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Gold Price Framework Vol. 2: The Energy Side of the Equation – Part III

In the third part of this report we are putting our gold price framework to use. Having identified longer-dated energy prices and real-interest rate expectations as the main drivers for gold prices, we conclude that both drivers are near the bottom of their respective cycles, implying little downside risk to gold while the outlook for prices is increasingly skewed to the upside. On one hand, longer-dated energy prices have finally broken out of their range and we believe there is a further 30% upside from here. On the other hand, it is becoming increasingly clear that Fed rate hikes are having very little impact on real-interest rate expectations, as most of them are already priced in. This explains why gold has been trending up since the hikes started. The recent sell-off in gold prices on the back of the strengthening dollar is not supported by fundamentals in our view and could result in an explosive upside correction going forward.

In the first part of this report we reviewed the gold pricing model we introduced last year and developed it further. We highly recommend reading it here to get a better understanding of the findings presented in this report. Using econometric tools, we showed that changes in energy prices – more specifically longer-dated oil prices – are a major driver for changes in the USD/gold price (with changes in real interest rates being the other main driver).

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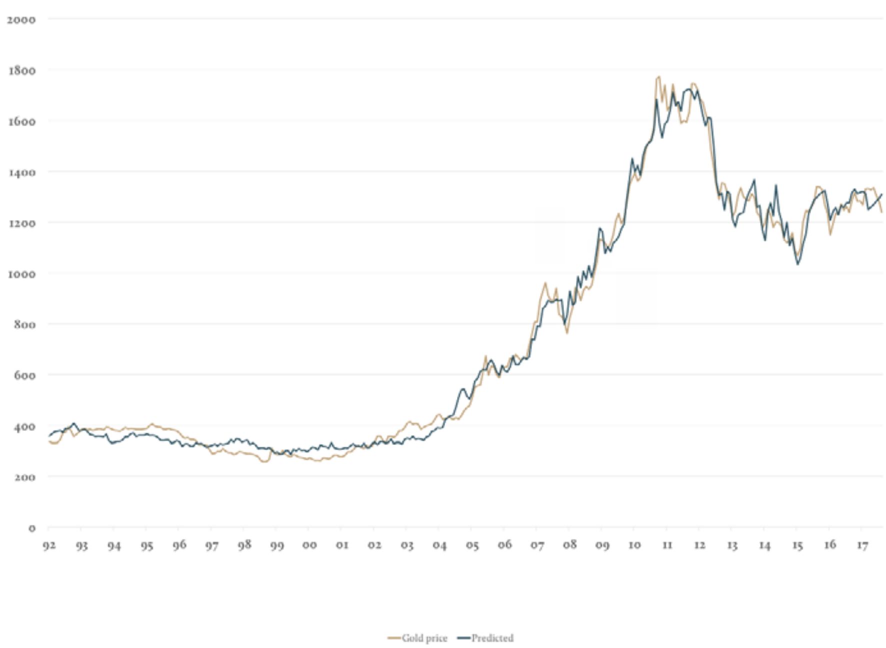
In the second part of this report, we did a comprehensive bottom-up analysis of the true energy exposure of the gold mining industry. We found that gold miners are not just exposed to significant direct energy costs such as fuels and power; their indirect energy exposure is even larger. The bottom up analysis shows that ~50% of production costs of the average gold miner are closely linked to energy prices, which is in line with the findings of part I of our gold price framework which showed that a 1% change in longer-dated energy prices impacts gold prices by about 0.5%.

The third part of this report is putting all these findings to use in the current environment: We analyze where we stand in the cycle of the three major price drivers we identified in our price framework and we give an outlook where we think gold prices are heading from here. We find that the recent drop in gold prices in USD is not supported by fundamentals. In fact, current prices are 10%% below where our model predicts, one of the largest deviations over the past 25 years. Historically such deviations have been followed by strong price rallies. Moreover, analyzing where we stand in the cycle of the underlying price drivers, the outlook for gold prices becomes even more skewed to the upside.

Exhibit 1: Goldmoney gold price model
USD/ozt



Source: Bloomberg, Goldmoney Research

THE LONG-TERM OUTLOOK FOR PRICES

We described our gold price framework at length in the first part of this report. In a nutshell, we found that gold prices are largely driven by just three main drivers: Central bank policy, changes in central bank gold holdings and changes in longer dated energy prices. Before we dive into a more detailed discussion where we believe these drivers are heading, we quickly recapitulate why these are the main drivers. For a more detailed analysis, we recommend reading the first part of this report here.

Central bank policy comprises of two things; Real-interest rate expectations and unconventional monetary policies such as Quantitative Easing (QE). Real-interest rates are nominal rates minus inflation. Real-interest expectations are the markets expectation of real-interest rates. In the US, TIPS yields are a good way to measure real-interest expectations over the next 10 years. We find that gold prices and real-interest rate expectations are inversely correlated, meaning that lower real-interest expectations lead to higher gold prices. Historically, central banks have tried to lower real-interest rate expectations by cutting nominal rates to counter economic downturns. When nominal interest rate hit the zero boundary in 2008, the Fed and other central banks were – successfully – trying to push real-interest rates lower through unconditional monetary policy. The FED's quantitative easing program had a huge effect on both nominal and real-interest rates and in turn on real-interest rate expectations, which pushed gold prices higher. However, we also found that QE has an impact on the price of gold that far exceeds the impact it has on real-interest rates.

The other main driver for gold prices is longer-dated energy prices. Our model shows that longer-term oil prices – we use the 5-year forward price for Brent crude oil – are significant. This comes as no surprise to us as energy is the dominant production cost for gold. Our bottom up analysis in part two of our gold price framework shows that ~50% of production costs of the average gold miner are closely linked to energy prices. This is in line with the findings of part one of our gold price framework which showed that a 1% change in longer-dated energy prices impacts gold prices by about 0.5%

The last driver is changes in central bank gold holdings. Central bank purchases do have an impact on the price of gold, but less so than private portfolio demand. Of all the parameters we identified that drive gold, net sales by central banks was statistically by far the weakest. Central banks were net sellers of gold until around 2008. These sales came predominantly from developed nations. Since 2008, central banks have been net buyers of gold as developing countries began to accumulate gold while developed countries stopped selling.

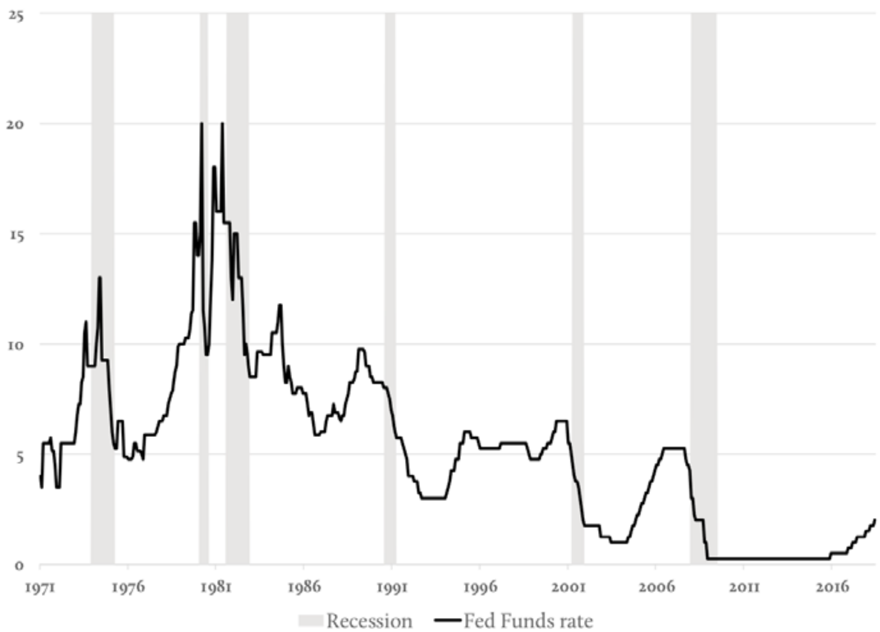
OUTLOOK FOR CENTRAL BANK POLICY AND REAL-INTEREST RATE EXPECTATIONS

We have long argued that USD real-interest rate expectations have little room to the upside even as the Fed keeps raising rates. 10-year TIPS yields averaged 0.45% in 2014-2015 before the first rate hike. Seven hikes later and with the Federal Funds rate 1.75% higher, 10-year TIPS yields are still only at 0.75%. It appears the market priced in the entire Fed hike cycle long before it began. More specifically, 10-year TIPS yields troughed at -0.9% in 2012, three years before the first rate hike.

We don't think further rate hikes will have a much more meaningful impact on real-interest rate expectations either. Despite the fact that the Fed so far has raised rates more than its critics have predicted, the members of the Open Market Committee are forecasting terminal rates at a mere 3.375% by 2020 (slightly up from an initial 3%). We have also shown in a previous report (see: Gold is breaking free from Fed rate expectations, March 20, 2017) that 10-year Treasury yields tend to undershoot short term rates when nominal rates peak. Hence, even if the Fed can continue to hike as it plans, long term rates will likely be below 3.5% at the end of the hiking cycle. In the same report, we have also shown that the Fed uses a different inflation measure (PCE) than what is imbedded in TIPS yields and that inflation as measured by the FED tends to undershoot CPI by up to 1%. Because the Fed will not raise rates unless its 2% inflation target is met (which means CPI inflation will likely be higher by up to 1%), there is little reason to believe that real-interest rate expectations as measured by TIPS yields should go much higher from here. Could nominal rates go higher than the Fed's own terminal rate forecast? Absolutely. But we think that only happens if inflation accelerates above the Fed's inflation target. In that case, real-interest rate expectations might actually go down.

Importantly, we are now just 10 months shy of being in the longest-ever period of economic expansion in the US. Over the past one hundred years, an economic expansion lasted on average 4.1 years. In comparison, the current expansion started over 9 years ago. The problem is that when the next recession arrives, rates will be nowhere near normal levels (5-6%), regardless whether the Fed is able to hike rats to their terminal target or not. Historically, the Fed has tried to mitigate an economic contraction by slashing Fed funds rates by about 5.5% on average (see Exhibit 2). But with rates – in the best case - at 3.375%, that means Federal Funds rates would have to fall into negative territory. Unlike other central banks, the Fed has so far been able to avoid this. And because there is a very limited impact once rates drop below zero, we would expect that the Fed would be forced to deploy more unconventional monetary policy (QE). In such a scenario, we expect real-interest rate expectations to make new lows. On net, this means that – at best – real interest rates have very limited upside as long as the Fed is able to keep raising rates, and a lot of downside once the economic expansion inevitably ends.

Exhibit 2: The Fed slashed rates by 5.5% on average to mitigate economic recessions
%



Source: Bloomberg, FRED, Goldmoney Research

As for our second driver, longer-dated energy prices, we have recently published a comprehensive report (Crude Oil – The Next 5 Years, May 14, 2018) where we make the case that longer-dated energy prices will have to move significantly higher from here (~30%) in order to encourage investment in new projects. In our view, absent a major economic slowdown, similar to the one in 2008-2009, we don't see much downside for longer dated energy prices. And if we do get another global recession, we would expect real-interest rate expectations to crash, outdoing any negative impact from lower energy prices on gold.

Last but not least, changes in central bank gold holdings are expected to remain favorable on trend. Nobody can say with certainty how central banks are going to manage their gold holdings in the future. But we know that eastern central banks stopped selling gold years ago and Emerging Markets central banks have steadily added gold to their reserves. Given that gold remains a very small share of foreign reserves of large emerging market countries including China, India and Brazil, we don't see a reason why these countries should reverse course anytime soon. It's also important to know that changes in central bank gold reserves is the weakest driver of gold prices.

Hence, of the two main price drivers for gold – longer-dated energy prices and real-interest rate expectations – one is pointing up while the other one implies very limited downside for gold near term and a lot of upside longer term. Table 1 shows how our model predicts gold should perform in various scenarios.

Table 1: Gold price scenario analysis
USD/ozt

Longer-dated energy	Real-interest rate expectations							
	1.50%	1.00%	0.50%	0.00%	-0.50%	-1.00%	-1.50%	-2.00%
100	1,420	1,553	1,686	1,819	1,952	2,085	2,218	2,351
90	1,335	1,468	1,601	1,734	1,867	2,000	2,134	2,267
80	1,250	1,383	1,516	1,649	1,783	1,916	2,049	2,182
70	1,165	1,298	1,432	1,565	1,698	1,831	1,964	2,097
60	1,081	1,214	1,347	1,480	1,613	1,746	1,879	2,012
50	996	1,129	1,262	1,395	1,528	1,661	1,794	1,927

Source: Goldmoney Research

GOLD IS OVERSOLD SHORT-TERM

Gold prices have sold off sharply over the past couple of months. Prices traded between USD1320/ozt – USD1350/ozt between January and April this year, before dropping sharply to currently USD1200/ozt (see Exhibit 3). As at the time of writing, prices are down almost 10% year-to-date and 9% year-over-year. So, what has changed since April?

Exhibit 3: Gold price chart
USD/ozt

Source: Bloomberg, FRED, Goldmoney Research

From a fundamental perspective, not much. Real-interest rate expectations, as measured by 10-year TIPS yields, are at the higher end of the range they have been trading in since 2011. But they were higher in April, when gold prices were almost US150/ozt higher (see Exhibit 4). At the same time, longer-dated energy prices, as measured by 5-year forward Brent, have finally broken out of the very narrow band of USD55-60/bbl they have been trading in for the past few years and are currently at USD63/bbl (see Exhibit 4). And central bank gold holdings – even though we lack real time data – have been steadily increasing over the past years and there is no evidence that this trend has reversed over the past months. (Russia has accelerated its pace of gold reserve accumulation in recent months.)

Exhibit 4: 10-year TIPS yields are close to the levels not seen since 2011
%

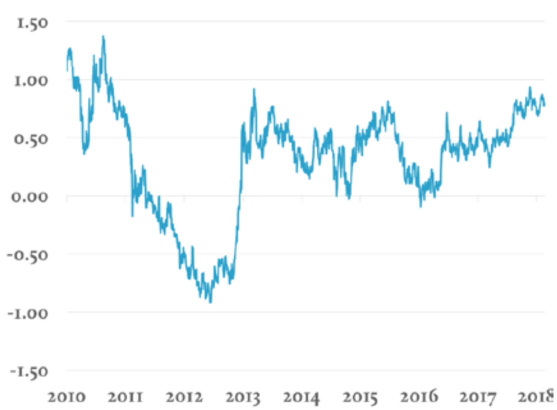


Exhibit 5: Longer dated energy prices have finally broken out of their USD55-60/bbl rage
USD/bbl

Source: Bloomberg, Goldmoney Research

So why did gold sell off? We believe there are two main reasons. First, prices were high relative to where our model predicted them from February to April. Given the move up in real-interest rate expectations, we would have expected that prices should have dropped somewhat earlier. More specifically, between February and April, gold prices were on average close to 6% above what our price model would have predicted. Hence, the recent sell-off could partly be attributed to a delayed reaction to the spike in real-interest rates. However, current prices are now 10% below where the model predicts them to be.

Second, the sell-off in prices has coincided with the general strengthening of the USD (see Exhibit 5). This seems intuitive at first because prices are measured in USD after all, and if the USD becomes stronger, so the argument goes, shouldn't gold prices go down? It depends on why the USD becomes stronger. If the USD becomes stronger against other currencies because the underlying fundamentals (real-interest rate expectation) become stronger, then there is indeed a reason for gold prices in USD to go down. But if the USD becomes stronger against other currencies because the fundamentals of these other currencies are weakening, then gold prices should remain unaffected. In fact, if the fundamentals of both the USD and other currencies weaken, but the fundamentals of the USD simply weaken relatively less, then gold prices should go up in all currencies.

Exhibit 6: The trade weighted USD has strengthened 6.5% since April
US trade weighted broad currency index

Source: Bloomberg, FRED, Goldmoney Research

Given the Federal Reserve's seven hikes since 2015, it appears that USD fundamentals have indeed strengthened slightly in recent years. However, as we have highlighted before, despite all these hikes, and despite the rise in both short-term and long-term interest rates, real-interest rate expectations are still at the same levels as before the hike cycle started in 2015 (see Exhibit 6). This is because inflation expectations are also rising (see Exhibit 7).

Exhibit 7: Real-interest rate expectations (10-y TIPS yields) have not moved with nominal rates
%

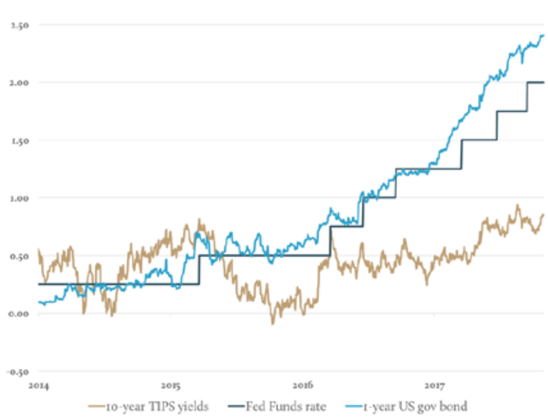


Exhibit 8: Inflation expectations increased with nominal rates
%

Source: Bloomberg, FRED, Goldmoney Research

The USD has strengthened about 6.5% on a trade weighted basis since April. Was that because underlying fundamentals strengthened? No, because – as we have said before - real-interest rate expectations have remained unchanged over this time period, and have actually moved lower again in recent days. Over the same time-frame, speculators sold a massive amount of gold in the futures market. Managed money futures positions reached an all-time record net short last week (see Exhibit 8). Exhibit 9 shows that this futures selling came clearly on the back of the rally in the trade weighted USD. However, in our view, gold prices have completely dislocated from the underlying fundamentals. For fundamentals to align with prices again, either prices move up, or it would require that either inflation expectations come down again, or, that 10-year yields rise significantly without a rise in inflation expectations. But the gold market is the only market that exhibits this forward view. In other words, the gold market is currently pricing in a forward view that is not shared in other asset classes such as bonds. We believe this leaves the gold market vulnerable for explosive upward correction once the dust settles.

Exhibit 9: Managed Money (speculators) futures positions are at an all-time net short
Number of Contracts

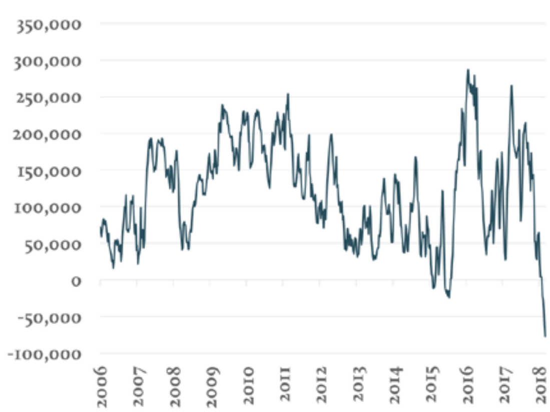
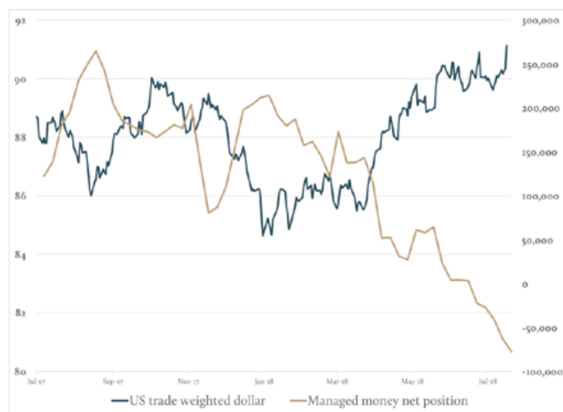


Exhibit 10: The speculative selling in the gold futures market came on the back of the USD strength
US$T (LHS); Number of contracts (RHS)



Source: Bloomberg, Goldmoney Research