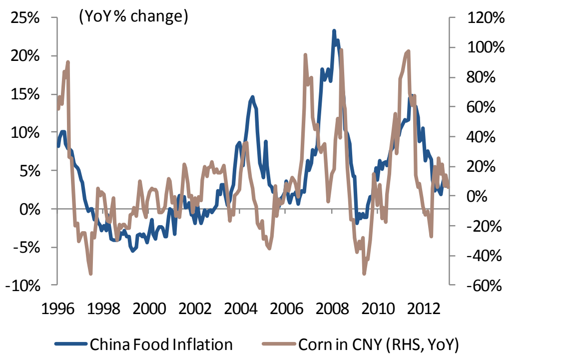
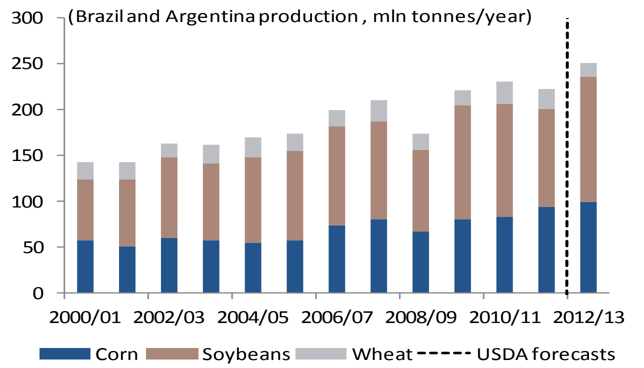
Touching the zero line means that statistically, at that point in time, the adjustment parameter is equal to zero, which means it does not react to the other series. We note that the results above can be interpreted in the following way: Both gold and food prices reacted to each other during the first food crisis in 2007 – in other words, it is not clear which caused which, but the two series were not 'independent' of each other. However, for the next two years, early 2008 to early 2010, the two series had no influence on each other, which makes sense as the two were not co-integrated. As food prices began to pick up in mid-2010, gold now responds to food (see right-hand chart) and not the other way around. In short, we conclude that, for now, food price spikes trigger gold price spikes.

Chinese food inflation remains anchored to grains



South American harvests should be record high



Source: SG Cross Asset Research

We are bearish grains relative to the forward curve (12% below for corn) and from an inflationary standpoint this should not be supportive of gold.

The bottom line is this: are we expecting rising food prices? No. We are quite bearish relative to the forward curve (e.g., for corn we are forecasting $5.00/bu by Q4 13, which is 12% below forward prices). After dual droughts in South and North America severely tightened global soybean inventories, and the drought in the US tightened corn inventories, production estimates for the new-crop year point to a replenishment of supplies. As such, food inflation fears have mitigated as grain and oilseed prices are expected to trend lower throughout the year. The bottom line is this: from an inflationary standpoint, expected or realised, gold is in trouble if our food price forecasts prove to be accurate.

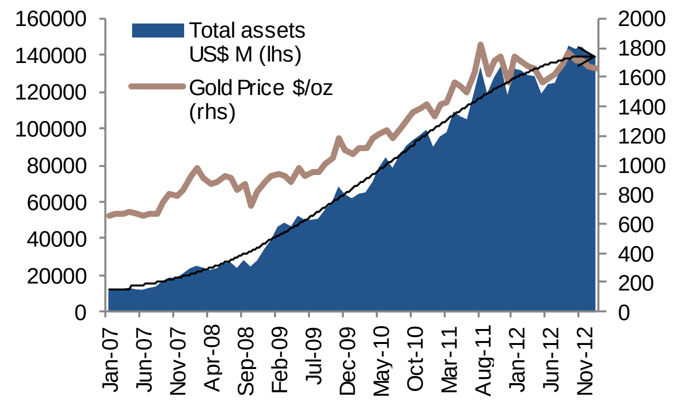
Exchange Traded Funds – Investors exiting – hugely bearish. Hedge Funds still net long

ETF holdings would make it the third largest central bank but since the beginning of this year gold ETFs have dumped roughly 140 tonnes of gold.

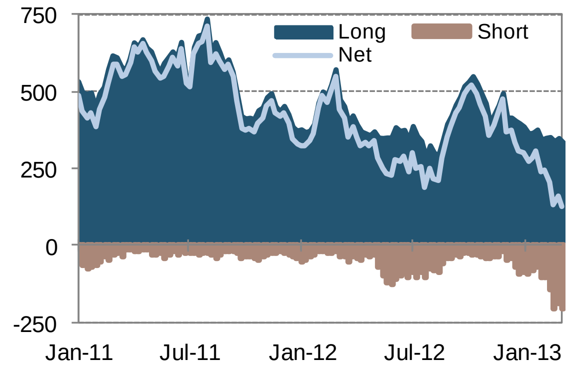
Even with stable ETF flows we would continue to have gold in surplus. Selling would significantly add to the surplus.

A vital element influencing gold prices is from the ETF and managed money (hedge fund) world. Indeed, ETFs have completely transformed the gold market. With roughly 2,500 tonnes of gold held around the world, ETF holdings outnumber all but just two central banks: the US and Germany. And, the amount of gold in ETFs could supply the Indian jewellery market – the largest consumer in the world – for four years. However, since the beginning of January of this year, gold ETFs have dumped roughly 140 tonnes of gold and February witnessed the largest monthly outflow on record. This is despite the fact that anecdotal evidence from members of the Exchange Traded Fund industry confirms that the majority of market participants are institutional, with ever-increasing interest coming from pension funds. These tend to be 'long-term holders". Speculative interest in gold ETFs are apparently a small percentage. Previous sell-offs in gold have not triggered ETF exits. In the final two months of 2011, gold prices fell 13% yet ETF flows increased. The volatility in ETF gold holdings is considerably lower than managed money holdings. Using a six week rolling volatility of holdings model with data from January 2009 to date, ETF holding volatility is just 17%. Gold-managed money holdings volatility is 120%. By all accounts, ETF holdings are far stickier than the managed money category. However with continued outflows of ETFs it would be extremely difficult to picture any future gold rallies. Even with stable ETF flows we would continue to have gold in surplus. Selling would significantly add to the surplus. A significant headwind to gold brought about by a perfect macro outlook would continue to turn investors negative. If we continue to see continued outflows of ETFs, their impact could be devastating for gold.

ETF assets in gold – sentiment turned negative recently



Comex, "managed money" investor gold positions, tonnes



Source: SG Cross Asset Research, CFTC, Bloomberg

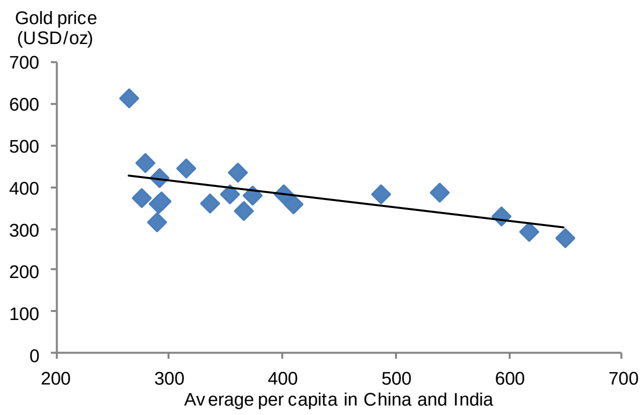
The overall investor outright short in late February 2013 was at its highest in 12.5 years.

Hedge funds have not had a new short position in gold futures since 2002. Since December 2012 however hedge funds have begun to unwind their positions from 208,326 contracts in December 2012 to 107,000 contracts at the beginning of March 2013, which is the smallest net length in over four years. The increasing readiness of managed money operations to trade gold from the short side is a bearish factor (see the chart above). The overall investor outright short in late February by hedge funds was at its highest in 12.5 years.

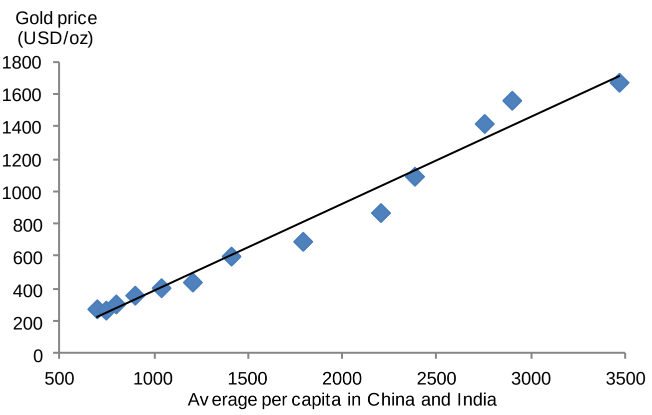
Demand – the strong link to China and India

The charts below illustrate the relationship between average GDP per capita for India and China for two periods. First, 1980 – 2000 (left hand side) and second, 2000-2010 on the right hand side. Without any doubt, in 1980, China and India were very poor with GDP per capita at just USD205 for China and USD265 for India.

Gold prices not influenced by low GDP growth in India and China from 1980-2000



Deregulation from 2000-2010 strengthened the price linkage



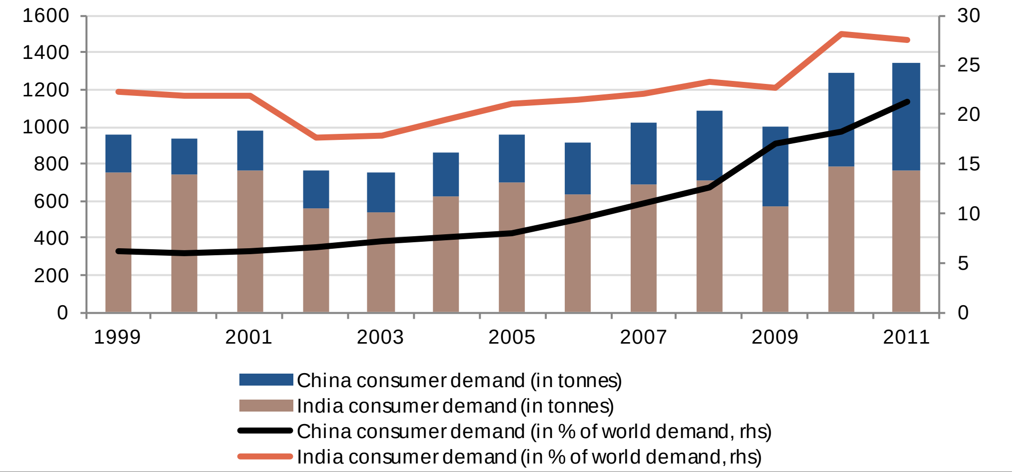
Source: SG Cross Asset Research, IMF, Bloomberg

Their impact on gold prices was obviously low before 2000. Even with a gradual increase in their prices from 1980–2000, this was not enough to influence the gold price. India began to liberalise its gold market in the 1990s, and once China deregulated its gold market in 2001, the two nations began to exert a noticeable impact on the price of gold.

The recent slowdown in China's growth has held back domestic demand and should continue to dampen desire to hold the metal.

The growth in Chinese demand for gold has been heavily influenced by the ways in which Chinese consumers can access investments. There are still very few ways that Chinese investors can diversify away from the mainstream investments of equity markets (still facing hurdles of investing directly in foreign equity markets) and property. Gold is simply an easy way for the Chinese to protect the real value of their investments. The fact that the Chinese government has been increasing its own gold reserves is, in effect, sanctioning Chinese citizens to do the same. Moreover, there has been a rapid acceleration in the ways that the Chinese can access gold investments**.** China has become one of the two major gold consumers along with India, with a significant rise in their market share (55% taken together for jewellery) and gold imports in China have grown considerably particularly since 2011, to meet increasing demand in that country, but the recent slowdown in China's growth has held back domestic demand and should continue to dampen desire to hold the metal.

China and India consumer demand for gold



Source: SG Cross Asset Research

Although lower gold prices would stimulate jewellery demand and investment demand this is unlikely to be a catalyst to send gold significantly higher.

Would growth or lack thereof in China be the ultimate and significant driver of gold price movements? We are of the opinion that Chinese growth will gradually slow over the longer term and would not be a significant driver of higher gold prices. However, although lower gold prices would stimulate jewellery demand and investment demand, this is unlikely to be a catalyst to send gold significantly higher. There is a tendency for jewellery purchases to be funded by the return of old gold pieces, helping to underpin scrap flow; other consumers are looking to buy gold-plated silver jewellery because of gold's high unit price. Overall, Chinese demand should remain an important support for the gold market.

Central banks

The official sector has been adding gold reserves in volume in recent years but the increase from the official sector does not come from the largest holders. Russia started a steady increase in its gold reserves in early 2007, and since then it has added more than 500 tonnes of gold. Over the past year the country added a further 87 tonnes. Gold is roughly 9.5% of Russia's total reserves, Turkey has also added significantly to its reserves in the past two

China is likely to limit its gold holdings to 2% of its total foreign exchange reserves. If they were to buy more gold, gold prices would surge, a scenario that will hurt Chinese consumers.

years (16.1% of reserves), as has the Philippines (12.3% of reserves), Brazil (1% of reserves), Korea, Kazakhstan, and Mexico. China is likely to limit its gold holdings to 2% of its total foreign exchange reserves, according to a recent comment by Yi Gang, a deputy governor of the PBoC. In a press briefing on 13 March, he added that "If the Chinese government were to buy too much gold, gold prices would surge, a scenario that will hurt Chinese consumers. We can only invest about 1-2% of the foreign exchange reserves into gold because the market is too small." The PBoC announced in 2009 that it held 1.054 tonnes of gold, equating to about 1.7% of its total foreign reserves, as calculated by the World Gold Council. No official announcements have been made since.

Official Sector Holdings

	Gold holdings in Million Fine Troy Ounces						Change in Gold Holdings in Tonnes				
	Jan-13	Jan-12	Jan-11	Jan-10	Jan-09	Jan-08	Jan-13	Jan-12	Jan-11	Jan-10	Jan-09
World Gold	1018.27	1003.26	991.49	980.74	963.92	963.35	466.9	366.1	334.4	523.1	17.9
Euro Area	346.69	346.85	346.99	347.18	350.17	353.67	-4.7	-4.4	-6.0	-93.2	-108.8
USA	261.50	261.50	261.50	261.50	261.50	261.50	0.0	0.0	0.0	0.0	0.0
Germany	109.04	109.19	109.34	109.53	109.72	109.87	-4.9	-4.7	-5.8	-5.8	-4.8
Italy	78.83	78.83	78.83	78.83	78.83	78.83	0.0	0.0	0.0	0.0	0.0
France	78.30	78.30	78.30	78.30	79.96	83.17	0.0	0.0	0.0	-51.7	-99.8
China	33.89	33.89	33.89	33.89	19.29	19.29	0.0	0.0	0.0	454.1	0.0
Switzerland	33.44	33.44	33.44	33.44	33.44	36.82	0.0	0.0	0.0	0.0	-105.1
Russia	31.18	28.39	25.37	21.01	16.84	14.50	**87.0**	93.7	135.6	129.9	72.8
Japan	24.60	24.60	24.60	24.60	24.60	24.60	0.0	0.0	0.0	0.0	0.0
Netherlands	19.69	19.69	19.69	19.69	19.69	19.98	0.0	0.0	0.0	0.0	-9.0
India	17.93	17.93	17.93	17.93	11.50	11.50	0.0	0.0	0.0	200.0	0.0
Portugal	12.30	12.30	12.30	12.30	12.30	12.30	0.0	0.0	0.0	0.0	0.0
Turkey	11.90	6.41	3.73	3.73	3.73	3.73	**170.5**	83.3	0.0	0.0	0.0
Venezuela	11.76	11.99	11.76	11.46	11.46	11.47	-7.2	7.2	9.3	0.0	-0.3
Saudi Arabia	10.38	10.38	10.38	10.38	10.38	4.60	0.0	0.0	0.0	0.0	180.0
UK	9.98	9.98	9.98	9.98	9.98	9.98	0.0	0.0	0.0	0.0	0.0
Lebanon	9.22	9.22	9.22	9.22	9.22	9.22	0.0	0.0	0.0	0.0	0.0
Spain	9.05	9.05	9.05	9.05	9.05	9.05	0.0	0.0	0.0	0.0	0.0
Austria	9.00	9.00	9.00	9.00	9.00	9.00	0.0	0.0	0.0	0.0	0.0
Belgium	7.31	7.31	7.31	7.32	7.32	7.32	0.0	0.0	0.0	0.0	-0.1
Philippines	6.20	5.12	4.95	4.99	4.95	4.23	**33.6**	5.0	-1.0	1.2	22.3
Algeria	5.58	5.58	5.58	5.58	5.58	5.58	0.0	0.0	0.0	0.0	0.0
Thailand	4.90	4.90	3.20	2.70	2.70	2.70	0.0	52.9	15.6	0.0	0.0
Sweden	4.04	4.04	4.04	4.04	4.37	4.75	0.0	0.0	0.0	-10.2	-11.8
South Africa	4.02	4.02	4.02	4.01	4.01	4.00	0.1	0.1	0.1	0.1	0.5
Mexico	4.00	3.40	0.22	0.27	0.19	0.11	**18.6**	99.0	-1.5	2.4	2.5
Kazakhstan	3.75	2.88	2.21	2.27	2.31	2.18	**27.1**	20.7	-1.6	-1.5	4.3
Libya	3.75	4.26	4.62	4.62	4.62	4.62	-16.0	-11.2	0.0	0.0	0.0
Greece	3.60	3.59	3.59	3.61	3.62	3.62	0.3	0.1	-0.9	-0.1	-0.2
Romania	3.33	3.33	3.33	3.33	3.33	3.33	0.0	0.0	0.0	0.0	0.0
Poland	3.31	3.31	3.31	3.31	3.31	3.31	0.0	0.0	0.0	0.0	0.0
Korea	2.71	1.75	0.46	0.46	0.46	0.46	**30.0**	40.0	0.0	0.1	0.0
Australia	2.57	2.57	2.57	2.57	2.57	2.57	0.0	0.0	0.0	0.0	0.0
Kuwait	2.54	2.54	2.54	2.54	2.54	2.54	0.0	0.0	0.0	0.0	0.0
Egypt	2.43	2.43	2.43	2.43	2.43	2.43	0.0	0.0	0.0	0.0	0.0
Indonesia	2.35	2.35	2.35	2.35	2.35	2.35	0.0	0.0	0.0	0.0	0.0
Brazil	2.16	1.08	1.08	1.08	1.08	1.08	**33.6**	0.0	0.0	0.0	0.0

Source: Bloomberg, SG Cross Asset Research, Note: the list of countries truncated at Brazil: 39 countries (lower holdings) are excluded from this list

A USD appreciation would reduce the appeal of gold as a source of diversification for central bank reserves.

Clearly not all purchases are in the public domain and it should be noted that some countries have reduced their holdings this year. Germany, Libya, and Venezuela all reduced holdings. Gold as a percentage of reserves for these countries is at 72.8%, 74.5% and 5.3% respectively. Our forecasts for the official sector's activity over the coming years is that it is likely to be a net purchaser of gold for the foreseeable future, but we admit our forecasts may be vulnerable. Specifically we expect the official sector to go from 536 tonnes (see forecast table at end) in 2012 to 450 tonnes in 2013 and 300 tonnes in 2014. To the extent that we are seeing the first divisions within the FOMC regarding the duration of the current QE programme and we are probably moving towards ending QE, the pace of purchases from central banks is most likely to slow as the USD appreciation would reduce the appeal of gold as a source of diversification for central bank reserves. Moreover, the buying activities of central banks need to be put in context. The largest ETF fund is the fifth central bank in terms of holdings, just after the US, Germany, Italy, and France. Selling in ETFs are more likely to have an impact on gold prices and would cancel or dwarf official sector buying if that occurred.

Supply: mine production should pick up and add to bearish tone

Mine supply only grew 2.6% in 2010, 6% in 2011 and 0.6% in 2012. Supply is expected to increase in 2013 and again in 2014.

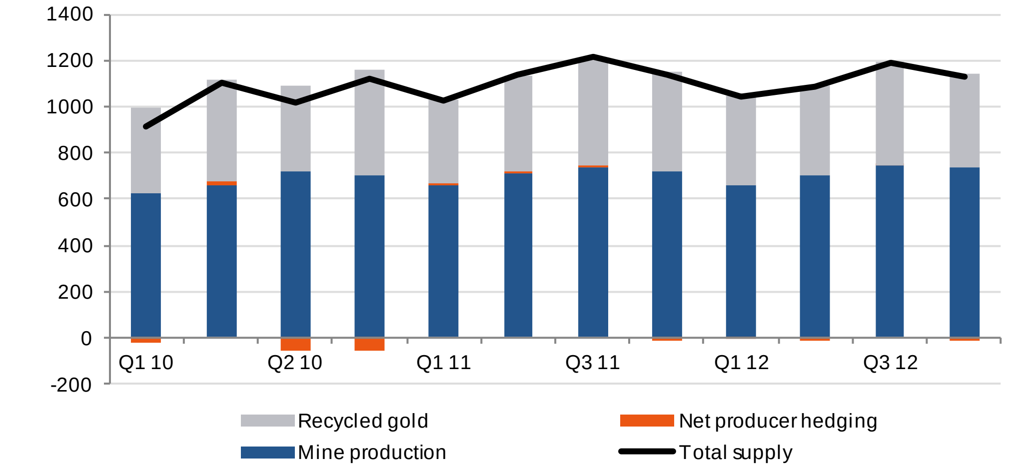
Over the past century, gold supply has been relatively fixed with annual mine production representing a small share of the total stock of gold outstanding with a limited ability for annual production to increase in response to changes in gold prices. In the short run, some miners can react to high prices in a limited way by diverting operations to the high-grade parts of mines and pipeline developments are accelerated to full production. However, as a general rule of thumb, it can take up to ten years for high prices to fully feed through to the mine sector through increased production levels. The lower left-hand chart illustrates that during the 1980s, the peak in mine-supply growth was in 1988, eight years after gold prices peaked. The 33% percent growth in 1988 did not last long. It fell to 3.3% the following year. In a similar way, the most recent low in mine-supply growth was in 2004, a function of the falling prices throughout the 1990s which resulted in cutbacks in most of the major mine producing countries. Fast forward to more recent history where gold prices have been high and margins have expanded, providing a new incentive and opportunity for miners to invest or accelerate projects. In spite of this, production only grew 2.6% in 2010, 6% in 2011, and a mere 0.6% in 2012.

We are not expecting a supply shock in the sense of mega projects all coming on stream, but the extra mining supply should add to the bearish momentum.

Mine supply is set to increase in 2013 and again in 2014. As an example, production should accelerate in China in order to meet its fast-growing demand. Moreover, the country is also acquiring foreign gold mines as it did for many other commodities. Visibility on the production side seems good and should provide a headwind for future gold price increases. Future supply is effectively locked in – already financed and development/expansions is underway. Our forecasts for mine supply for 2013 is 1,750 tonnes up from 1,661 tonnes in 2012 but we will also see some closures and other reductions. The largest individual growth comes from Pueblo Viejo (Barrick 60%, Goldcorp 40% and also a large contributor to increased silver mine production this year) in the Dominican Republic as it ramps up towards full capacity. A recovery at Grasberg in Indonesia should also see a significant increase in output, while Olympiada in Russia is near completing its expansion. Finally Detour Lake poured its first bar in February and is targeting an average annual output of 20.4 tonnes over a 21-year mine life.

Thus, we know pretty well the supply coming through this year and next, but no supply shock (huge supply response) in the sense of mega projects all coming on stream, but the extra mining supply should add to the bearish momentum.

Gold supply

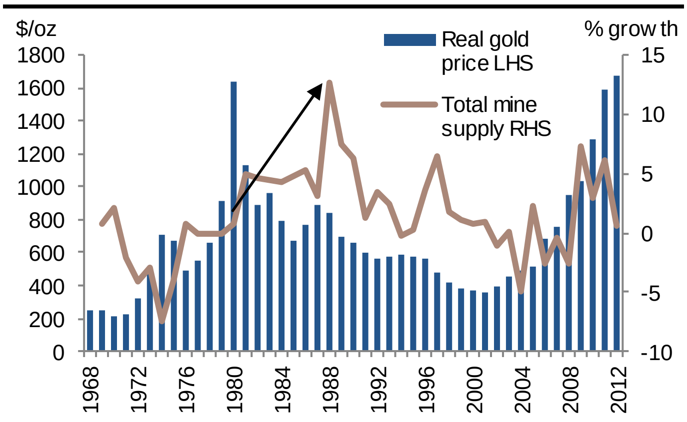


Source: SG Cross Asset Research

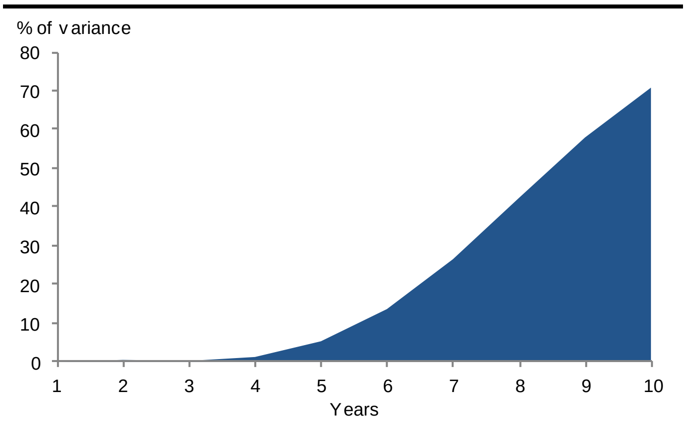
Changes in gold prices do not explain gold mine supply variation for at least six or seven years.

To formally test the responsiveness of mine supply to gold prices (and vice versa), we use the data displayed in the lower left hand chart. In particular we employ so-called innovative accounting techniques to determine how soon mine production reacts to gold prices (and vice versa). First we shock mine (and gold) prices within the vector autoregressive framework. Results suggest that changes in gold prices do not explain a high percentage of gold mine supply variation for at least six or seven years. The breakdown suggests that it takes approximately seven to eight years before over 50% of mine production variation can be attributed to gold price variation.

Higher prices invoke larger supply with a significant lag



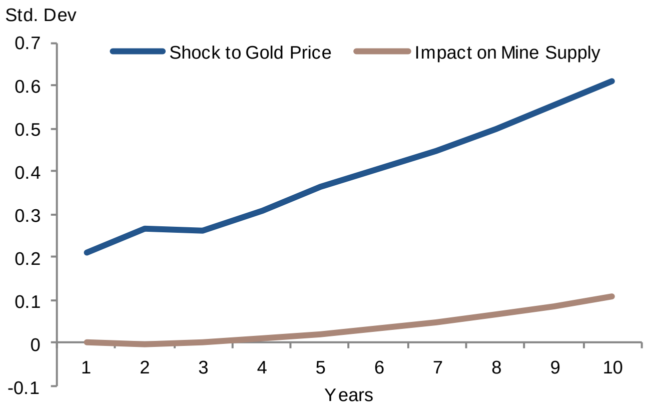
Variance decomposition of mine supply: gold prices do not influence mine supply for many years



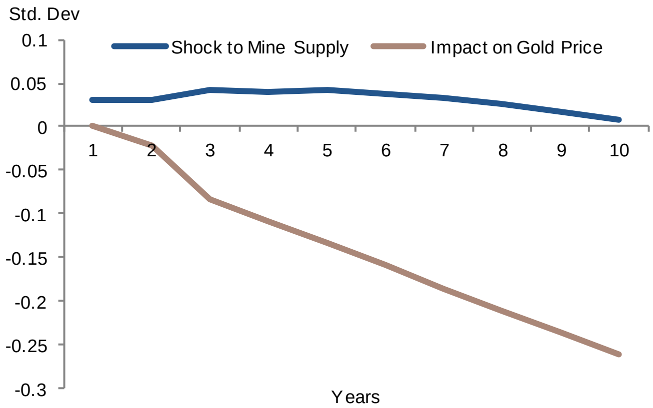
Source: SG Cross Asset Research

We can take the analysis one step further with the assistance of impulse response functions. Here we shock the model by one standard deviation and trace out the influence on the other variable. On the right-hand side we see that a one standard deviation shock to mine supply results in a negative response to gold prices but not immediately. More interesting is the mine supply response to a one standard shock to gold price (see left-hand chart). It takes three years before mine supply response is positive and takes about five to six years for the one standard deviation in gold prices to result in a one standard deviation increase in mine supply.

Impulse response: it takes years for mine supply to respond to a one standard deviation shock (increase) in gold prices



....................but gold prices immediately drop to a one standard deviation increase in mine supply



Source: SG Cross Asset Research

Producer hedging

Average costs for producing gold in 2012 was $1,044/oz. At the ninth decile it is $1,400/oz and a fall below this could unleash fresh waves of producer hedging.

What will it take for an increase in producer hedging? With relatively high gold prices, miners are still reluctant to hedge. However, a strong downtrend in gold prices driven by macro factors as discussed could trigger producer hedging. Average all-in costs (cash operating costs, general & administrative costs, and full capex) for producing gold in 2012 are estimated by GFMS at $1,044/oz. The ninth decile of all-in costs was approximately $1,400/oz. Thus, a sustained fall below $1,400/oz could unleash fresh waves of producer hedging not associated with project-related hedging by miners looking to finance development projects. A downward price spiral could see gold locked into a vicious downward cycle as increased producer hedging prompts ever lower gold prices and, in turn, more producer hedging. A dramatic decline in gold prices may well prompt the necessary paradigm shift in producer and investor attitude towards hedging, allowing the use of forwards and options contracts to significantly enhance sales revenue at a time when producers' margins are critically lean.

Trade recommendations

We recommend selling a 1-year call gold option with an $1800 strike and use the received premium to buy a 1-year gold put option with a strike at $1440. At the time of writing, this option structure had zero upfront cost (spot gold price of $1600). With the Fed's QE coming to an end, low US inflation, and the US dollar trending higher, we would be very surprised to see gold trading above $1800 over the next year. In other words, we consider it very unlikely that the short call option position would end up loss-making at expiry. Note that we expect the put option to end up well in the money in our base case scenario for gold, while the position would be extremely profitable in the super bearish risk scenario.

An alternative zero net premium option structure would be to short a 1-year gold call option with a $1700 strike and buy a 1-year put option with a $1510 strike.

A third strategy would be to go short gold against palladium. The outlook for the palladium price is increasingly turning bullish on a combination of a negative supply shock, as the Russian government stockpile is nearly depleted, and a recovery in demand growth from auto catalysts and electronics. We forecast the palladium price to average $850 in the fourth quarter of 2013 and to have reached $1,000 by the end of 2014. The palladium/gold price ratio should trend higher at pace over coming quarters and years.

SG Primary Gold forecasts

tonnes		**2008**	**2009**	**2010**	**2011**	**2012**	**2013f**	**2014f**
MP		2,429	2,611	2,740	2,836	2,840	2,870	2,925
Old Scrap		1,350	1,735	1,719	1,670	1,640	1,600	1,650
Official Sector		235	34	-77	-457	-536	-450	-300
Total		**4,014**	**4,379**	**4,382**	**4,049**	**3,944**	**4,020**	**4,275**
Fabrication	Jewellery	2,304	1,814	2,017	1,972	1,885	1,900	1,957
	coin	192	234	213	245	200	200	200
	other	531	469	554	542	540	500	505
Bar hoarding		621	498	882	1,197	1,000	1,000	1,000
Total		**3,648**	**3,014**	**3,666**	**3,956**	**3,625**	**3,600**	**3,662**
Balance		**366**	**1,365**	**716**	**93**	**319**	**420**	**613**
Net dehedging/ (hedging)		357	234	108	-11	20	0	0
ETFs		321	617	368	185	279		
Surplus / (deficit)		**-312**	**514**	**240**	**-81**	**20**	**420**	**613**
Price pm fix		**871.96**	**972.35**	**1,224.52**	**1571.52**	**1,668.98**	**1,500**	**1,400**

Source: Thomson Reuters GFMS, SG Cross Asset Research

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