ETF Securities Outlook 2016 April Update:
Central bank separation anxiety: the seed of a policy error

The US Federal Reserve (Fed) has made a policy mistake. After raising rates for the first time in nine years, the Fed has held back from further hikes in 2016, heeding to market tantrums. At the same time, the European Central Bank (ECB) announced further policy easing including widening the types of assets it purchases from the market. Separation is hard. The Fed is struggling to focus on the strength of domestic fundamentals such as the strong labour market or increasing inflationary pressures and is reluctant to move too far from the pack. Instead it has revised its ‘dot-plot’ guidance to indicate it will only raise rates twice this year (down from four in December). We believe that will be insufficient to rein in prices and could lead to the central bank having to tighten more aggressively later in the cycle.

A global economic recovery is likely to provide a tailwind to industrial precious metal prices (silver, platinum and palladium). At the same time it is unlikely to derail gold, a more defensive asset.

Central bank policy will remain a supportive influence for gold. Along with the Swedish Riksbank, Danish National Bank, Swiss National Bank and the Bank of Japan, the ECB has adopted a policy of negative interest rates (NIRP). We argue that NIRP, whether in nominal or real terms, is positive for gold prices.

While emerging markets (EMs) have been in the doldrums for some time, we believe pessimism around EM bonds is overdone. We believe that investors are being overcompensated for emerging market credit risk and this presents a buying opportunity. Given the low yields in developed markets, as EM sentiment improves, we expect inflows into EM bonds. That should support EM currencies. EMs are a heterogeneous group. Emerging European countries have relatively low levels of debts compared to their Latin American and Asian counterparts. On an inflation-adjusted basis, valuations favour Emerging European currencies.

After the sharp correction in equities in the first quarter of 2016, valuations in several sectors look compelling. Of particular note are cyber security stocks.

Volatility is an underutilised tool in making asset allocation decisions. We demonstrate that creating a trading signal to buy bonds when equity volatility spikes (and sell bonds when equity volatility subsides), can enhance returns when compared to a balanced portfolio or a trading signal based on relative yields between equities and bonds. Volatility is likely to remain a pervasive influence in 2016 as central bank policy creates uncertainty and investors need to be wary.

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Federal Reserve credibility at risk

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Summary

- Recent US Federal Reserve (Fed) policy ambiguity will give impetus to US Dollar volatility in coming months.
- US Dollar peak postponed as uncertainty about Fed interest rate path prevails.

Policy feedback loop

Currency volatility remains elevated as investors continue to fret over the potential for rate hikes derailing the US economic recovery. We believe there is no threat of modest rate hikes impacting economic growth. The threat is coming from uncertain policy guidance from the Fed.

Real GDP trends indicate that the pace of US economic growth is solid. While the growth path of real GDP is not as strong as pre-crisis levels, there is no evidence of a slowdown. Such a growth path warrants tighter monetary policy.

Although uncertainty is likely to be a consistent element within the financial landscape, the US recovery will continue in 2016. However, it seems that now the Fed is responding to asset price volatility and external factors rather than its mandated combination of full employment and price stability. Greater policy uncertainty could be feeding market volatility and generating a self-fulfilling cycle. As a result, volatility will remain until US monetary policy becomes more predictable.

Doves overwhelm the hawks

The FOMC kept rate settings unchanged at its March 2016 - a widely anticipated decision. We feel this was an error in judgment from US policymakers.

The latest economic projections released at the March FOMC meeting highlights that the Fed’s Board of Governors has become more dovish since the December meeting. The median estimate indicates that rates will rise to 0.9% (from current level of 0.38%) by end-2016, down from 1.4% in December. The market is even more myopic than the Fed, pricing in only one rate hike by year end.

Previous studies highlight that such action is misguided. Former Federal Reserve Chairman Bernanke has noted that changes in asset prices should affect monetary policy only to the extent that they affect the central bank’s forecast of inflation. The FOMC noted that ‘global economic and financial developments continue to pose risks’. We feel that the Fed is being dictated to by markets, something that will lead to unintended consequences as a result of poor policy action – the Fed has made its first mistake. Former Chairman Bernanke’s view was that policy should respond to market developments only if financial stability is compromised.

Inflationary pressures mounting

The Fed’s estimate for inflation by year end is 1.6%, compared with current level of 1.0%. The Fed’s medium term target is 2.0%. Inflation overshooting seems the most likely scenario if the Fed continues to delay policy tightening. Its expectation of inflation reaching the target level in ‘two or three years’ seems a long shot given that core inflation is already running at 2.3%.

The Fed knows the US jobs market is strong. An increasingly...
tight jobs market is likely to be the driver of rising inflation. It is likely that the US economy has nearly reached the level of unemployment (NAIRU) at which inflation begins to rise as a result of wage pressure. Indeed, according to Fed projections, the current unemployment rate (4.7%) is now at the bottom of its long run 4.7-5.8% range.

Wage data puts annual growth moderating to 2.2% but a recent calendar quirk accounts for this fall. Adjusting for this, the true rate of wage growth it is probably closer to 2.6%. While nominal wage growth is lacking, real wage growth remains solid and in line with longer run averages of jobs market improvement.

A lack of wage growth has been widely cited as the reason for sanguine inflation despite robust jobs market. Households, however, have been comfortable with current compensation rates given that budgets have been supported by low interest rates and gasoline prices. Additionally, if real wage growth is rising due to depressed inflation dynamics, then households will be less likely to pursue nominal wage increases, especially if productivity growth is low. However, that cannot hold in the long run, now that core inflation is rising – workers will demand nominal pay growth to defend against the erosion in purchasing power. There is potential of an upward wage-price spiral developing as a result.

Investments may go up or down in value and you may lose some or all of the amount invested. Past performance does not guarantee future results. 

The latest FOMC statement even notes that ‘survey-based measures of longer-term inflation expectations are little

The Fed’s credibility is on the line

The risk of waiting too long to raise rates is greater uncertainty. Such a situation seems circular, with markets fretting Fed decisions and the Fed concerning themselves with market volatility – issues outside the scope of its mandate.

With the US jobs market in robust shape, pipeline inflation pressure should be the Fed’s focus. If the Fed is too slow in raising rates in 2016, inflation expectations will begin to gain momentum and the only cure is a more aggressive rate profile.

While the Fed may be able to raise rates more gradually given the slower growth recovery of the economy, the tightening process shouldn’t stall and its rhetoric must be clear: the US economy is arguably at full employment and in turn inflation expectations must be contained. The Fed needs to be more active than it currently has been. The Fed has a history of being reactive and this tightening cycle seems no different. The Fed’s credibility is now on the line.

Implications for the US Dollar

The market is pricing in a stronger USD over the coming three months, but futures market positioning has declined in recent weeks. The US Dollar has range traded recently, but we expect further near-term volatility until a clearer path for rates is enunciated by the FOMC.

Investor positioning

While the USD will peak in 2016, further weakness has been postponed by the Fed’s inability to adhere to its mandate.
Gold should benefit in a NIRP environment

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Summary

- Historically, in negative real interest rate environments gold has performed better than in non-negative rate periods
- Gold is likely to be used by corporates as a way of avoiding the negative interest rate burden
- NIRP (Negative Interest Rate Policy) isn’t the final experiment by central bankers
- NIRP could push gold into backwardation and therefore could be used as a carry trade

There is little difference between NIRP and negative real rates

There has historically never been a period where a major banks deposit rates has turned negative until now, with the European Central Bank (ECB) cutting the bank deposit facility to -0.4%. Looking at UK data, which has the longest time bank interest rate deposit series data available of any country, can give us some clues as to what might happen to gold during periods of negative rates. We see there being no substantial difference between negative deposit rates today and negative real deposit rates back in the 1970’s and the post credit crisis period. Periods of negative real yields typically lead to capital flight from depositors into real or yielding assets and both are a form of “soft-default” as they are designed to generate inflation by encouraging spending and thus reduce the real value of debts.

Central banks engineering negative real rates

Central banks are complicit in generating the inflation so desired by the central government. In a recent FRBSF Economic letter titled “Is There a Case for Inflation Overshooting?” written by senior San Francisco Federal Reserve economist Vasco Cúrdia, argues that the US Federal Reserve (Fed) is happy to allow inflation to overshoot by keeping interest rates low. Given that core inflation is rising faster than nominal interest rates, a negative real rate policy is clearly being pursued in the US. It cannot persist forever though, as it would constitute a breach of the Federal Reserve Act, and expose the central bank to all sorts of political interference. However, as policy undertaken today is to target inflation and employment outcomes in over a years’ time, the central bank can argue that it is keeping policy loose due to looming risks it sees in the future.

Whether negative in real terms (Fed) or in nominal terms (ECB, Swedish Riksbank, Danish National Bank, Swiss National Bank, Bank of Japan), negative rates appear to be the policy choice of modern developed world central banks.

Gold outperforms in negative real interest rate environments

There have been two distinct periods where bank deposit rates were negative in real terms: in the 1970’s and post credit crisis period. There were mild negative real rates in the late 1950’s but the gold price was fixed, and so we look at data from 1968, when the gold price started to move. 1968 marked the end of both the unified fixed exchange rate regime and the beginning of the end of Bretton Woods.

Historical data suggests that there is a relationship between negative real interest rates and the gold price. The chart above highlights the 6 month forward median price performance of...
gold in different real rate environments. The data highlights a distinct outperformance of gold in negative real interest rate environments relative to more normal periods. We have included the S&P500 index performance as a benchmark, highlighting that real interest rates have little impact on equity market performance.

The unintended consequences of NIRP

Negative interest rates set by the ECB are having some unintended consequences. According to Bloomberg, institutional investors, savings banks and pension funds are debating whether it is worth bearing the insurance and logistics costs of holding physical cash as overnight deposits fall deeper below zero, negatively impacting returns. Consequently they are looking for ways to avoid paying negative interest rates. Munich Re’s approach has been to boost its gold holdings.

Banks are likely to suffer from the negative rates on the ECB deposit facility too, although the proposed TLTRO II auctions have more favourable funding conditions than the original TLTRO initiative. In TLTRO II banks lending above a certain benchmark will receive a discount, which will help compensate for the “tax” on their deposit rates. Encouragingly, the introduction of TLTRO II and the purchase of non-financial corporate bonds by the ECB highlights that central banks are looking for alternative methods of stimulus, and that NIRP is not necessarily the final experiment by central bankers. The ECB is acutely aware of the negative impact that negative interest rates could have on the already meagre European lending environment.

NIRP could push Gold into backwardation

Interest rates are a key input in the pricing of a commodity futures contract and accordingly play a role in total return futures investment in the asset class.

Futures contracts for commodities are priced on the concept of the ‘cost of carry’. The cost of carry incorporates storage and insurance costs, and the funding cost of the cash needed to purchase the underlying commodity. With lower, and potentially negative rates expected to prevail, prices along the commodity futures curve will be forced lower as funding costs are cheaper. The lower interest rates go, the greater the potential for the commodity curve to move into backwardation.

In addition, because there is a cost to holding cash in a NIRP environment, rising demand for defensive or ‘monetary assets’ like gold should lift prices at the front end of the curve as the opportunity of holding cash balances rises.

In summary, we find that in a negative real interest or NIRP environment gold is likely to outperform relative to more normal periods.
Economic recovery unlikely to derail gold prices

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Summary

- Rising inflation and a weakening US dollar are gold price positive. However, an up-tick in the economic cycle could be a drag on gold prices.
- While we find the economic cycle is an important driver of gold prices, this appears to be a relatively new development. A return to old relationships could eat away at gold’s defensive qualities.
- If the US Federal Reserve (Fed) restarts hiking rates in June 2016, gold at approximately 1250 is fairly valued.
- We continue to believe that a policy error is in the making with the Federal Reserve being too slow to normalise rates.

Gold as a defensive asset

In our paper Policy mistakes provide upside potential for gold¹, we presented a model which showed that the price of gold is positively associated with inflation and investor sentiment towards the metal (using net speculative positioning) and is negatively associated with nominal long yields and the trade-weighted dollar. We propose adding a further variable to the model: an economic cycle indicator. This measure, which we have developed in-house, combines the following elements²:

1. US budget deficits
2. Leading economic indicators
3. The consumer to producer price inflation premium (a proxy for corporate profit margins)

The indicator behaves in a similar way to the output gap, but does not require guess-work in terms of what potential output is and is more timely that the Congressional Budget Office’s release of the output gap. Although many of the variables in the existing model have some relationship with the economic cycle, budget deficits and corporate margins are not captured well.

Using the new variable in the model improves its R-square (a statistical measure of how close the data is to the fitted regression line) from 64% to 68%.

¹ Presented in ETF Securities Outlook 2016: Don’t believe the hype..., (December 2015)
² The measure is normalized around the median using a z-score and we use a year-ago difference in the measure as the model input

The variable is negatively associated with gold prices, which confers to gold’s defensive qualities. It is significant at the 1% level and the enhanced model works well in our out-of sample testing.

Determinants across gold cycles

Before accepting the new variable into the model, we look at how consistently it has been relevant in past gold price cycles. We firmly believe that we should include as much history as possible to calibrate the model, but as an exercise to see when the model does and does not perform, we have split our time

Investments may go up or down in value and you may lose some or all of the amount invested. Past performance does not guarantee future results.
We calibrate the model in each of these separate gold price cycles and see if the explanatory variables are significant and of the expected signage (see table at below).

While all the variables become relevant in the latest cycle (2008-2016), that has been quite rare through the various gold price cycles. The trade-weighted US dollar tends to be the most consistent variable in the model through time, with it only falling out of favour in two of the past nine cycles (1974-1976 and 2007-2008). In the former period, the world was adjusting to the death of the Bretton Woods system and so the US dollar-gold relationship had not been fully formed yet. In 2007-2008, the global financial crisis led to US dollar and gold being considered safe havens, breaking the traditional relationship.

Inflation has been a significant variable in five of the past nine cycles. Between 1982 and 1993 (spanning three cycles) inflation failed to become a significant variable with the correct sign. During this period, the US was adjusting to a much lower inflation environment while gold prices were reacting to a number of global shocks.

Nominal yields only appear to be a relevant variable in four of the past nine cycles. It has been a relevant variable for most of the past decade, but prior to that was only significant in the 1982-1985 and 1993-2001 periods. Quite like the recent cycle, in 1982, nominal interest rates were declining (albeit from a very high base).

For the period of time that we have the data, speculative positioning appears relevant in most cycles. In the 2001-2007 period most elements of the model failed. The sharp gains in gold price in the middle of 2006 (52% y-o-y in June 2006 for example) are hard to account for and points to a bubble in that period.

The economic cycle indicator only appears to be significant in two of the past nine cycles. Indeed its sign moves from positive to negative in many of the cycles. It seems to indicate that this is one of the least stable elements of our model. For this reason we would caution against placing too much emphasis on the cycle element of the model. Indeed the cycle indicator looks close to a peak at moment, but gold prices are still rising.

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**Gold Price Cycles**

We measure inflation surprises and US dollar depreciation to keep prices higher

Using our model, assuming inflation rises to 2% and the cycle indicator increases by 0.5, gold prices are likely to stay around current levels in February 2017 (assuming a 5% depreciation in the US dollar and speculative positioning remains around its long term average). A sharper rise in inflation or depreciation in the US dollar could take prices materially higher. These are likely outcomes if the Fed persists with its current rhetoric.

With our cycle indicator close to its historic highs, we don’t think the cycle component will move materially higher, capping gold price declines.

<table>
<thead>
<tr>
<th>US dollar</th>
<th>Inflation</th>
<th>Nominal yields</th>
<th>Cycle indicator</th>
<th>Speculative positioning</th>
<th>Adj. R²</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>69%</td>
<td>N/A</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>69%</td>
<td>N/A</td>
</tr>
<tr>
<td>✓</td>
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<td>✗</td>
<td>✗</td>
<td>69%</td>
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<tr>
<td>✓</td>
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<td>✗</td>
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<td>69%</td>
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</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>69%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

# Inflation and US Dollar Depreciation to Keep Prices Higher

Using our model, assuming inflation rises to 2% and the cycle indicator increases by 0.5, gold prices are likely to stay around current levels in February 2017 (assuming a 5% depreciation in the US dollar and speculative positioning remains around its long term average). A sharper rise in inflation or depreciation in the US dollar could take prices materially higher. These are likely outcomes if the Fed persists with its current rhetoric.

With our cycle indicator close to its historic highs, we don’t think the cycle component will move materially higher, capping gold price declines.

### Gold in level terms (US$/oz), Feb 2017

<table>
<thead>
<tr>
<th>CPI inflation (%)</th>
<th>Increase in economic cycle score</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2.5</td>
<td>1222 1197 1172 1147 1121 1096 1071 1046 1021</td>
</tr>
<tr>
<td>-1.0</td>
<td>1238 1208 1273 1248 1223 1198 1173 1148 1122</td>
</tr>
<tr>
<td>0.0</td>
<td>1342 1299 1273 1248 1223 1198 1173 1148 1122</td>
</tr>
<tr>
<td>1.0</td>
<td>1364 1339 1314 1286 1261 1239 1213 1188 1163</td>
</tr>
<tr>
<td>1.5</td>
<td>1385 1359 1334 1309 1284 1260 1234 1209 1183</td>
</tr>
<tr>
<td>2.0</td>
<td>1405 1380 1355 1330 1304 1279 1253 1229 1204</td>
</tr>
<tr>
<td>2.5</td>
<td>1425 1400 1375 1350 1325 1299 1274 1250 1224</td>
</tr>
<tr>
<td>3.0</td>
<td>1446 1420 1395 1370 1345 1320 1295 1269 1244</td>
</tr>
<tr>
<td>3.5</td>
<td>1467 1502 1476 1451 1426 1401 1376 1351 1326</td>
</tr>
</tbody>
</table>

*The model assumes a 5% depreciation in the US dollar, no change in nominal long rates and net long speculative positioning at the long term median of 75,000 contracts.*
Industrial precious metals to continue to recover

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Summary

- Demand for platinum, palladium and silver likely to continue to grow as China’s industrial output appears to have found a base.
- Supply deficits likely to grow as Rand depreciation abates and miners cut back on activity.
- Rising global emission standards, to drive demand for platinum group metals (PGMs) higher.

Recovery started

Silver, platinum and palladium have started to recover this year, rising 14%, 11% and 7% respectively (to 22 March 2016). Part of their recovery reflects their close ties with gold: silver and platinum monthly returns have been 70% and 57% correlated with gold since 1993. Silver and platinum are heavily used in jewellery and are invested in bar and coin form. Palladium has a much lower correlation to gold (25% since 1993), reflecting the fact that jewellery and bar and coin investments are very small for the metal. Nevertheless, more than half of silver’s and close to 70% of platinum’s use is in industrial applications and automobile components (over 90% for palladium). Industrial output is therefore an important driver of the demand for these metals. We refer to these metals as industrial precious metals to distinguish them from gold, which operates more like a monetary asset.

China’s industrial output found a base

Part of the reason that these precious metals have been falling since 2011 is due to China’s moderating demand as it adjusts to a slower pace of economic growth. China’s demand growth for silver and platinum has fallen in recent years, but remains strong for palladium, which is used heavily in catalytic converters in gasoline powered cars. While China’s industrial output growth fell from a high of close to 20% y-o-y in mid-2010, it appears to have found a base, after growing at 6% y-o-y in almost every month in 2015.

Supply deficits likely to grow

All three of these metals have been in a supply deficit in the past three years. The deficit is likely to continue. South Africa, which produces 80% of platinum and close to 40% of palladium habitually has labour and energy security problems. The depreciating South African Rand has insulated its miners from the price weakness of the the underlying commodity for some time. However, as the South African Reserve Bank is determined to stamp out inflation by raising interest rates and regaining strength in its currency, miners will no longer be as insulated as they used to be. Miners are likely to continue to pare back on activity.

Silver, which is mainly mined as a by-product of other metals, is likely to see its production cut as other metals supply is pared back. As we argued in Sentiment turns more positive for industrial metals, (March 2016), deep CAPEX cuts in the...
industrial metals space is going to reduce zinc and copper production in 2016. These are key sources of silver production.

**Sources of silver supply**

![Graph showing sources of silver supply](image)

**Tightening emission standards to drive PGM demand higher**

In 2015, tighter emission standards were rolled out in Europe. In Europe there are more diesel cars than gasoline cars. Diesel cars use higher platinum loadings\(^4\) compared to palladium in their autocalysts. While autocalysts are not the primary technology to abate NOx emissions (lean NOx traps and selective catalytic reductions are used in the after-treatment for this purpose), according to Johnson Matthey, PGMs optimise the process. As a result, in 2015 PGM loadings increased by 7% due to the roll-out of the legislation. Platinum demand in 2016 is likely to increase as a result of the higher loadings in European cars introduced in September 2015.

<table>
<thead>
<tr>
<th>Introduction date</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro 6</td>
<td>Generic emission standard.</td>
</tr>
<tr>
<td>Euro 6a</td>
<td>Voluntary stage.</td>
</tr>
<tr>
<td>Euro 6b</td>
<td>Sept 2015</td>
</tr>
<tr>
<td>Euro 6c</td>
<td>Sept 2017</td>
</tr>
<tr>
<td>Euro 6d</td>
<td>Sept 2017</td>
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</table>

\(4\) The amount of the metal used in the catalyst

In 2010, India had rolled out an emission standard that was the equivalent of Euro 4 in 14 states. That is to be enforced nationally by 2017. However, such is the desire to improve air quality, that this year India decided to scrap the equivalent to Euro 5 regulation rollout and leapfrog to the equivalent of Euro 6 regulation by 2020. India is thus quickly catching up with its developed country counterparts in emission standards. With emerging market car sales growing rapidly this bodes well for PGMs.

The US has entered a new phase of tightening emission standards. In California and a number of other “green” states, LEV III regulations will be implemented between 2015 and 2025 model years. Federal Tier 3 will be rolled out between 2017 and 2025. The effect of both of these legislations is that fleet average emissions will be ultimately reduced by 70-80%.

We expect higher loading of palladium in particular (given the dominance of gasoline engines in the US) as a result of the new legislation.

Notwithstanding seasonal fluctuations, global auto sales remain strong – a trend we see continuing as the global economic recovery continues to gather momentum.

With demand for the industrial precious metals rising and supply remaining constrained, we are likely to enter another year of a supply deficit. Such supply tightness will be price-supportive. Rising global emission standards will add a tailwind to PGM demand in 2016 and beyond.
Emerging market spreads overcompensate investors for the credit risks

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Summary

- Emerging markets (EM) bonds offer one of the best risk-adjusted yields. In our view, spreads are overcompensating investors for credit and liquidity risks.
- The “lower interest rates for longer” rhetoric from the G10 central banks should limit the US dollar appreciation and maintain a steady money flow from developed markets to emerging markets, as investors continue to hunt for yield elsewhere.
- Overall, the current account balances of emerging markets countries have generally been aptly managed so far, revealing economic and financial resilience.

External factors limit the scope for a spike in US yield

The European Central Bank (ECB) and the Bank of Japan (BoJ) have become increasingly accommodative since January this year, while the Federal Reserve (Fed) is increasingly reluctant to hike. Thus, the divergence between G10 central banks is likely to remain limited this year. We believe this should curb ‘flight to quality’ from investors toward the US and cap dollar appreciation. A continuing low, if not negative, rate environment continues to encourage investors to hunt for yield by taking extra risks (e.g. extend to riskier credit asset classes, local currency denominated bonds and active management).

Overall, EM economies proved resilient

Since the early 2000s, emerging market countries have generally demonstrated greater fiscal, monetary, and political discipline, contributing to increased foreign reserves and stabilized inflation. Thus, central banks in these countries gained credibility, with many emerging countries experiencing robust economic performance and financial stability.

However, the 2008 crisis followed by the economic growth slowdown in China and the prolonged drop in energy prices have damaged investors’ sentiment which translated into net capital outflows from all emerging markets in 2015 for the first time in a decade. This sudden stop in capital inflows has, in turn, undermined economic growth and external balances, as well as exacerbated heterogeneity among emerging economies.

Countries with quasi-floating currencies benefited from currency depreciation in improving competitiveness and adjusting their current accounts. For example, the Russian rouble lost 56% against the US dollar from August 2014 (USD/RUB 36.1) to its low in January this year (USD/RUB 82.9), helping Russia to increase its current account surplus from 3% of GDP in 2014 to 5% of GDP in 2015 despite lower foreign demand for its oil and commodities. On the other hand, countries positioned as intermediates in the global supply chain such as China, India and Korea, had their current account balances adjusted automatically by lower global demand. Their imports of intermediate inputs and exports of manufactured goods (after transformation) declined simultaneously.

But, countries like South Africa, Turkey and Brazil failed to adjust their external balances. Either idiosyncratic risks, such as political instability, or specific macroeconomic imbalances led to severe capital outflows, pressuring their central banks to raise rates. Such actions prevented currencies from depreciating to a competitive level that would restore their external balances. In particular, Turkey is running the largest current account deficit among the emerging countries (-6% of GDP as of December 2015).

With the exception of this minority of countries, current account balances of emerging market countries have been aptly managed so far, revealing economic and financial resilience. In our view, the current unpopularity of emerging markets does not reflect economic fundamentals and thus offers opportunity for investment diversification and extra yield.

\[\text{The Maastricht Treaty was signed by all members of the Eurozone, with the obligations for the members to keep "sound fiscal policies", with debt limited to 60\% of GDP and annual deficits no greater than 3\% of GDP. We used it as a benchmark to assert EM fiscal positions.}\]
Although, long term challenges have increased

As a result of lower fiscal revenue, a significant share of fiscal budgets has been used as automatic stabilisers, leading to material fiscal balance deterioration in some countries. On average, the fiscal deficit of emerging market countries increased 40% to -3% of GDP. In particular, Brazil, South Africa, China and India run the largest fiscal deficits and highest debt level as illustrated below. But this should not be too much of a concern at this time (it is more of a long-term issue).

EM Bonds valuation is compelling

Emerging market bonds underperformed in 2015 largely because investors perceived the strengthening of the US dollar as harmful for emerging market debt. But, the drop of emerging market currencies versus dollar – reflecting investors’ fear – has been extreme in our opinion, since only 40% of the total outstanding emerging debt is in dollars or euro.

In our view, credit risk is overpriced in EM bonds

The continued decline of oil prices led Moody’s to downgrade 13 sovereigns and 67 Investment grade corporates in Africa and Middle East since the start of the year. Emerging markets may face another wave of ratings downgrades this year. Brazil, Turkey, Eastern Europe, Africa and Middle East are under the greatest threat. But rating downgrades target specific countries (those most exposed to oil industry) rather than the entire emerging market world. In addition, 90% of total emerging market debt is government or government-related debt. We believe that governments have a stronger credit standing than what is commonly perceived and hence the rise in overall EM spreads appears overdone.

We believe spreads overcompensate investors for credit risks in particular in emerging Asia, Russia, India, and South America (except Brazil).
Low rate environment beneficial for EM currencies

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Summary

- Low yield environment in developed markets should increasingly benefit EM currencies as sentiment improves.
- Public and private debt burdens are lower for emerging European economies than their Latin American or Asian counterparts.
- Asian currencies appear overvalued compared to emerging Europe or Latin America on an inflation adjusted basis.

Sentiment turning

The majority of emerging markets (EM) currency crises have resulted from a combination of high debt loadings, low foreign exchange reserves and the flight of capital. Emerging market currencies have had a tough time in recent years—particularly those most vulnerable in a rising US interest rate environment. Foreign exchange reserves remain stable, with only a few exceptions (Russia, Argentina and Hungary are most notable), so it may be a case of better times ahead in 2016.

Over the past year the JP Morgan EM currency index has depreciated by over 8%. The worst regional performer in 2016 has been emerging Asia. However, in an environment of improving global growth, we expect that the search for yield will increasingly lead investors to EM assets.

Emerging market currencies have corrected in early 2016, as volatility has remained high. Although there are lingering fears that the global economic recovery is losing momentum, EM currencies could rebound strongly this year.

Investors’ appetite for EM assets appears to be improving, with sentiment for both equity and bond exposures appearing to be forming a base.

Fund flows are yet to follow suit though, with EM bond and equity markets experiencing the seventh consecutive month of outflows in January 2016 according to the Institute for International Finance. While 2015 was the worst year since the financial crisis for EM asset flows, portfolio flows were flat in February 2016 with inflows into EM bonds offsetting outflows from EM equity markets.

Debt burdens favour Europe

EM underperformed in 2015 because investors foresaw the strengthening of the US dollar and potential associated problems with foreign denominated debt burdens.

With the US Federal Reserve (Fed) in tightening mode, sporadic US Dollar (USD) strength could be negative for those EM countries that have large amounts of USD denominated debt. While we expect that the USD will stay weak over the course of 2016, regional differentiation remains important.
Emerging Europe has the lowest private sector cross border claims and in the current environment has the greatest potential for outperformance.

Sovereign debt burdens also are the lowest for emerging Europe and should not be a deterrent for investing in these regional currencies as it has been for the Latin American region in recent years.

Chasing growth

On the premise that investor flows search for returns within high growth, low inflation economies, emerging Asian currencies appear to be the best placed for strength in 2016.

Nonetheless, currencies of countries that have been in policy easing mode, like China and India, are likely to remain soft in the near term. But with robust growth rates in the region and policymakers appearing willing to support growth via fiscal policy, such currencies look to be forming a bottom.

As a general rule of thumb, investors should be wary of those EM countries that are tightening monetary policy to stave off capital flight, especially when there is little inflationary pressure and weak growth - South Africa is a good example. With the mining sector under pressure, the Rand is likely to remain weak. However, inflationary problems, such as they are in a country like Brazil are also a threat to returns.

Valuations at multi-year lows

Growth in emerging Europe more broadly appears to be turning a corner. And inflation has stabilised in the region.
Hacking the cybersecurity investment opportunity

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Summary

- Cyber security equities offer lower volatility than technology and the broader equity market.
- Corporate, government and household spending on cyber security is rising. Moreover, cyber security enjoys a more diverse income stream than technology.
- Cyber security is beyond the hype phase and is steering towards the slope of enlightenment.
- The recent price rout has left cyber security valuations attractive relative to technology.
- 2015 saw a landmark year in financing and deal making for cyber security, highlighting it as a key growth sector.

Cyber security outperforms in the long run

The global equity market rout since the start of 2016 failed to spare cyber security stocks. It is likely that the negative sentiment emanating from the S&P 500 Index caused cyber security to shed 8% YtD as we saw their correlation rise 11% to 0.76. Cyber security outperformed technology (Nasdaq 100) and the MSCI World Index by a significant margin of 98% and 202% respectively since 2006, when the Nasdaq 100 began.

This timeframe includes both the financial crisis of 2008 and the Chinese market crash in 2015 highlighting the resilience of cyber security stocks against the broader market in today’s digitally driven world. More importantly the recovery from their lows in 2016 was stronger for cyber security (+20%) vs MSCI world (+12%). Evidently the spate of cyber threats facing governments, corporations and individuals is driving spending on cyber security. We believe security spending is well positioned to outpace overall IT spending, augmenting their price divergence in the future.

Profitable future ahead for cyber security

It has become imperative for organisations globally to defend themselves against the widespread economic, operational and reputational damages caused by cyber-attacks. We believe cyber security is better positioned than overall technology, because the subsector benefits from a more diverse revenue stream owing to a wide range of products that appeal to a large customer base. Cyber security incidents are growing at a compounded annual growth rate (CAGR) of 66% since 2009, coupled with a diversified income stream are transpiring into profitability of cyber security companies. Q4 2015 net income for cyber security posted gains of 25% vs technology that lost 2% over the prior year.

Cyber security is beyond the hype phase

Cybercrime is likely to expand into robotics, artificial intelligence, 3D printing and industrial biology. The growth of the Internet of Things (IoT) allows nearly every car, airline, home appliance or office equipment to be virtually connected, exposing further critical loopholes for hackers to exploit. The requirements for securing the IoT are not straightforward and organisations would need to use a blend of approaches rather than rely on a single solution.

We believe cyber security is past the hype phase. The hype cycle coined by Gartner is an illustration of how expectations for a new technology initially become overinflated, and when
reality sets in reaches a trough of disillusionment. We believe we can apply the same concept to the valuations for cyber security.

Cyber stocks now attractively valued

On drawing a comparison of the relative valuation of cyber security versus technology to the hype cycle we found that from a price to earnings (P/E) perspective cyber security is beyond the peak of inflated expectations witnessed in June 2015. While technology valuations have remained stable in the 17-19x range, cyber security valuations have fallen from a peak of 70x to 40x bringing the spread of their historical P/Es to levels last seen in 2013 and close to the historical median. We believe this signals cyber security valuations are currently in the trough of disillusionment.

However the world’s increasing reliance on cyber security combined with the sector’s higher profitability is steering the sector towards the slope of enlightenment. In addition, cyber security offers a lower beta of 0.88 versus technology making it a lower risk and attractive value proposition.

Cybersecurity attracting the smart money

Well-publicised data breaches and technical glitches evidently attracted smart money into cyber security. 2015 marked a landmark year in financing for cybersecurity with deals totalling $11.5bn. The CAGR has risen by an impressive 21% between 2011 and 2015. A few notable examples of investment in diverse cyber security start-ups:

- Global provider of next generation cyber security software Tenable Network security will receive $250mn funding from Insight Venture Partners and Accel.
- Google Capital, Google’s growth equity fund, led a $100mn investment in Crowdstrike, a provider of next generation endpoint protection platform.
- Checkmarx, a leader in software application security will receive $84mn investment by Insight Venture Partners.

A continuation of this narrative is expected in 2016 with announcements of $1.4bn worth of deals YtD.

In summary, the intangible need for cyber security is difficult to quantify given the burgeoning cyber-attacks facing the deeply connected world we live in. It is evident cyber security outperformed the broader market over a long horizon and has the elasticity to recover in severe downturns. Current valuations from a price to earnings standpoint provide an attractive entry point to cyber security. We believe cyber security is beyond the trough of disillusionment. In addition the distinctly low beta of 0.88 allows investors to get exposure to one of the fastest growing segments of technology at a comparatively low risk. The record investment in financing and deal making in 2015 is testament to the opportunity cyber security presents.
Summary

- The Fed model allocates into equity or bonds based on their relative valuation and the idea that equity earning yields and long-term government bond yields are equal.

- Using volatility instead of relative valuation provides a higher return and lower volatility than the Fed model and the typical 50/50 balanced benchmark.

- The portfolio allows for more balanced holding periods between equities and bonds and investment decisions based on actual data rather than forecast data.

The Fed model

So named by Ed Yardeni in 1997, the Fed model is a valuation model based on the principle that stock market earning yields have to equal government bond long-term yields.

\[ \frac{E}{P} = Y \]

The Fed model suggests that if stock market earnings yields are higher than government bond long-term yields then investors should hold equities as they appear cheaper than bonds on a relative basis and vice versa.

When implementing this strategy using the earnings yield of the S&P 500 and the US Treasury 10 year yield, we observe that the model holds bonds for a long period of time (1986 to 2002) before shifting only once into equities. Then the model would suggest holding equities from 2002 to today.

We constructed a portfolio of 50% equities and 50% bonds as a balanced benchmark to the Fed model and looked at how the model performed compared to the benchmark over the same period. It is not surprising that the Fed model underperformed the benchmark by an annualised 15%.

Not only did the benchmark provide higher annual return over the period but its volatility was lower than the Fed model (volatility at 9.6% annualised vs 14.5% annualised for the Fed model).

Even back to 1997 when the Federal Reserve (Fed) report was published, the Fed model didn’t outperform the balanced benchmark despite having a strong correlation between stock earnings yields and government bond long term yields until 2001. Although the idea was interesting, the Fed model wasn’t performing in-sample or out-of-sample.

Investments may go up or down in value and you may lose some or all of the amount invested. Past performance does not guarantee future results.
Replacing relative yields with volatility

In general, while a strategy can work in-sample, if the strategy depends on forward looking indicators, in other words if investors need to know today the value of the indicator tomorrow for the strategy to work, then the strategy will likely fail the out-of-sample test. One way to bypass the out-of-sample test is to set a strategy that is not dependent on forward looking data but based on historical data only.

Using historical stock market’s volatility (CBOE Volatility Index or VIX) rather than relative valuation allows for the strategy to be valid both in-sample and out-of-sample.

Volatility is the standard measure of market risk and a key indicator for investment decisions. In our strategy, we take the median of the volatility and set an upper and lower band so that it captures more than 80% of the data points. When the volatility of the S&P 500 (VIX) crosses the upper band upwards, the portfolio buys bonds and holds it until it crosses the lower band downwards, when the portfolio sells bonds to buy equities and vice versa in order to reduce trading turnover.

**Comparing with the Fed model**

In terms of portfolio management, using volatility offers a better balance as the portfolio reallocates from one asset to the other after holding it during a meaningful period of time. The Fed model, on the other hand, rarely holds equities during the first 15 years of simulation. Holding equities for such short periods would have been costly and would have made little impact on the overall performance of the portfolio.

Another point to make is that by using the median instead of the average of the VIX, we deliberately want to avoid large deviations of the VIX having an impact on the strategy of the portfolio and eventually have a negative impact on the portfolio performance.

When comparing our portfolio with the 50/50 benchmark and the Fed model, clearly the Fed model has its flaws: higher volatility, lower return, high max drawdown and longer recovery period. Our portfolio on the other hand, offers higher return for slightly lower volatility compared to the 50/50 benchmark. It also increases investor protection from downside risk, with the maximum lost in any one event being -14.3% compared to the benchmark of -25.2%. Finally the portfolio takes less time (around one year and a half) to recover to its previous peak while the benchmark and the Fed model takes approximately 2 years and 3 years respectively.

<table>
<thead>
<tr>
<th>50/50</th>
<th>Portfolio</th>
<th>Fed model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatility</td>
<td>0.6%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Annual returns</td>
<td>9.1%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Max drawdown</td>
<td>-25.2%</td>
<td>-14.3%</td>
</tr>
<tr>
<td>Max recovery</td>
<td>2.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Beta</td>
<td>1.00</td>
<td>0.34</td>
</tr>
<tr>
<td>Correlation to benchmark</td>
<td>1.00</td>
<td>0.36</td>
</tr>
<tr>
<td>Tracking error</td>
<td>0.0%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Sharpe ratio</td>
<td>0.57</td>
<td>0.76</td>
</tr>
<tr>
<td>Information ratio</td>
<td>0.14</td>
<td>-0.13</td>
</tr>
</tbody>
</table>

In this note, we show that strategies based on simple concepts such as the 50/50 benchmark or using volatility as trading signal can enhance the portfolio risk/return profile compared to models that are based on trading signals with limited shelf life. While models like the Fed model underperformed the 50/50 benchmark in many ways, a strategy based on volatility enhances the portfolio risk/return profile and exhibits two advantages. First, investment decisions are based on actual data rather than forecast data which makes the strategy easy to implement and highly transparent. Secondly, the number of transactions and therefore implementation costs are very low.

Using the volatility model, since 1987, the portfolio outperforms the 50/50 benchmark by 16.5% per year and is slightly less volatile, enhancing the Sharpe ratio to 0.76 compared to 0.57 for the benchmark.
Blockchain and bitcoin: a complex world in simple words

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Summary

• “Conceptually attractive but hard to tangibly pin down or explain”. This is exactly the purpose of this two-page note: try to bring some light to bitcoin/blockchain.

• While the popularity of bitcoins is declining, the technology that underpins the digital currency, blockchain, is on track to reshape the financial industry drastically.

• Fintech companies that develop blockchain-based system are likely to benefit from the surge in demand for the distributed ledger as education on the topic spreads.

Background and vocabulary

Fintech is the general terminology referring to any technology that has application in the financial industry from electronic trading platforms to digital wallets like the Apple pay or digital assets like bitcoin.

Created in 2008 by Satoshi Nakamoto, bitcoin is a cryptocurrency, a form of currency based on mathematics alone. It is meant to be used in the same way as physical coins and notes except that it circulates only in a digital world called blockchain and transactions are done solely online.

Like a banking note travelling from one hand to another, bitcoin is traded on a peer-to-peer basis but without a centralised entity to control it. While in a fiat currency system, central bank injects new money in the system, miners create new bitcoins and inject them into the blockchain.

Bitcoin is not traded on exchanges like a stock. However, there are circles around the world that have similar functions. The circle is a wallet service that sends, receives, exchanges and stores bitcoins for users (or nodes in the Fintech terminology). Technically, a node is not a person but the device that holds the software or client that allows the user to connect to the bitcoin network and trade bitcoins.

To buy bitcoins, investors need to download the software, create an account and connect to the network. Bitcoin also has cash machines or BTMs that allows anyone to purchase bitcoins. Bitcoin can then be stored or used to purchase physical goods in a number of e-commerce sites such as Dell, Microsoft or Expedia. Gold can also be bought through online platforms that accept payment in bitcoin. An increasing number of merchants are accepting bitcoin for payment.

Blockchain: the hidden part of the iceberg

The current financial payment system as shown in the below graph requires a third party such as bank or broker to validate transactions, charging a high fee for the service provided.

Blockchain, on the other hand, is a peer-to-peer market with no centralised control but a system of coding that records transactions from the mining stage to its current owner. It’s like being able to trace a bank note from its printed stage at the central bank mint to the wallet of its current holder.

A transaction block contains a number of transactions in the bitcoin network that once confirmed as valid, is grouped or hashed to form a block which is then added to the blockchain. The distributed ledger is publicly available and saved in multiple copies around the world, making it highly difficult to destroy.

6 Demystifying Blockchain in Capital Markets: Innovation or Disruption? – Sang Lee and Gabriel Wang, Aite Group
Alternative networks to blockchain that use the same process called altchains are already available. Alternative applications to bitcoin such as namecoin were derived from altchains. At the moment, altchains and blockchains are not connected, preventing owners of bitcoins from traveling from one network to another. However, bridges called sidechains are currently under development.

Is bitcoin investable?
The Bitcoin Price Index provides an average of bitcoin prices that are trading across leading circles around the world and is publicly available on a daily basis.

![Bitcoin US Dollar Index](image1)

In November 2013, the price of bitcoin peaked at US$1,137 from US$206 within a month as Baidu, the Chinese equivalent of Google, allowed clients to pay with bitcoins. During this month, BTC China, a bitcoin exchange, was about to become the largest bitcoin trading exchange in volume as it acquired Japan-based Mt. Gox and Europe-based Bitstamp. On the 5th of December 2013, the People’s Bank of China prohibited the use of bitcoins by local financial institutions and the bitcoin price fell shortly after.

![Volumes are growing exponentially](image2)

While the number of transactions, the number of unique addresses and the hash rate are all growing exponentially, the number of transactions per unique address is declining as bitcoin prices started to decline from December 2013. Bitcoin misuses started with money laundering in 2013 and have prevented it from becoming a widely used and trusted digital currency. However, volume continues to grow.

Is there a future for blockchain?
While bitcoin remains controversial, many financial institutions are investigating or are already investing in blockchain. The system behind bitcoins is very likely to save billions of dollars of operating costs as it reduces inefficiencies in existing financial markets. For example, it can remove the need for intermediaries and reduce delays.

Nasdaq is the first exchange worldwide to experiment blockchain through its Nasdaq Linq, a platform launched in December 2015 that records the purchase of companies executed privately. More than 40 financial institutions are working together in a consortium led by R3, the fintech company, to develop a collective blockchain system with secured access that would comply with the existing system needs. The Bank of England also launched a competition for the best idea to use blockchain.

Applications of blockchain can go beyond the financial industry with the e-Estonia the best illustration of its potential. After its independence in 1991, Estonia went through many years of modernisation and has today the most digitally advanced societies in the world, providing the best foundation to test a blockchain-based system. Launched in December 1997, Estonian e-Residency allows its citizens to have access to more than 1,000 government services almost instantly online. Following the success of Nasdaq Linq, Nasdaq is now working on a blockchain-based e-voting service using the Estonian e-Residency platform to allow shareholders of companies listed on the Nasdaq OMX Tallinn Stock Exchange to vote in shareholder meetings. It has also been announced recently that the technology will be deployed in Estonian medical services to secure more than 1 million patient healthcare records. In UK, the Government Chief Scientific Adviser recently published a report urging the government to adopt blockchain to improve public services across the country.

While bitcoin remains associated to drug dealing and money laundering, blockchain is taking off. Fintech companies that develop blockchain-based systems are likely or are already benefiting from the boom in demand for the technology. However, making money out of it remains a tough challenge.

Fundamental questions about data security, datacentre capacity and the potential impact on the environment are yet to be answered. Investors still know very little about it and very few Fintech companies are listed. Meanwhile billions have already been invested in blockchain with more to come.
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