

ETFs Outlook



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Central banks' fine balancing act

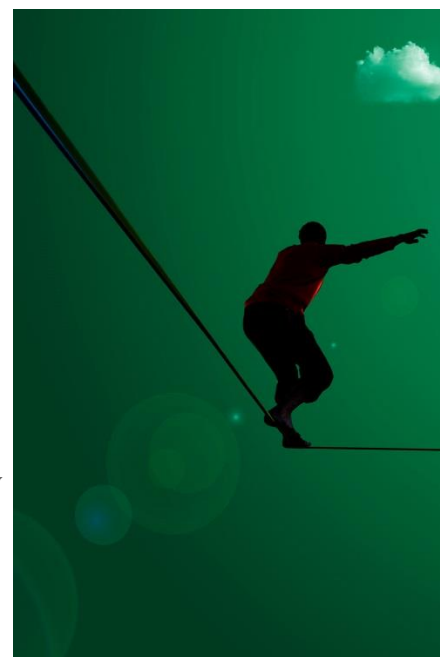
Globally, economic growth is becoming more broad-based, although growth rates remain well below their 40 year average in the developed world. US interest rates are beginning a steady rate hike path. Core inflationary pressures in the rest of the developed world are broadly rising, suggesting other central banks will have to follow the Federal Reserve or risk "falling behind the curve". We question if interest rate normalisation can occur with so much government debt and such low productivity, and consequently see central banks having to strike a very fine balance between the twin dangers of inflation and recession. Increasing commodity prices are a primary driver of inflation. The rise of populism and potential reversal of globalisation could further stoke inflationary pressures, but these trends are contingent on the delivery of political campaign promises, which look increasingly difficult.

Central bankers are beginning to adopt a form of dovish monetary policy tightening, preferring to allow inflation to run above target. Despite the risks, we believe this is the correct approach for now, given heightened levels of uncertainty as illustrated by the wide gulf between soft and hard economic data.

We expect the Euro to benefit as the European Central Bank ceases its asset purchases this year. The Bank of England will follow the US Federal Reserve's footsteps and raise rates while maintaining a stable but elevated balance sheet. As monetary policy tightens we do not believe we will see a repeat of the "Taper Tantrum" witnessed in 2013 as cautious central bank action and better communications will diminish market dislocation risks. Although rising rates will pose issues for the FTSE100, UK households and smaller businesses in the US.

We believe Europe will survive populism, although markets will continue to worry. These concerns will be primarily played-out in the currency markets. By year-end greater clarity over Brexit, the German and French elections and President Trump's ability to enact reform will lead to calm.

Populist movements have extended outside of developed markets, but with an ethical tone. Several emerging market countries seem willing to forego economic growth from resource extraction in pursuit of better environmental outcomes. Consequently, the prices of metals may rise as supply tightens. Sentiment towards commodities has just come off all-time highs, suggesting caution in the near-term. In the longer-term the effects of capex cuts in miners in recent years will continue to have a negative impact on supply.



FX Outlook 2017

By Martin Arnold – Director –FX & Macro Strategist | martin.arnold@etfsecurities.com

Summary

GBP remains the most undervalued currency in the G10 space. Investor positioning is at the most pessimistic level on record, GBP could break higher as short positions are quickly unwound.

The Japanese Yen is likely to weaken as speculation about tapering the Bank of Japan's (BOJ) QQE programme fades and investors look offshore for yield.

The US Dollar will remain soft, amidst more dovish rhetoric from the Fed and lower real interest rates. The Euro will benefit from the ECB QE unwind.

FX heatmap

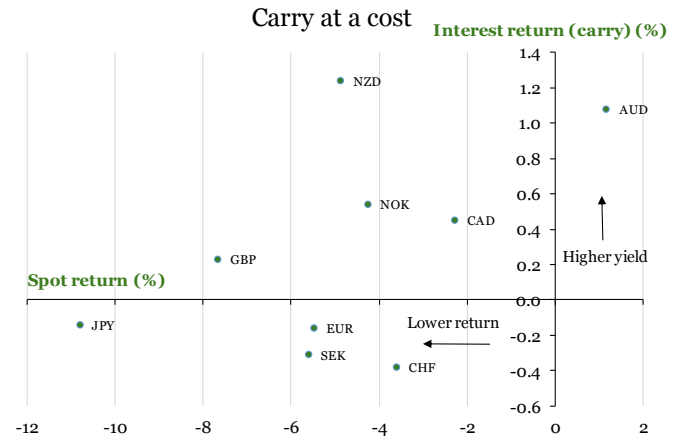
	MvC	Carry	Valuation	Positioning	Total
EUR/USD	0	-1	1	1	1
USD/JPY	0	-1	1	-1	-1
GBP/USD	-1	-1	1	-1	-2
USD/CHF	0	-1	-1	-1	-3
AUD/USD	-1	1	-1	1	0
EUR/GBP	0	-1	-1	1	-1
USD Index	0	1	n/a	1	2

Source: ETF Securities. Please refer to [ETFS Outlook January 2017](#) for definitions of the various heatmap indicators

The FX market has been characterised by tactical positioning, driven by the ebb-and-flow of political uncertainty in both the US and Europe in recent months. We expect the uncertainty to moderate, and with it a modest decline in volatility. A more benign environment should see fundamentals, in particular a focus on central bank policy, drive strategic trends once again.

Carry at a cost

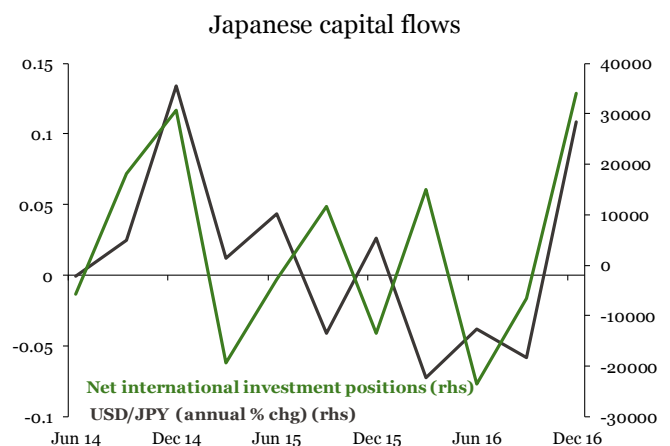
We discussed the case for tapering in major economies 'Taper tantrum 2.0?', but we feel that increasingly there is a case for broad tightening of monetary policy. However, it is too early for investors to get excited about the re-emergence of the carry trade. We believe the low rate environment has not given rise to 'carry' as an FX strategy in the G10 space. Additionally, with FX volatility remaining elevated, the risk/return for carry trade activity is not compelling, because carry comes at a cost.



Source: Bloomberg, ETF Securities as of close 15 March 2017

Of only five currencies delivering positive carry, the Australian Dollar is the only one to have provided a positive total return over the past six months.

Nonetheless, the JPY should be a currency that remains a funding currency as we expect the Bank of Japan's QQE program to remain expansive throughout 2017. Accordingly, we feel that the ongoing stimulus from the Japanese central bank will keep yields low and force domestic money offshore to search for yield. Such investment outflows will lead to an eventual decline of the JPY, but not after some strength in Q2 and Q3 2017.



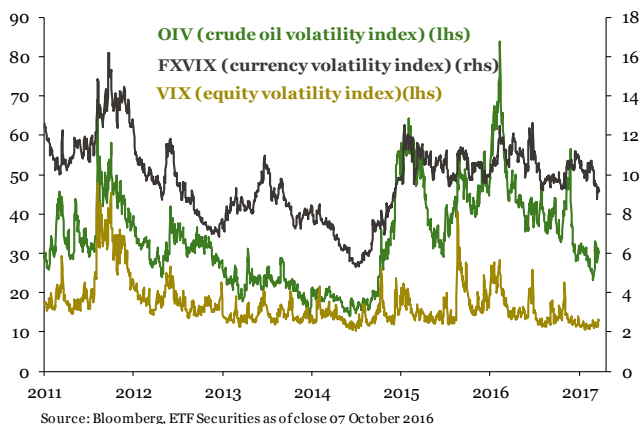
Source: Bloomberg, ETF Securities as of close 28 March 2017

Momentum unconvincing

Because FX volatility remains historically elevated, albeit moderating, momentum is a strategy that does not have a convincing underlying foundation. Volatility in the FX market has moderated, but not as far as would be expected when comparing to other markets like equities or commodities.

Unsurprisingly, few G10 currencies are showing strong indications of momentum within our heatmap. However, as political uncertainty fades, particularly in the Eurozone, volatility could moderate further. We expect that as this occurs in 2017 the focus of investors will once again revert to central bank policy.

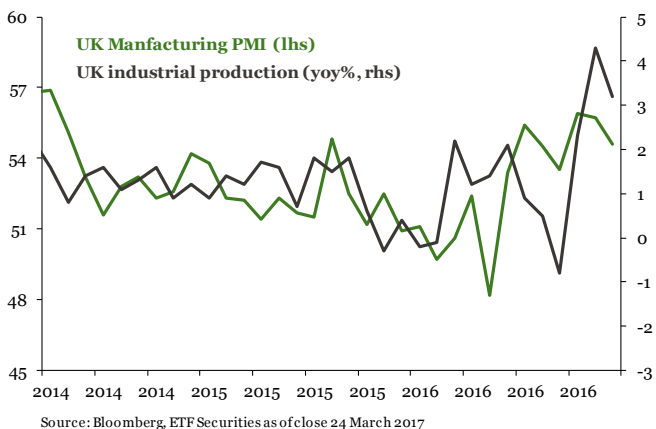
Volatility moderating



Tapering and tightening

Tapering is very different from tightening (hiking rates). Although the current recovery has been ongoing for many years, its gradual nature has not forced policymakers' hands to raise rates aggressively. Of G10 central banks, only the Fed has increased rates thus far. We expect the Bank of England to follow suit and hike rates in 2017 but not to remove its balance sheet stimulus from the economy.

Economic activity defies Brexit



With inflation jumping to 2.3% in February - the highest level in the UK since September 2013 (and above the BOE target) - we expect the central to unwind its Brexit-driven rate cut of Q3 2016. The additional policy accommodation was introduced to defend the UK economy from the ravages of Brexit, which have, as yet, not shown up. As a result, we expect GBP to benefit from narrowing yield differentials (as the BOE hikes rates), particularly as the impact on prices from the Sterling decline begins to fade in H2 2017.

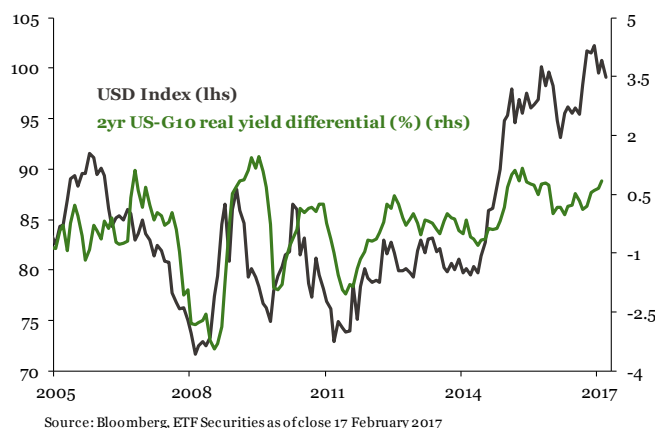
GBP remains the most undervalued currency in the G10 space. Additionally, investor positioning is at the most pessimistic level on record and with GBP nearing the 200-day moving

average, GBP could break higher as short positions are unwound.

Depressed real rates to pressure US Dollar

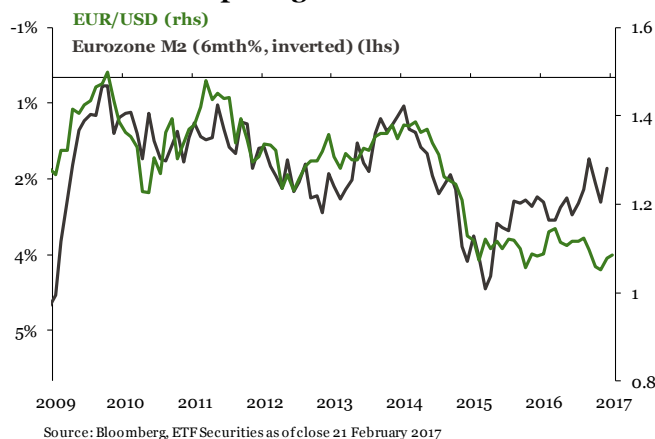
The USD is beginning to move back into line with fundamental yield differentials. The US Dollar Index is likely to find a firmer footing below 100, but low real yield differentials will keep the USD soft. In response to rising inflationary pressures, we feel the Fed will need to become more hawkish in both rhetoric and action later in the year. Subsequently, a tighter monetary policy stance from the Fed than the market expects will see the USD regain the ground it has lost in H1 by year-end 2017.

Relative bond yields versus the USD



In the meantime, we expect that the Euro will be one of the main beneficiaries of the more neutral policy stance of the ECB. Without the threat of deflation, there is very little need for additional stimulus. Inflation is at its highest level since January 2013. President Draghi noted that there is 'no longer urgency in taking further actions'. As a result, a reduction in monetary aggregates (tapering stimulus) should boost Euro back toward 1.10 in coming months.

Tapering will lift Euro



Platinum Outlook: gold and ZAR remain key

By Maxwell Gold – Director – Investment Strategy | maxwell.gold@etfsecurities.com

Summary

Despite apparently favourable supply fundamentals, Platinum prices have lagged other precious metals in the last few years. Fundamental supply data may be underestimating actual physical holdings and thereby overestimating supply deficits.

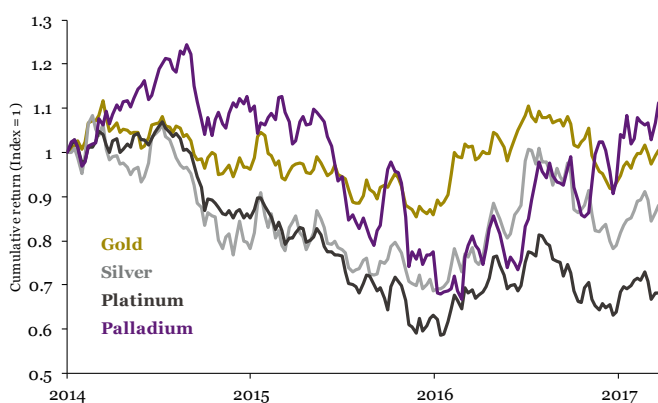
Our model suggests the best explanatory variables for platinum price movements have been gold, the S. African Rand (ZAR), industrial production, and Emerging Market equities.

We currently like the risk-reward for Platinum over the next year. Our base-case sees \$1005/oz.

Following the fundamentals

After a rebound last year, precious metals have continued their momentum so far in 2017. Uncertainty, low rates, and rising inflation have rebuilt investor support. Platinum, however, remains the laggard of the group, trailing both gold and silver, as well as its sibling metal, palladium. Platinum, which posted annual supply deficits since 2012, is expected to extend this trend in 2017 according to the World Platinum & Investment Council. Despite these favourable fundamentals, however, platinum prices haven't responded in recent years.

Platinum lags its precious metal peers

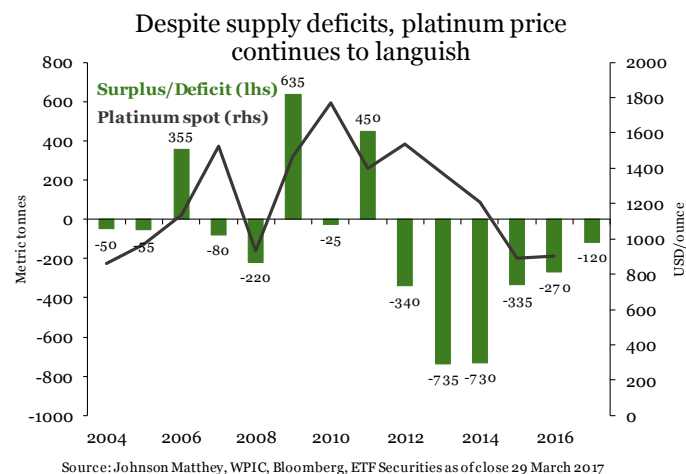


Source: Bloomberg, ETF Securities as of close 29 March 2017

One explanation could be that allocated platinum holdings have not been fully captured in reported figures. According to the World Platinum Investment Council estimates, above ground stocks fell from 4.3 million ounces in 2011 to 2.1 million ounces in 2016. During this period the platinum price fell nearly 50%.

Additionally, the supply of platinum is much more concentrated than gold and silver, with 70% of mine supply confined to South

Africa. Lack of transparency in physical holdings coupled with a small, concentrated market increases the vulnerability to volatility. This has made fundamental data a challenging indicator to help explain platinum price moves and returns.



Source: Johnson Matthey, WPIC, Bloomberg, ETF Securities as of close 29 March 2017

Outlook: modest upside

Applying our current fair value estimate for gold (\$1230) for year-end 2017 along and assuming that over next year the Rand continues its recent recovery and strengthens 5% further, global industrial production rises 3%, and emerging market equities rise another 10%, the platinum's fair value would be \$1005/oz in 2017. This would provide a modest 6% increase from current platinum prices (\$950/oz).

Using our bullish scenario for gold where prices rise to \$1380/oz driven by inflation surprises and geopolitical volatility, platinum would rise to \$1080 experiencing a 10.4% increase from the current price. Alternatively, applying our bearish scenario with gold falling to \$1095/oz, platinum would see a slight drop from current prices to \$940/oz.

Based on these fair values, expectations for continued global recovery in growth and manufacturing, and a record discount to the gold price, the downside risks for platinum appear more limited than the potential upside risks.

Our model methodology

In an effort to deal with the issues with fundamental data, we evaluated market and macroeconomic variables as a proxy for platinum supply and demand drivers. The aim was to provide a simple, powerful, and statistically significant explanatory model as an initial step towards a robust platinum model.

Over 20 macroeconomic variables were analysed as alternatives for supply such as mine production and recycling, and autocatalyst, jewellery, and industrial needs for demand. The

key explanatory variables for platinum include: gold, the South African Rand (ZAR), emerging market equities, and global industrial production.

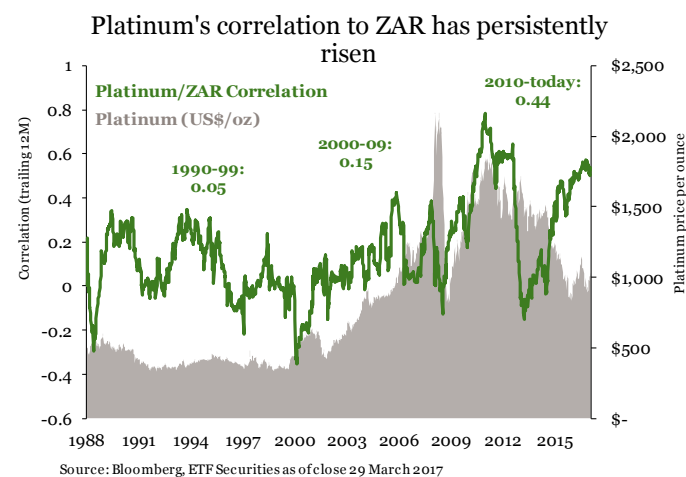
Table 1: Summary of platinum model variables:

Base Model	R ²	Proxy for
Gold spot price	0.33	Investment demand
South African Rand (ZAR)	0.24	Mine production
Global industrial production	0.23	Auto/Industrial demand
Emerging Market Equities	0.23	Jewellery/Industrial demand

Running a regression of these four variables from 1989 created a base model with an R² of 0.59. All variables (evaluated monthly) were statistically significant at the 95% confidence level, and positively related to platinum returns year over year.

Supply: forget mining, look to the Rand

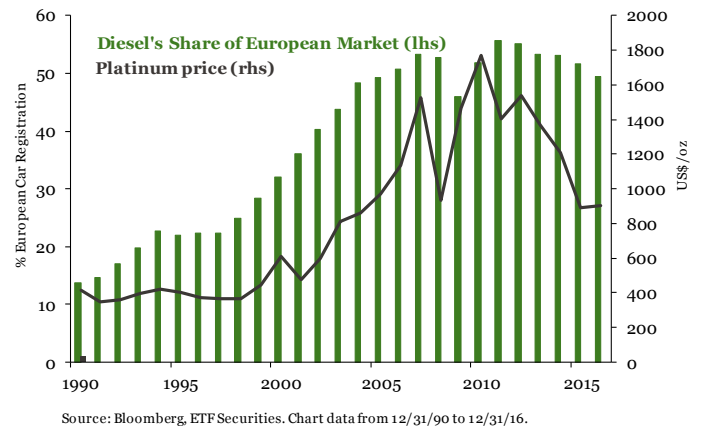
From a modelling perspective, using the Rand has several advantages. It closely tracks the South African economy and provides data at a higher frequency. Platinum prices and ZAR have an intrinsically positive correlation. When ZAR strengthens, this increases pressure on miners margins, eventually spurring a slowdown of production and supply.



Industrial production captures platinum demand better than auto sales

At 40% of annual demand, autocatalysts are a critical component of the global platinum market, with the European auto market making up half of this demand. Since Europe is the largest market for diesel engines which utilise platinum in autocatalysts.

Platinum's fate driven beyond diesel recently

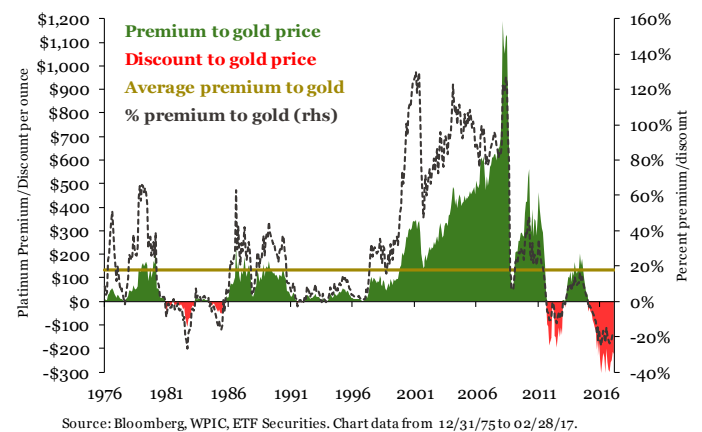


We have found that global industrial production is a good proxy to capture trends in the auto and jewellery industry. To further enhance our model we have found that moves in Emerging Market equities in combination with global industrial production help capture jewellery and industrial demand.

A safe haven with cyclical merits

Platinum's status as a safe-haven varies over time, but is a key driver for its investment demand. Among the variables evaluated, gold was the best indicator of platinum returns. Other investment data series analysed such as investor sentiment (net non-commercial futures positioning) were not significant.

Platinum's precious metal status



Recently, platinum's discount to gold has reached record levels (~20%) signalling that investors prefer gold as a defensive asset. This may see a reversion if safe haven demand increased rapidly.

We currently like the risk-reward for Platinum over the next year. Our base-case fair value sees \$1005/oz.

Taper tantrum 2.0 unlikely

By Martin Arnold – Director –FX & Macro Strategist | martin.arnold@etfsecurities.com

Summary

A ‘taper tantrum’ 2.0 is unlikely in 2017, as cautious central bank actions and better communications will diminish market dislocation risks.

We expect the Euro to benefit as the European Central Bank (ECB) ceases its asset purchases this year. Meanwhile, the Bank of Japan (BOJ) will step up its asset purchases and weaken the Yen.

The Bank of England (BOE) will follow in the US Federal Reserve’s (Fed) footsteps and raise rates but maintain a stable but elevated balance sheet.

Taper tantrum 2.0?

Tapering is the process of gradually scaling back quantitative easing (QE) activities - the extraordinary measures that central banks have put in place since the global financial crisis to boost the money supply and keep yields low to support growth. In Q2 2013, the Fed began to communicate its intention to scale back its QE programme, triggering a sharp bond market sell-off now known as the ‘taper tantrum’. At the same time, the potential action of unwinding the vast amount of stimulus injected into the US financial system caused equity markets to initially drop alongside sharp gyrations in the US Dollar.

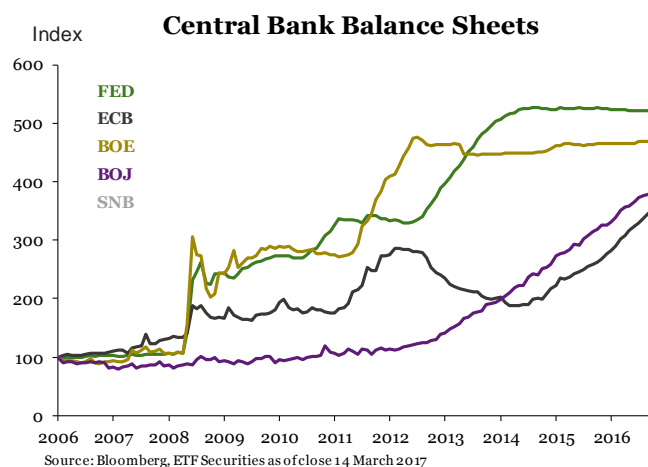
Tapering of central bank asset purchasing schemes results in the stabilisation of central bank balance sheets, but at elevated levels. Balance sheet dynamics from major central banks have diverged in recent years, with the Fed and the BOE keeping a stable amount of stimulus in the system, while the ECB and the BOJ are continuing with QE activities apace. With speculation that both the ECB and the BOJ will follow in the Fed’s footsteps, the risk is a potential ‘taper tantrum’ 2.0.

Four years on from the original ‘taper tantrum’, if and when QE tapering happens, it is not likely to have the same volatile effects it originally had on financial markets. Not only is the global economy on a more solid footing, but central banks have become better in their communications with the market. In turn, with central bank’s not withdrawing stimulus and simply maintaining balance sheets at elevated levels, investors have witnessed that unwinding stimulus does not lead to doomsday scenarios for asset markets.

Why taper?

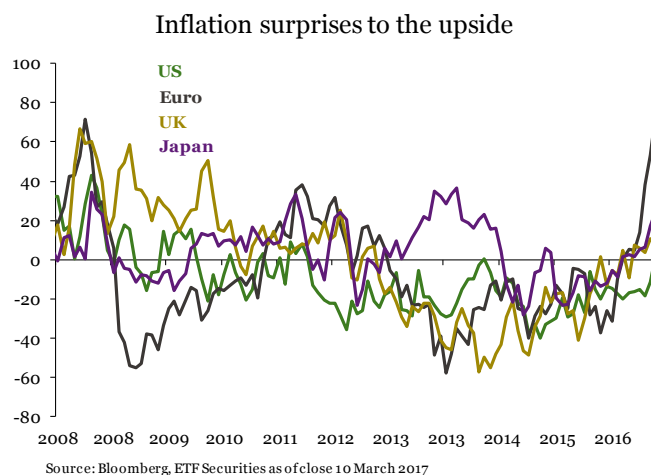
Inflationary expectations have risen across the globe but realised inflationary data has continued to beat expectations,

particularly in the Eurozone and Japan.



*SNB: Swiss National Bank

QE activities were emergency measures and the global economy is far from being in a dire position. As such, we believe it is prudent for some central banks to begin unwinding QE in order to prevent stoking inflationary pressures.



Timing an ECB taper

The Eurozone’s recovery is gaining momentum and the risks of deflation ‘have largely disappeared’ according to ECB President Draghi. The ECB has also removed a phrase from its latest monetary policy statement that indicated it would use ‘all instruments necessary’ to lift inflation toward its target. Nonetheless, we expect the central bank will be very careful to avoid any dislocation in financial markets and cause a ‘taper tantrum’ 2.0. We expect that due to the dramatic improvement in the economic backdrop, the rise in inflation and inflationary expectations, the ECB will end its QE programme by year-end 2017.

Indeed, we expect that the ECB could begin tightening before it makes its final asset purchases in its QE programme later this year. While the FOMC Board members are likely to remain

universally dovish as they raise rates, comments from ECB Board members are becoming more hawkish, with talk of raising the deposit rate, back to zero, signalling confidence in the economic rebound.

However, we don't expect a sharp bond market sell-off as occurred during the original taper tantrum. Nonetheless, the German yield curve is steeper than in the US and further narrowing of real rate differentials will continue to support the Euro in coming months.

In contrast to the market reaction in the US, we expect that European equity markets will benefit from the recent pickup in economic momentum and not be adversely impacted from any reduction in QE from the ECB.

Japanese QQE to continue

Japan is on track to miss its target asset-purchasing programme in 2017. According to the Bank of Japan's own projections, it is likely to miss its target for asset purchases by 18% this fiscal year (ending 31 March 2017). While this has led some to accuse the BOJ of 'tapering by stealth', we do not expect the central bank to taper its buying program and could begin to widen its search for suitable assets.

After decades of deflationary pressure, inflation in Japan rose for the first time in two months, being one of the countries where inflation has beaten consensus the most. However, the gains are due in large part to the weaker Yen and the rebound in oil prices. There is very little pressure coming from the demand side: wage growth remains muted and core inflation has only just nudged above the 0% level for the first time since mid-2015. Contrary to our expectation that QE will be tapered in the Eurozone, we feel that speculation is unfounded for Japan.

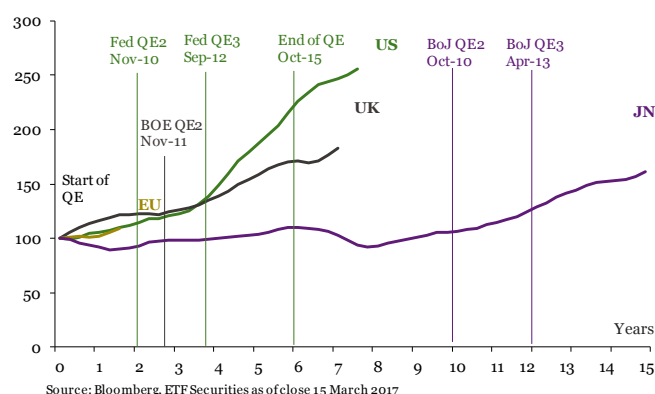
No wage pressure on core CPI



The 'deflationary mindset' that the BOJ refers to is unlikely to be eased in as short a period as the Eurozone. Deflation has been entrenched in Japan for many years: the prolonged and pronounced QQE activities (15 years and counting) of the BOJ points to the problem being deeply ingrained in the Japanese

psyche (see below for the impact of QE for various countries).

QE Performance Index

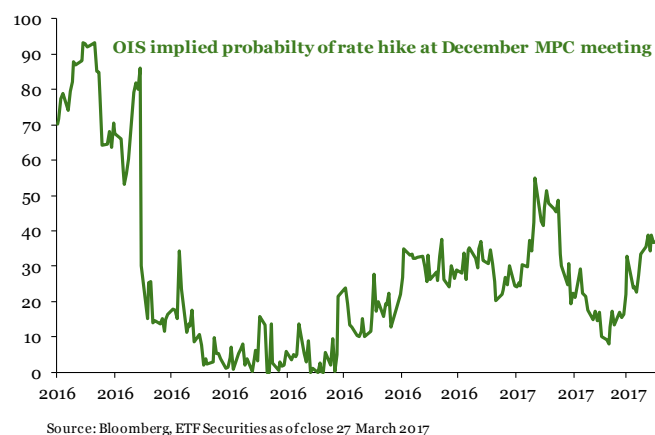


The BOJ recently noted that 'inflation expectations have remained in a weakening phase.' and that price growth should 'exceed 2 percent and stay above the target in a stable manner'. With the BOJ's commitment to create an inflation overshoot, it appears that QQE will continue for some time. Nonetheless, we expect the BOJ could change the way it implements its QQE policy in order to avoid any constraint in the domestic JGB market. Such a move could see the BOJ target a yield range instead of a point estimate for the 10yr JGB's.

Rate hike for the UK

Thus far, the UK economy has shrugged off the threat of weaker economic activity resulting from leaving the EU, something the Pound has been unable to do. Although market expectations for rates has risen in recent months, there is only a 40% chance of a rate hike by the BOE by year-end 2017.

Odds of rate hike rising



While we don't expect any further tapering from the BOE, we do expect it to unwind its rate cut that it put in place after the EU Referendum vote because the doomsday economic scenarios did not materialise. A rate hike will provide further downside GBP protection. In turn, we expect that the performance differential between small cap to large cap UK listed companies will narrow as the benefit of a weaker GBP fade (which has been a tailwind for large cap equities).

Tech equities: structural growth at attractive valuations

By Michael Wang – Director –Equity Strategist | michael.wang@etfsecurities.com

Summary

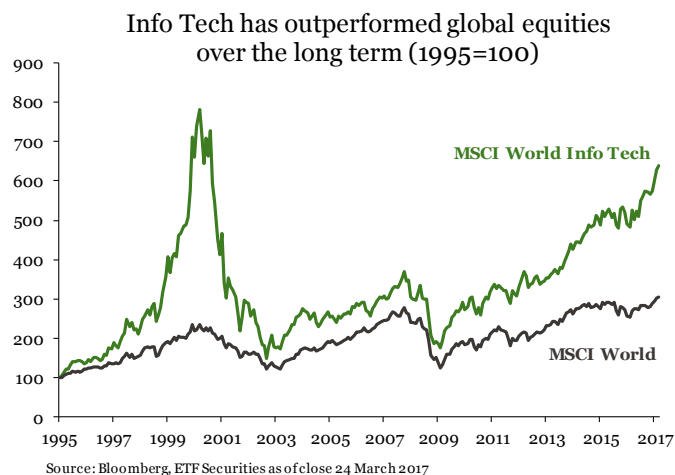
Technological innovation continues to be a major driving force in the global economy. Secular themes such as Cyber Security, Artificial Intelligence and Cloud Infrastructure are likely to be long-term drivers of tech spending in the decades to come. Favourable demographics especially in emerging markets also provide tailwinds.

Global Tech companies have been able to harness these forces to outperform the wider market over the longer-term. Earnings growth in this sector has been the highest of any global sector over the last two decades; dividend growth one of the best and balance sheets one of the strongest. As structural growth drivers continue to play out, we expect outperformance trends to continue.

Valuations are currently attractive but the potential for rising trade protectionism poses a risk.

Tech offers a structural growth story

Technological innovation is driving not only new products and services, but is fundamentally altering the way economies operate and consumers live. As technology becomes cheaper and more readily available (Moore's Law), more of the 'old economy' is likely to become disintermediated.



There are several key secular growth areas likely to drive tech spending in the decades to come:

Cyber Security: data breaches are becoming increasingly common, providing a growing opportunity set for security software companies.

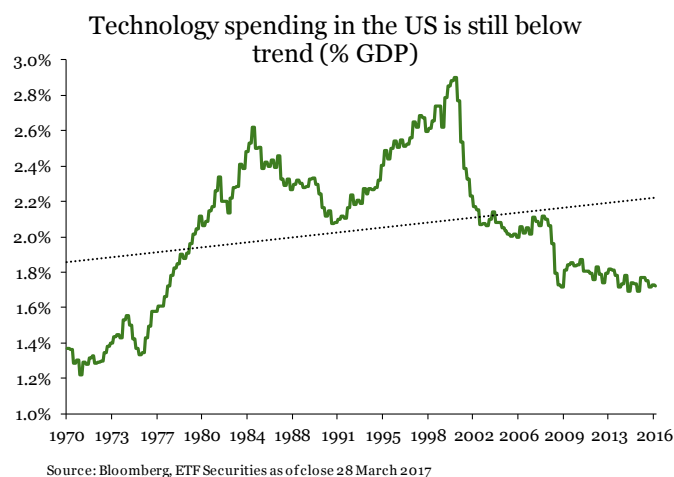
Internet: e-commerce continues to take market share from existing brick and mortar companies and benefits from the growth of internet penetration rates in emerging markets.

Cloud Infrastructure: companies are increasingly managing IT remotely (i.e., managing and storing information and services over the internet).

Artificial Intelligence (AI): computing power is becoming strong enough to make artificial intelligence a reality. This has the potential to affect almost every part of the economy, from health care to manufacturing. According to a recent study, AI has the potential to double the GDP growth rates of 12 developed economies by 2035^{1*}.

Demographics around the world also provide a tailwind, as technology usage increases inversely with age. Especially in emerging markets, where the percentage of young people in the population is larger, technology usage will likely become more 'native'.

There is scope for technology investment to rise as a share of GDP. Tech spending in the US as a share of GDP has stagnated since the great financial crisis.



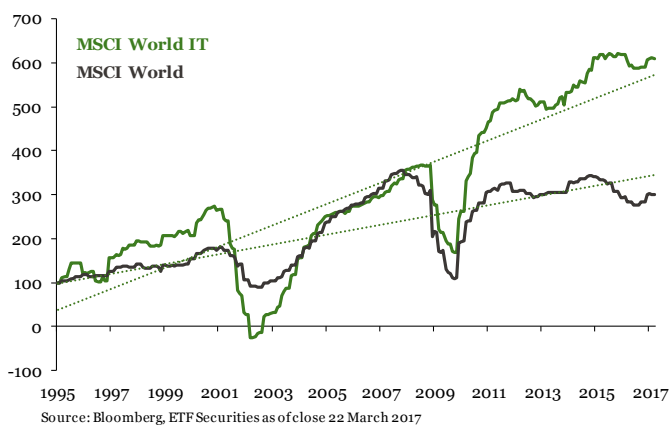
Tech equities continue to look attractive

Tech equities have grown earnings more than any other sector over the last two decades reflecting their ability to translate the structural growth themes detailed above into profits. Tech

¹ *(2017) https://www.accenture.com/gb-en/insight-artificial-intelligence-future-growth?c=ad_giukFY17_10000026&n=bac_0117

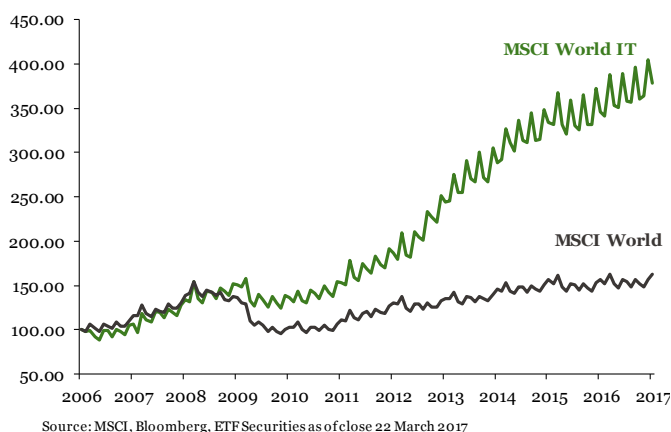
earnings per share ratio (EPS) has increased more than 500% since 1995 versus half that for the wider market. This translates into an annual compound growth rate for EPS of 8.5% per annum compared to 5% for the market.

Tech earnings have outpaced the wider market

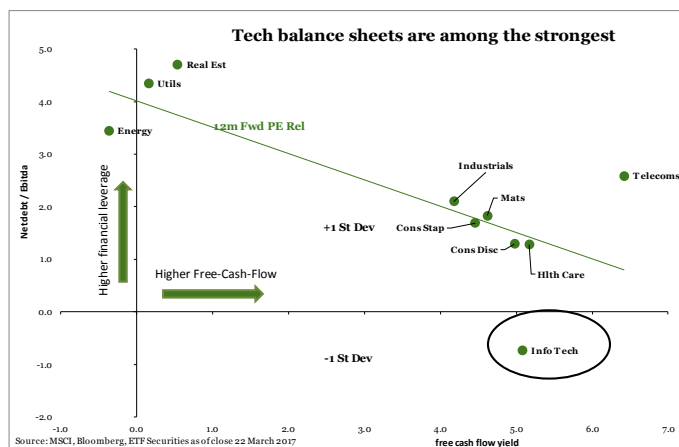


Second, many tech companies are highly cash generative, with cash representing as much as 25% of the valuation of some tech stocks. That cash pile has helped to drive dividend growth in the sector. Dividend per share has grown three times faster in the Tech sector than for the wider market.

Growth in Dividend per Share (2006=100)

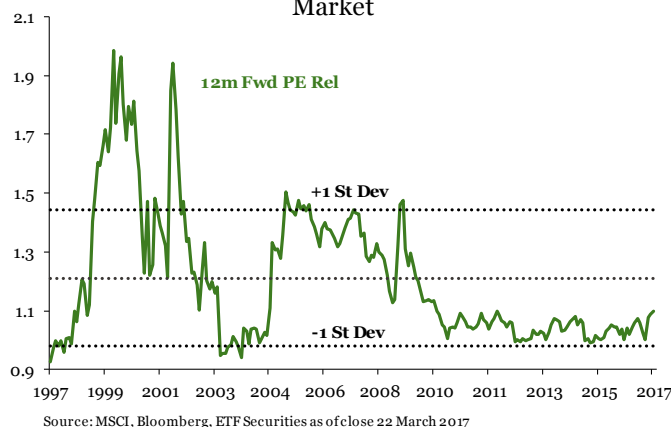


Third, Tech is attractive because it has both defensive and cyclical characteristics making it well positioned for different market environments. Being exposed to structural growth areas tends to make tech revenues relatively stable and therefore defensive. Furthermore, Tech companies have some of the strongest balance sheets in the market. At the same time, however, tech earnings are highly correlated with a pick-up in GDP momentum, giving it the characteristics of a cyclical sector. Historically, US tech investment growth has had a beta of around 2.3x to real US GDP growth. Although, having both defensive and cyclical characteristics means Tech can perform well over the economic cycle.



While some prominent tech companies are trading on elevated multiples, this is not true of the overall sector. Even on a market cap weighted basis, global tech is trading close to a 20-year low on a 12m forward P/E relative to the market and on a 20-year high on dividend yield despite its superior growth outlook.

Global Tech trading near 20 yr lows versus the Market



Rising trade protectionism is a risk for the sector given how globalised tech companies have become. The industry is now dominated by companies that depend on the global trade framework to move goods and services through international supply chains. It is too early to tell what the new US administration's stance will be, but a further rise in protectionist rhetoric would be a negative overhang.

In summary, owning global Tech can provide not only diversification benefits but also exposure to one of the most dynamic structural growth stories in the market. Global Tech companies have outperformed the wider market over the longer term. Given the sector's superior earnings outlook and attractive valuations, that outperformance trend can continue.

Inflation-linked bonds improve portfolio risk-adjusted return

By Morgane Delledonne – Associate Director – Fixed Income Strategist | morgane.delledonne@etfsecurities.com

Summary

Inflation-linked (I/L) bonds generally outperform nominal bonds in times of rising inflation and growth by an average of 3%.

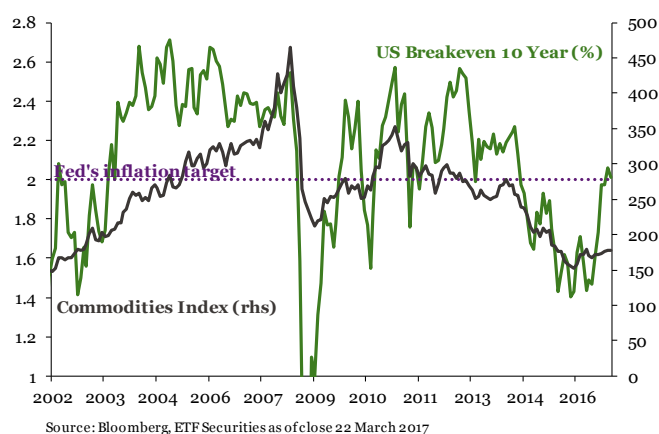
I/L bonds remain better for long-term capital protection rather than short-term inflation hedging.

We found that including I/L bonds to a portfolio reduces volatility and improves risk-adjusted returns. I/L bonds are also efficient instruments for improving diversification.

Moderate inflation outlook

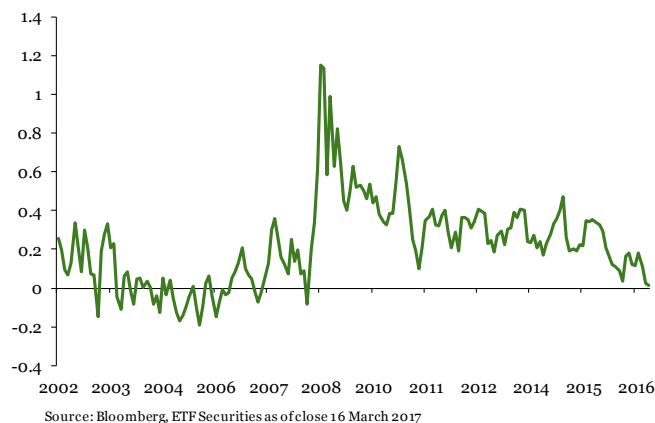
Inflation expectations are the biggest driver of rising long-term yields together with expectations on future short-term interest rates. The breakeven inflation rate (difference between the yield of a nominal Treasury bond and the yield of an inflation-indexed Treasury bond of the same maturity) reflects inflation expectations and the risk premium for uncertainty about current inflation. The US 10yr breakeven yield fell below 2% from 2014 to 2015 alongside the drop in commodity prices and the perceived risk of deflation. Then, it rebounded drastically in August 2016 in anticipation of tighter monetary policy, Trump's pro-growth policies and a better outlook for energy prices. Most market and survey-based inflation expectation indicators are now close to Fed's inflation target of 2%.

Inflation expectations



However, the 10yr-5yr breakeven spread has fallen to zero recently, suggesting that market participants are expecting a rise in inflation in the short term but are not yet convinced that inflation will continue to accelerate over the next decade.

Breakeven 10y-5y (pp)



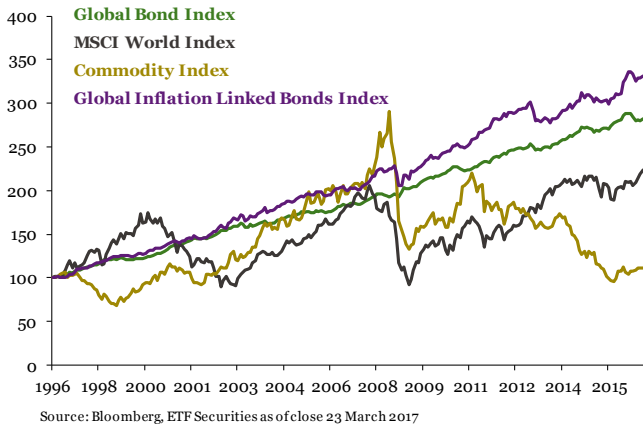
We believe that structural headwinds such as an ageing population, low productivity growth and a global debt overhang problem will likely prevent the economy from overheating, thus reducing the chances of inflation rising higher over the longer-term. Meanwhile, the volatility in commodity prices is likely to continue to translate into volatility in inflation metrics.

Strategy in a global inflationary environment

In a rising growth and inflation environment, bond investors generally reduce duration exposure and take on more credit risks (such as emerging market debt and high yield). In order to protect against the capital erosion from inflation, fixed income investors can also increase their exposure to inflation-linked (I/L) bonds or "Linkers" such as Treasury Inflation-Protected Securities (TIPS) in the US. Linkers provide capital protection against realised inflation. Their nominal coupon and principal payments are adjusted for the rise in the underlying price index (e.g. US CPI Index is used for TIPS), so that the real value of their payments remain the same. Linkers have lower coupon payments than traditional bonds but have larger principal repayment at maturity. In other words, linkers offer best returns when held to maturity.

Over the past decade, global linkers outperformed all the other asset classes.

Cumulative performance (Index Jan-94=100)



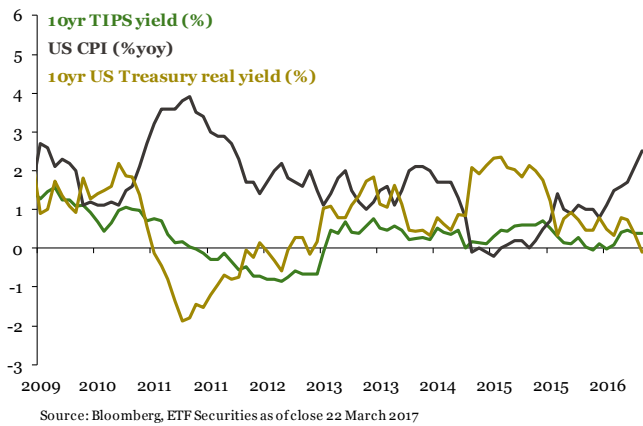
In the US, TIPS generally outperformed nominal bonds by an average of 3% in times of rising inflation and growth. During periods of falling growth on the other hand, linkers generally underperformed nominal bonds by 2%.

	Commodities	US TIPS	US Equities	US Treasuries
Rising inflation	8.2%	7.0%	5.4%	5.2%
Falling inflation	4.3%	6.1%	10.1%	4.6%
Rising growth	11.1%	5.8%	13.4%	2.9%
Falling growth	-8.0%	2.7%	2.3%	4.4%

Source: Bloomberg, ETF Securities. (For the periode 1997 to 2017)

Despite the tightening of monetary policy in the US, the rise of inflation more than offset the rise of nominal yields, leading real yields on traditional bonds to decline. However, the yields on linkers remain broadly stable.

Linkers limit capital erosion due to inflation



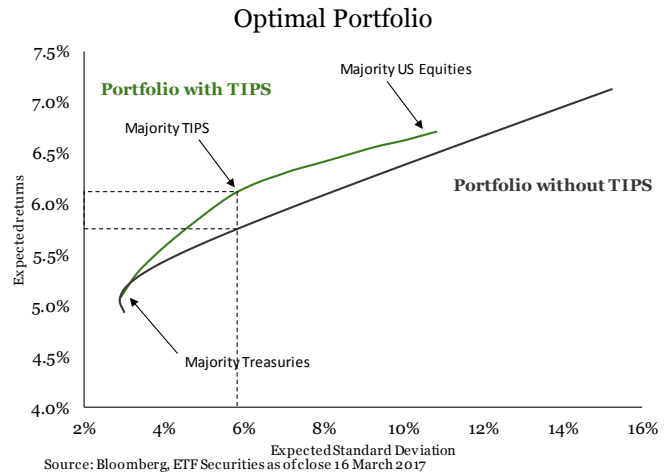
Source: Bloomberg, ETF Securities as of close 22 March 2017

Linkers in a portfolio

In the context of portfolio investing, as well as bonds, linkers are efficient instruments for diversification since they have a low correlation with other asset classes such as equities and commodities.

Besides, we found that a portfolio composed of US bonds including TIPS and US equities is less volatile and has a better risk-adjusted return than a comparable portfolio without TIPS. The graph below illustrates the efficient frontiers - the set of optimal portfolios that offers the highest expected return for a given level of risk or the lowest risk for a given level of expected return - for both portfolios. Results show that adding TIPS to a broader bond and equity portfolio is an efficient way to reduce risk and increase return. For the same level of risk (e.g. 6.0%),

the portfolio with TIPS has a higher expected return (6.2%) than the portfolio without TIPS (5.8%).

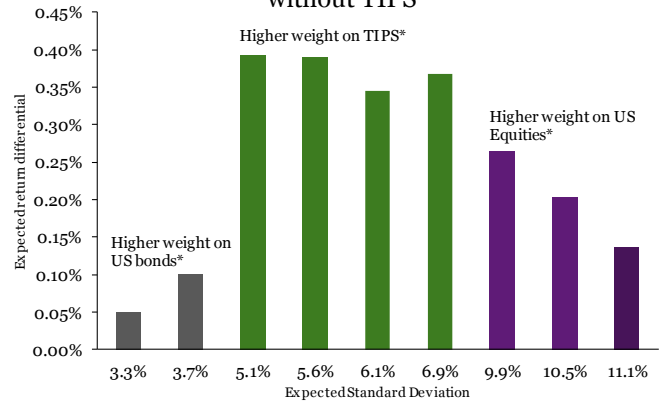


Source: Bloomberg, ETF Securities as of close 16 March 2017

Tactically, the strategic allocation decision between linkers and nominal bonds primarily depends on economic conditions. Linkers are more attractive in recovery and inflationary phases when central banks are tightening monetary conditions while nominal bonds outperform in recessionary phases when central banks are easing monetary conditions.

However, our analysis shows that over the long run, I/L bonds should be considered as a core holding in a portfolio. Although, in order to maximize the additional expected returns resulting from adding TIPS to a portfolio, investors would have to allocate over 60% of the total portfolio on TIPS.

Return differentials between portfolio with and without TIPS



Source: Bloomberg, ETF Securities as of close 16 March 2017
* >60% of total allocation

As we head into a global inflationary environment, fixed income investors could reduce duration risk and add more credit risk. In addition, investors could add I/L bonds to their portfolio for the purpose of optimization and long-term capital protection rather than using them for short-term inflation hedging.

In our opinion, structural headwinds will likely continue to exert downward pressures on growth and inflation over the next decade. Thus, we remain neutral on global bonds, with a preference for emerging market debt and high yield credit.

Vulnerabilities exposed by rising interest rates

By James Butterfill – Head of Research & Investment Strategy | james.butterfill@etfsecurities.com

Summary

In the UK we have found that for every 1% rise in the Bank of England interest rate we see a 0.7% rise in debt service ratios.

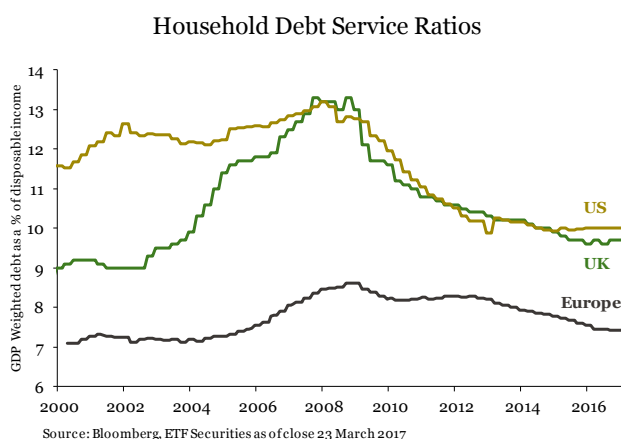
The FTSE 100 has a much lower interest coverage ratio relative to Europe and US equities.

Despite the potential economic gearing smaller businesses have, in the US they are particularly vulnerable to rate rises

It is our belief is that unprecedented loose central bank monetary policy over the last nine years has distorted certain areas of the economy. As we have written in the past, we believe loose monetary policy is partly responsible for the waves of political populism the developed world is experiencing. Now we want to focus on the impact loose monetary policy has had on households and corporates, if any, and what could happen if policy continues to tighten.

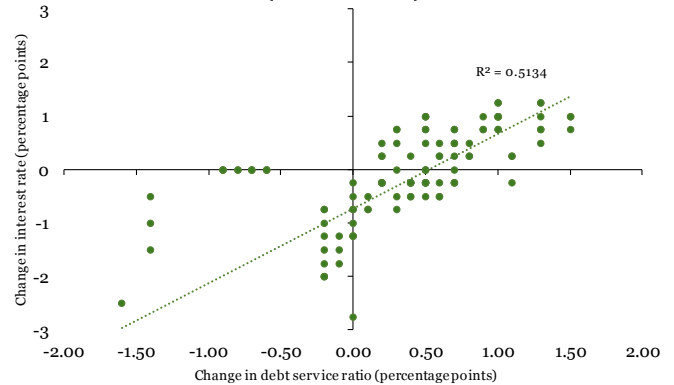
UK householders vulnerable to interest rate rises

Household debt is not overly extended at current interest rates, with the share of disposable income used to service debt (debt service ratio) having fallen from its peak of 13% in the US to 10% now. Debt service ratios in both Europe and the UK show similar trends.



Contrary to our expectations, we found that debt service ratios were unresponsive to changes in interest rates in the US or Europe but are in the UK. We have found that for every 1% rise in the Bank of England interest rate we see a 0.9 percentage point rise in debt service ratios. UK households appear to be more sensitive to interest rate changes because there is a greater proportion of variable rate debt in the UK.

Interest rate changes versus debt service ratios (2000 - 2010)

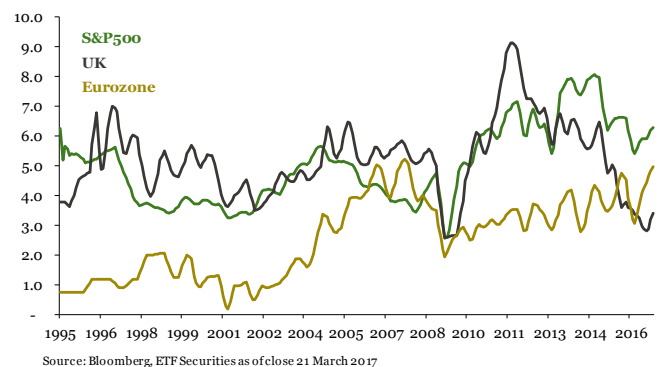


The UK is much more vulnerable in a rate rising environment. By our estimates, if interest rates return to their pre-credit-crisis-highs of 5.25%, debt service ratios would increase from 9.7% to 11.9%, returning close to the highs seen in 2007. Other regions where debt service ratios look alarmingly high are Netherlands, Australia and South Korea, which are 18%, 15% and 11% of disposable household income respectively.

Corporates' ability to handle debt

One of the more effective ways to understand interest rate sensitivity in companies is to measure their ability to handle their outstanding debt.

Interest expense coverage ratio

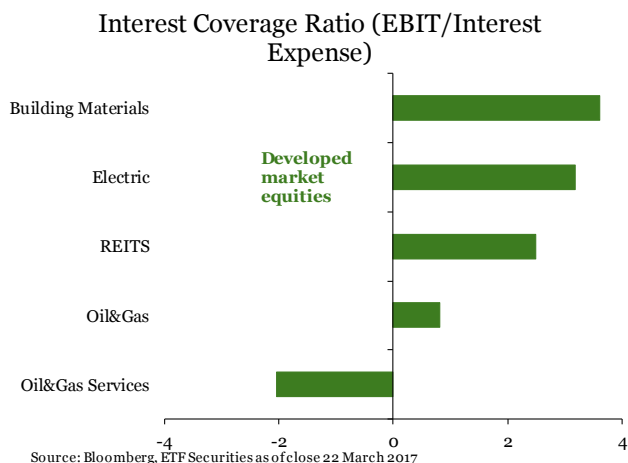


We believe the interest coverage ratio, measuring EBIT (Earnings Before Interest and Taxes) over Interest Expense is the most effective method in measuring this sensitivity. An interest coverage ratio of above 3x is considered healthy while an interest coverage ratio below 1.5x is typically indicative of a company that is struggling to handle its debt.

From a regional perspective we find, like households, that Europe and the US have the healthiest interest coverage ratios, while the UK has seen a substantial deterioration in its interest cover, having fallen from 9x in 2012 to just 3.4x today.

The FTSE 100 is vulnerable

The UK is well below the 5x and 6.3x cover seen in Europe and the US respectively. Within Europe we do find pockets of weakness though, Italy has a low cover of only 2x. And within the UK we find it is the FTSE 100 which has a much lower cover relative to the FTSE 250. Breaking down the data by industry sectors reveals that the most vulnerable are resource and property related sectors.



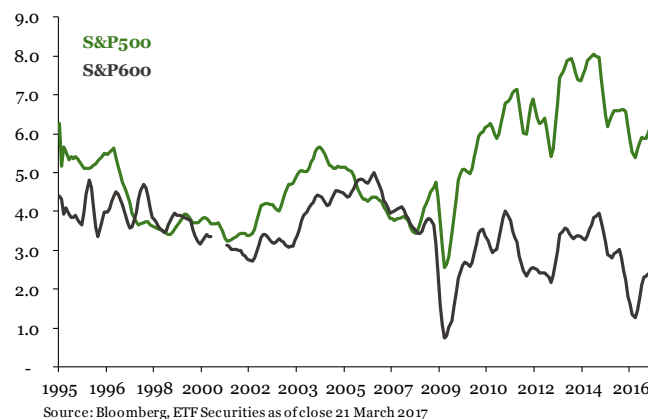
We have found that these sectors and regions also lack consistency in their EBIT, having some of the highest EBIT volatility. EBIT volatility increases these sectors' sensitivity to interest rate rises.

US small caps at risk

US small companies have diverged from US larger companies. Having historically been closely correlated, interest coverage has diverged between small and large companies. Funding costs available to larger companies have not been available to their smaller counterparts at equivalent interest rates, regardless the growth in small business loans since their trough in 2010 has been faster than larger businesses, having risen 44% while large companies have grown 39%.

From a sector perspective, REITS are the obvious group of companies in the S&P 500 that are vulnerable to interest rate rises. They have a low interest coverage ratio and high valuations. As investors migrate away from bond-proxies, demand for REITS are likely to falter. The oil and gas sector looks particularly weak too, especially after a year of very low oil prices. However, recent improvements in cost efficiencies are likely to see earnings recover in this sector. The small cap pharmaceuticals sectors' acquisitions and biotech investments have led to it being particularly vulnerable to rising rates, with current interest coverage ratios at -3x.

Interest coverage ratio S&P600 vs S&P500



Despite the potential economic gearing smaller businesses have, in the US they are particularly vulnerable to rate rises. Valuations of these companies also look lofty and are ripe for a correction: current cyclically adjusted price/earnings valuations are in the 93rd percentile. Their ability to service their debt is poor relative to their larger cap counterparts.

The understating of implied risk

Option-implied volatility in the S&P500 is understated. An interest rate increase could cause a disorderly unwinding of the distortions that have suppressed the VIX.

The steep term structure of the VIX is likely a result of years of loose monetary policy, which has distorted market valuations. Perversely, the steep term structure gives yield hungry investors who are short the VIX, a positive yield (representing a carry trade). This steepness is also a reflection of some investors' fears for the future, although that steepness existed many years before the VIX reached current lows. In some ways, the carry trade and fears for the future are feeding off each other.

This has created a situation where CFTC net positioning on the VIX is at record low levels, suggesting a greater number of investors are short and taking advantage of this carry trade. Higher interest rates could prompt a disorderly unwind of this short positioning given that it is so extended at present, causing a spike in volatility.

We have isolated areas most vulnerable to interest rises by looking at those with the biggest debt burden, namely, US smaller businesses, the FTSE 100 and UK households. We continue to believe developed market central banks will maintain a fine balancing act between inflation and recession, and therefore continue with a "dovish tightening" approach, suggesting that some of these distortions in the market could persist for a while longer, a shock rate rise is the biggest risk to companies and household with high interest expenses.

Little honour among OPEC cartel members

By Nitesh Shah – Director –Commodity Strategist | nitesh.shah@etfsecurities.com

Summary

Although individual OPEC countries involved in the deal to cut production are close to compliance, as a group, the cartel is only 83% of the way to cutting 1.2mn barrels.

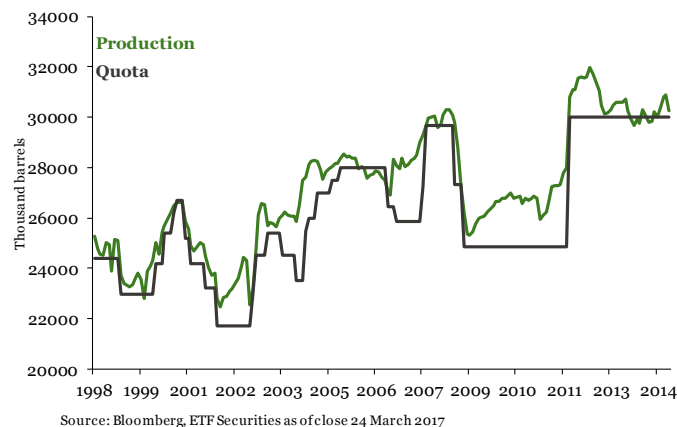
Extending the deal looks difficult given that participating non-OPEC countries are doing far worse on compliance and want more time to assess market conditions.

Cutting output has offered market share to the US. It is difficult to believe that OPEC will want to continue to lose market share unless prices significantly recover. Rising US production keeps a lid on prices.

OPEC's poor history of compliance

In November 2016, OPEC stole the headlines with a deal to cut output by 1.2mn barrels compared to October levels. The cartel abandoned its prior 2 year-strategy of maximising market share. Moreover, the group managed to convince some non-OPEC members to participate in the effort to cut back. However, the group has had a poor history of compliance with quotas and we question whether this time will be any different.

OPEC: Actual production vs quota

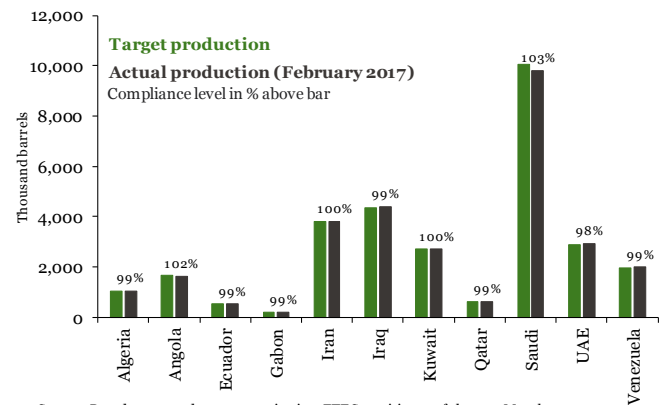


Individual level compliance appears good

In the current OPEC deal, most member countries are allocated an individual level quota. Of those countries that have a quota,

most are doing well, and have cut production close to target. Some countries have even cut more that they are required to, based on the data from secondary sources.

Compliance in current deal



An illusion

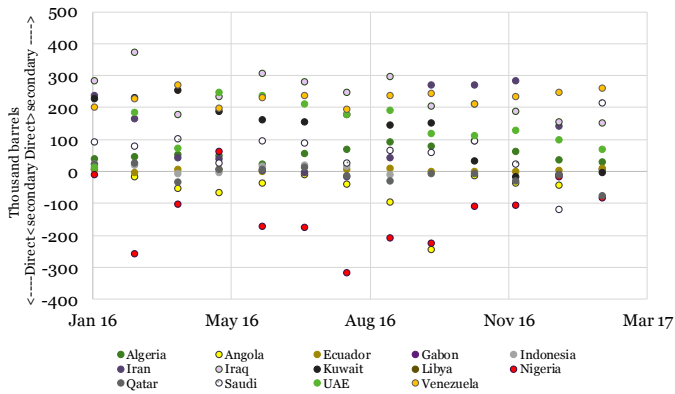
However, the OPEC deal was sold as a 1.2mn barrel cut in production from the cartel. The cartel has not cut anywhere near as much. The reason is that a number of countries are exempt from the deal including Libya and Nigeria. Iran was allowed to increase production by 90k barrels (although curiously in OPEC's announcement its target level was lower than what it was producing in October). Angola's reference value was set at September levels rather than October levels. Saudi Arabia's reference value was set at a level that was above what was printed in the OPEC November Monthly Oil Market Report (presumably, the figures were revised after the quota-setting meeting). Indonesia, which produces around 750k barrels a day, suspended its membership around the time of the deal and so it became free to increase its production. Production cuts from OPEC (excluding Indonesia) have only amounted to 997k barrels, not 1.2mn barrels. Therefore, the group is only 83% compliant.

OPEC direct vs secondary communication

The deal had been calibrated based on secondary source information to set the reference values. In addition, these secondary sources are used for monitoring purposes. These secondary sources include the International Energy Agency, S&P Global Platts, Argus Media, U.S. Energy Information Administration, Petroleum Intelligence Weekly. OPEC also reports what its own members think they are producing. However, this data is incomplete as it excludes Libya and Gabon. Looking at the discrepancies between this direct

communication and secondary sources over the past year reveals that there are consistent biases. Most OPEC countries believe they are producing more than secondary sources report i.e. they themselves don't believe that output is as low as reported by secondary sources.

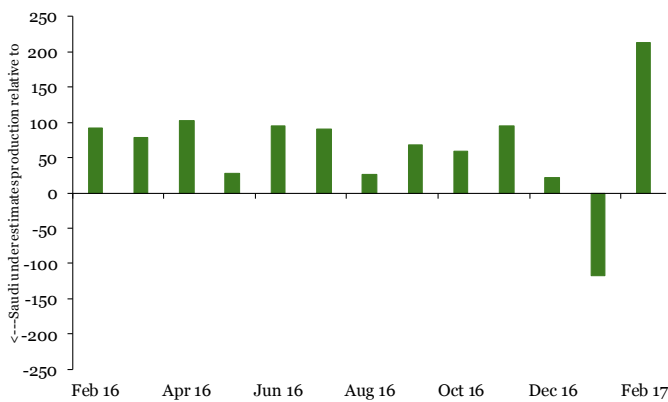
Direct vs. secondary discrepancy



Source: OPEC, ETF Securities as of close 23 March 2017
Data represents production estimate from direct communication less production estimate from secondary sources

Saudi Arabia quite consistently over-estimates its own production (relative to secondary sources). Except for in January 2017, when it underestimated. That was a month when it had to set an example to fellow OPEC members to cut aggressively. It reported a production cut of 877k barrels versus October 2016. That compares to the deal requirement to cut 486k barrels.

Saudi Arabia: direct vs secondary discrepancy



Source: Bloomberg, ETF Securities as of close 23 March 2017

Defying seasonals

Cutting back on production in January and February was relatively easy because production was not cut back as much as normal in the final five months of 2016. Seasonal trends point to production increases over the next few months. Keeping production this low will have to work against seasonal trends.

Change in Saudi Arabian production by month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	-610	-90										
2016	50	0	-10	10	60	210	190	-20	-40	-20	-50	-50
5-year average	-16	-7	72	71	86	118	136	-32	-48	-24	-74	-126

Source: Bloomberg OPEC production estimates, ETF Securities as of 23 March 2017

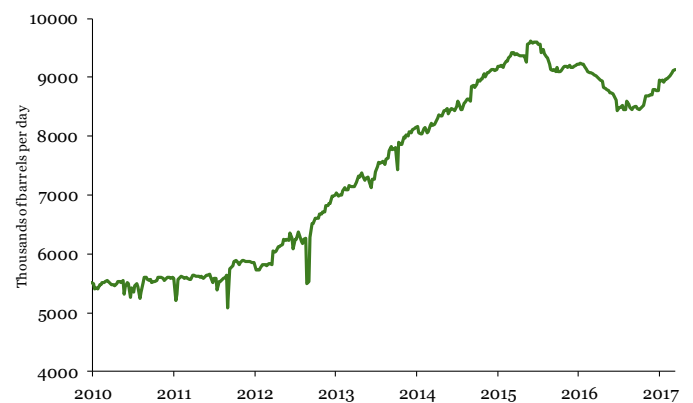
Non-OPEC members

While several members of OPEC tout strong individual level of compliance, non-OPEC members who are participant to the deal have not done so well. The deal was supposed to be revolutionary because of the participation of non-OPEC countries, but it looks like OPEC is doing most of the heavy lifting. The largest non-OPEC member, Russia, has cut production only by 185k barrels according to Russia's Energy Minister Alexander Novak in an interview with Bloomberg on Saturday 25th March. That compares to 300k barrels it signed up to. At the most recent Joint OPEC/Non-OPEC Ministerial Monitoring Committee (JMMC) in Kuwait, the committee announced that the OPEC and participating non-OPEC countries achieved a conformity level of 94 per cent in February. Once again we believe this figure fails to incorporate the rising output from OPEC countries with an exemption.

Deal extension?

In recent weeks there has been a lot of talk about extending the deal beyond the initial six months. Saudi Arabia said that if OECD oil inventories remains above the 5-year average it is willing to support an extension. Another four members of OPEC were supposedly also supportive at the JMMC. Oman, a non-OPEC member was also supportive. However, Russia said it needs more time to assess the market, inventories and production in the US and other non-OPEC countries. This is likely to be the sticking point, judging by how much market share the US has taken in recent months. US production of shale oil can break-even at US\$40/bbl today, compared to US\$80/bbl three years ago. Rising US production will cap prices at around US\$55/bbl and therefore reduce the motivation for OPEC to cut further.

US Crude Oil Production



Source: Bloomberg, ETF Securities as of close 27 March 2017

Metal supply to tighten as environmental concerns enforced

By Nitesh Shah – Director –Commodity Strategist | nitesh.shah@etfsecurities.com

Summary

The extraction and production of commodities has been highlighted as a cause for environmental concern, particularly in Emerging Markets.

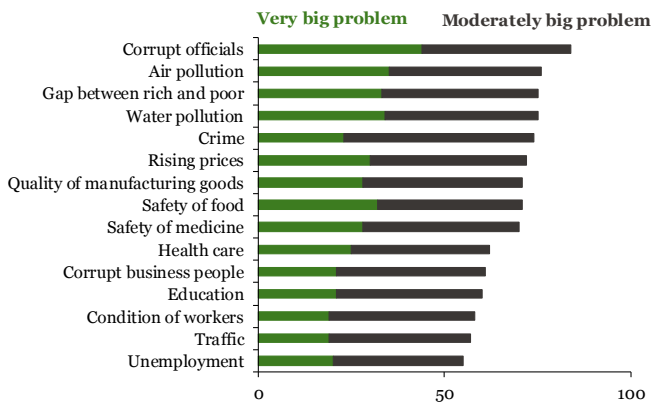
Both China and the Philippines are taking a tougher stance on environmental protection.

China is the largest producer of aluminium and Philippines is the largest producer of nickel. Both metals are at risk of supply deficits as a result of new environment policy.

China tackles key concerns

China has a pollution problem. According to the China Statistical Yearbook, 60% of groundwater is unfit for human consumption. Of the 161 closely monitored cities, only 16 cities reached the national standards of air quality. While the Chinese authorities may have delivered on superior economic growth for decades, its record on delivering better environmental outcomes has not been as good. Its fragile one-party political system relies on social peace. That is difficult to achieve if the population is annoyed with the state of the environment. According to recent surveys, air and water pollution are respectively the second and third most pressing problems for Chinese households. They rank ahead of income disparity, worker conditions and unemployment. According to Beijing News, environmental pollution was the cause for close to 50% of all mass disturbances involving more than 10,000 people.

Chinese perception of domestic problems



Source: PEW Global Attitudes Survey, ETF Securities as of close 20 March 2017

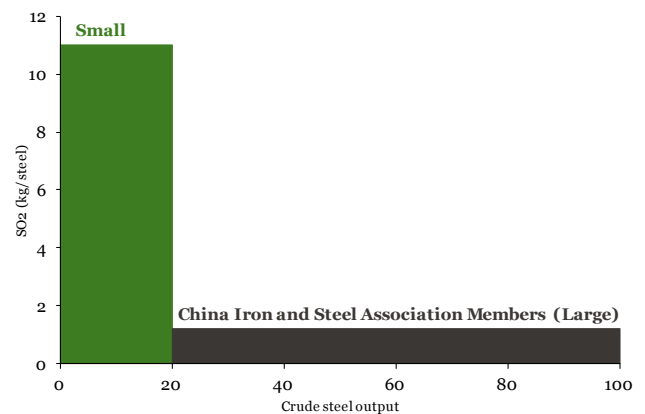
Latest 5-year plan tackles governance

Chinese authorities have acted on these concerns. In the 11th Five-year plan (2006-2010), targets were set for cleaning up the

environment. In the 12th Five-year plan (2011-2015), the Environmental Law was amended to raise the penalty for violations and lower the threshold for a violation to be convicted as a crime. However, enforcement remained a key problem due to China's administrative structure. Local authorities were responsible for hiring and paying for local environmental bureaus. They had vested interests in protecting polluting industries in their jurisdiction in order to achieve their economic growth targets. One of the key amendments in the 13th Five-year plan (2016-2020) is to separate environmental enforcement and monitoring agencies from local governments and pull their reporting line to provincial level environmental protection departments.

The change in governance structure will finally start to give teeth to environmental policy. In the steel industry, for example the Ministry of Environment Protection set up a dedicated inspection team to assess if steel companies were adhering to state technology and emission standards. After visiting 1019 steel enterprises, it found that 173 firms had broken the rules. Of those offending firms, 29 had been shut down temporarily to rectify their problems, 23 had been asked to cut production levels. Fines totalling US\$2.8mn have been imposed on these firms. Small, inefficient steel mills are the main offenders. They produce more pollutants relative to their steel output. The Ministry of Environmental Protection aims to shut 100-150 million tonnes of surplus steel capacity over the next five years.

Sulphur emission by size of steel mill

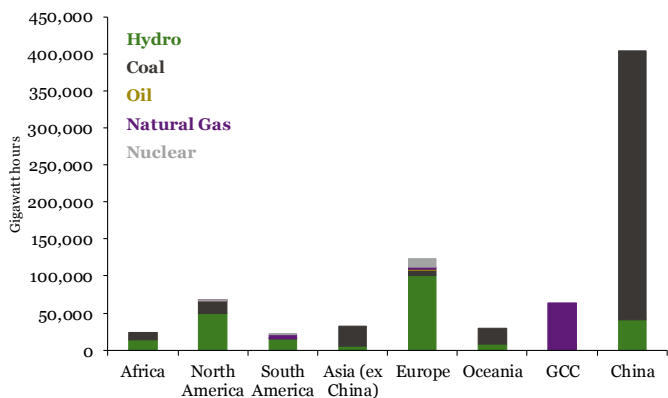


Source: Ministry of Environmental Protection, China Iron and Steel Association

Aluminium production cutbacks

While the steel sector was the focus of environmental enforcement in 2016, overproduction of aluminium is the area that the authorities will tackle in 2017. Similar to steel, it is the marginal producers that are particularly polluting and chronic overcapacity has been a by-product of local government complacency to withdraw financing from loss making producers.

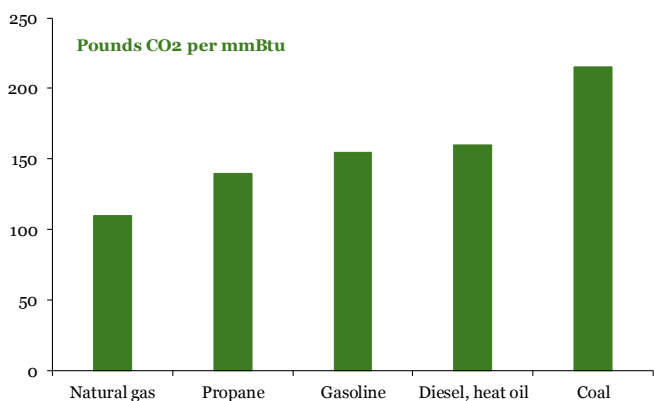
Power use in aluminium smelting



Source: International Aluminium Institute, ETF Securities as of close 17 March 2017

China produces about half of all global aluminium output. Aluminium is very energy intensive to produce due to the use of electricity in the smelting process. Because China uses coal as a source of power for most of its smelting, it is particularly polluting. By contrast, the majority of production elsewhere is powered by hydroelectricity, which does not emit carbon.

Coal: heavy carbon emitter



Source: EIA, Wood Mackenzie, ETF Securities as of close 20 March 2017

According to official and media reports, up to 30% of capacity could be cut in Henan, Shandong and Shanxi during the winter heating season. These regions represent close to 20% of global capacity, so the closures could take out 6% of global capacity during winter. That could be enough to tip the global balance of aluminium into a deficit.

Philippines shuts mines

In February, the Philippine interim environment minister ordered 23 of the country's 41 mines to shut for alleged environmental violations. Fifteen of the 23 are within watershed areas. The minister has also ordered the cancellation of 75 mining contracts, or nearly a third of mineral production sharing agreements for mines that have yet to go into production, for being located in watershed areas.

A watershed is an area of land where all of the water that is under it, or drains off of it collects into the same place.

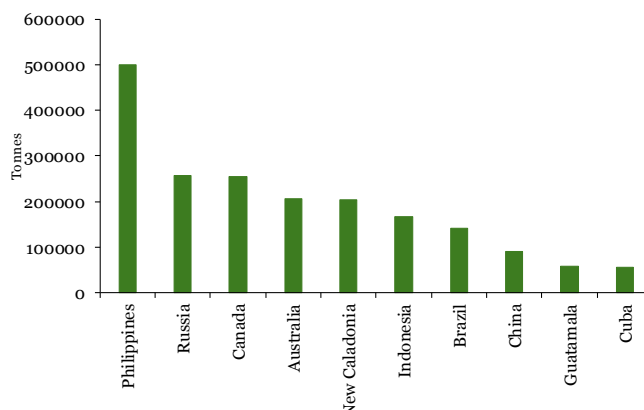
Watersheds are important in bringing the right nutrients to other drainage basins.

Protected watersheds in the Philippines



The Philippines is the largest producer of nickel ore. The mine closures represent close to 170k tonnes and around 8 percent of world supply.

Top 10 Nickel Producers



Source: Investing News 2016 Annual Update, ETF Securities as of close 22 March 2017

Although the mine closures are being contested and the interim environment minister is awaiting confirmation for a permanent role, the President of Philippines has offered full support. With such political capital behind the idea, there is significant risk of the mine closures coming into effect.

Other Emerging Markets

Although not a large producer of any metals, El Salvador has recently voted to ban the mining of any metals in the country. That comes after foreign-owned mine operators flouted environmental laws and failed to pay fines. Focus on environmental legislation could become a theme for more countries.

Sustainable investing: the performance myth

By Edith Southammakosane – Director – Multi-Asset Strategist | edith.southammakosane@etfsecurities.com

Summary

Sustainable investing is becoming mainstream, as investors increasingly require portfolios to address today's environmental and social challenges.

Outperformance through exposure to companies with a high Environment Social and Governance (ESG) score is still yet to be proven.

Strategies that outperform the benchmark require multiple layers of screening in addition to screening by overall ESG or even individual E, S or G scores.

Sustainable and responsible investing (SRI), as defined in the European SRI Study 2016, is “a long-term oriented investment approach, which integrates ESG factors in the research, analysis and selection process of securities within an investment portfolio.”

SRI is appealing to a growing number of institutional and individual investors, representing more than €22tn² of assets in Europe in 2015 and US\$6.5tn³ in the US in 2014. From an asset manager perspective, offering SRI solutions is an opportunity to attract long-term assets from new types of investor that are not only seeking a return or income, but also have a moral duty towards the planet and future generations.

In this note, we are analysing the impact of SRI strategies on performance using existing SRI offering, focussing on passive investment solutions from well-established index providers.

The framework

Many initiatives such as the United Nations (UN) Global Compact principles or its Principles for Responsible Investment (PRI) have become the base to assess companies and their ESG engagements, defined as follows:

- Environmental issues include global warming, energy usage, waste management and pollution;
- Social factors relate to company's internal policies, diversity, equal gender and benefits to the community;
- Governance matters refer to board structure and independence, shareholder rights and compensation.

² European SRI Study – European Sustainable Investment Forum (Eurosif), 2016

³ The Impact of Sustainable and Responsible Investment – US Forum for Sustainable and Responsible Investment (USSIF), 2016

Screening companies for their ESG exposure is becoming mainstream in any investment decision process. Given the extensive work required in the screening process and the maintenance of an ESG database, most investment solutions either have developed an ESG rating tool internally or are using data provided by an ESG rating agency.

The screening process

While the scoring system remains highly subjective, agencies offering ESG data are putting listed companies through different layers of screening:

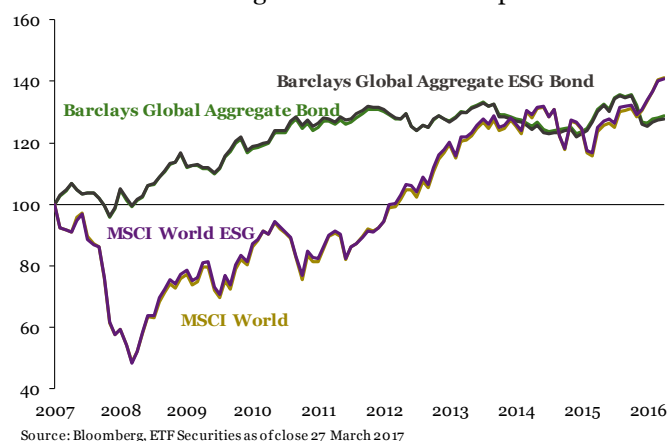
1. a negative screening that excludes all companies operating in ‘sin’ industries such as alcohol, tobacco, weapons
2. a positive screening where companies are assessed based on a list of ESG criteria and disclosure and are attributed a score by sub-factor - by E, S or G and an overall ESG score
3. companies' capacities to sustain their engagement in the long term

The weighting applied to E, S and G vary depending on the sector or industry the company belongs to, allowing for companies from different sectors to be comparable.

The impact of ESG on performance

In this section, we look at whether screening the constituents of equity or bond indices through ESG factors make any difference in terms of performance, using the MSCI World and Barclays global aggregate indices as benchmarks for equities and bonds as well as their ESG equivalent.

Screening for ESG has little impact



The chart shows that both ESG versions of the equity and bond benchmarks, which weights the constituents according to their ESG scores, overlap their respective benchmark, highlighting that screening for ESG does not actually make much difference

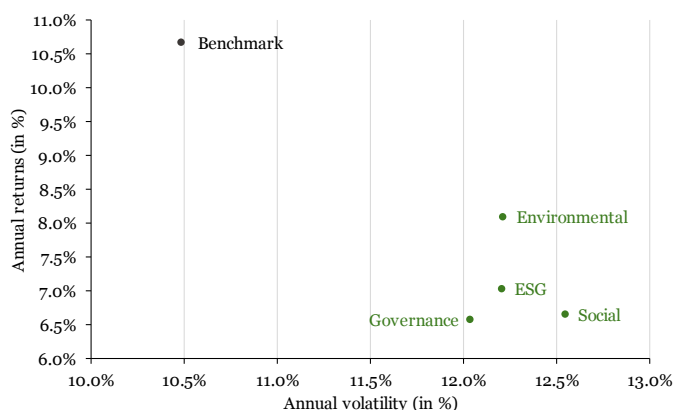
in terms of performance. Although, one can argue that past performance is not relevant, as ESG compliant companies will likely see the financial benefit over the next decade.

Decomposing E, S and G factors

Many academic studies have shown that selecting securities based on their overall ESG score is not enough to demonstrate substantial outperformance. Some suggest taking a step further by looking at the E, S and G factors separately for better results.

For the purpose of our analysis, we are using the indices launched by STOXX based on the scoring of Sustainalytics, one of the largest ESG data providers in the world. The universe of the Global ESG Leaders indices are from the STOXX Global 1800 Index. To be included in the E, S or G sub-indices, a company must have a score of at least 75 out of 100 in that factor and a score of at least 50 in the other two factors, a strategy known as best-in class as opposed to the ESG strategy mentioned earlier.

Environmental outperformed ESG by 1%



Source: Bloomberg, ETF Securities as of close 27 March 2017 in EUR

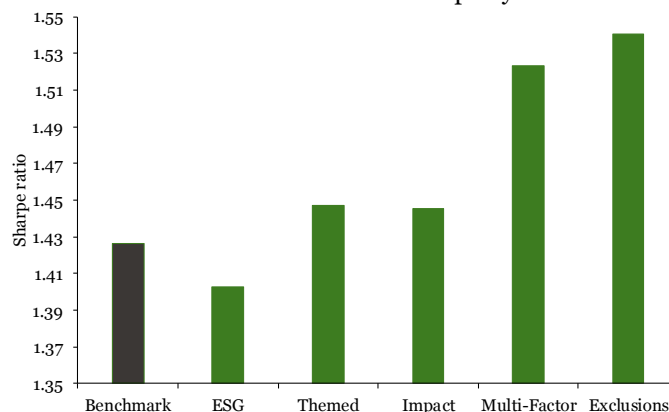
The above chart shows that the risk/return profile of indices that have higher exposure to E, S or G diverges significantly compared to the ESG index but all underperform by an average of 3.6% relative to the benchmark. Focussing on the ESG indices, Environmental outperforms the overall ESG index by 1% per year for the same level of risk while the governance and social indices underperform by 0.4% on average.

While the equivalent E, S and G indices for bonds are not available, a study⁴ from Barclays shows that bonds with high Governance scores perform better than bonds with high Environmental or Social or ESG score. This is in line with a 2014 study⁵ based on Sustainalytics' data that advocated exposure to specific sub-factors under E, S and G that have the highest correlation to companies' profits to achieve outperformance. The papers found that among the top 10 sub-factors, 7 are from governance, 2 are social sub-factors and only one sub-factor is under environmental.

ESG portfolio strategies

In this section, we compare different ESG strategies using indices launched by Standard & Poor's and look at how they perform compared to the S&P 500, the benchmark. As mentioned earlier, the basic ESG strategy weights the constituents according to their ESG scores. Sustainability themed provides exposure to specific themes, in this case carbon efficient. Impact provides exposure to companies of the S&P 500 that meet social and environmental criteria while Exclusions excludes companies that own fossil fuel reserves. Multi-Factors relates to an ESG strategy that combines multiple ESG strategies in this case Impact and Exclusions.

Exclusions enhances the Sharpe by 8%



Source: Bloomberg, ETF Securities as of close 27 March 2017. Risk free rate = 0.35%

Since December 2011, exclusions and multi-factor strategies enhanced the Sharpe ratio by 8% and 7% on average compared to its benchmark. Themed and impact strategies come next improving the risk-adjusted returns by 1% on average while ESG reduces the Sharpe ratio by 2% on higher volatility. All the strategies outperformed the benchmark by 0.7% on average per year for very similar levels of risk, except for the basic ESG strategy.

Growing interest in sustainable investing reflects the trend of investing into longer-term thematic, as well as the need to incorporate increasing environmental constraints that can affect corporate profitability. Considering these risks at an early stage allows companies to mitigate the potential negative impact on revenue and eventually benefit financially in the longer run.

In this note, we showed that outperformance through exposure to companies with high ESG scores remains a myth for the time being. Investors should be considering ESG in their investment decision process either by incorporating multiple layers of screening or by using it as a risk management tool, reducing future operational risk.

⁴ Sustainable investing and bond returns – Barclays, 2016

⁵ A Quantitative Approach to Responsible Investment: Using ESG-Multifactor Models to Improve Equity Portfolios – Fetsun and Söhnholz, 2014

Lithium & the energy metals

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Summary

Growing adoption of battery technology will be a boon for Lithium, Cobalt and manganese demand.

Supply concentrations and geopolitics will continue to come into focus for these markets.

Supply constraints on other metals used in battery and electronic goods such as nickel and copper are not as acute and so these ‘traditional’ metals may not benefit as much in the short-term

Batteries will comprise nearly 70% of global lithium demand by 2025 according to Deutsche Bank estimates, a share increase of approximately 30% from 2015. Although we fear that the hype surrounding lithium technology is high, as lithium carbonate producers ramp up production it is likely there will be still be an undersupply supply of lithium. According to BMI Research global supply of lithium will double to 90,000 tons, whilst 120,000 tons is required to keep market balance. However, due to the material committed on contracts in 2017 and its general illiquidity we may not see a price response in 2017 for the European lithium market.

This burgeoning trend, however, is not limited to lithium demand. Other key components in lithium-ion (Li-ion) batteries will likely follow suit with increasing demand in coming years. While the pace of demand for these other metals may vary, continued adoption of Li-ion battery technology in electric vehicles, electronics, and energy storage will be a growing source of attention to more traditional metal markets.

Battery Breakdown

Batteries of any kind share the same basic anatomy. They all consist of two electrodes that hold opposing charges: an anode (negative) and a cathode (positive). They have a third component: the electrolyte – a chemical medium that allows the flow of electricity. For lithium-ion (Li-ion) batteries, the electrolyte is made of lithium, while the anode for the majority of batteries is made of graphite both of which have garnered investor interest.

The cathodes in Li-ion batteries, however, come in many flavours depending on their intended application. For most electronics such as smartphones, laptops, and electric tools, cobalt is utilised, while for electric vehicles nickel and manganese are the most common cathode material.

Types of lithium-ion battery cathodes

	Cathode composition	Weighting	Major usage
Lithium Cobalt Oxide (LCO)	Cobalt	100%	Mobile phones, laptops, digital cameras
Lithium Manganese Oxide (LMO)	Manganese	100%	Electric vehicles, power tools, medical devices
Lithium Nickel Cobalt Aluminium Oxide (NCA)	Nickel Cobalt Aluminium	80% 15% 5%	Electric vehicles (Tesla), medical devices, power cells
Lithium Nickel Manganese Cobalt Oxide (NMC)	Nickel Manganese Cobalt	33% 33% 33%	Power cells, e-bikes, medical devices

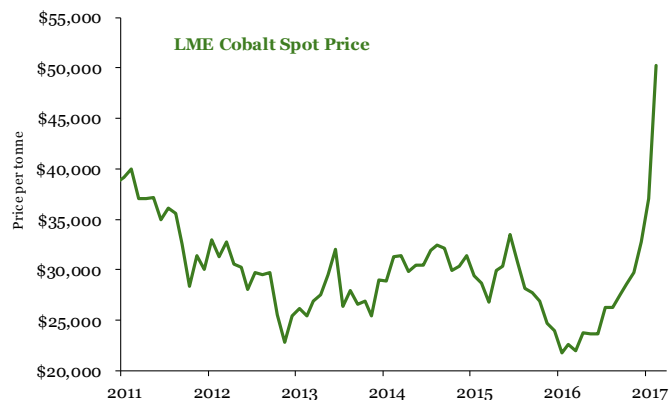
Source: BofAML Global Research, BatteryUniversity.com, ETF Securities. Chart data as of 3/27/2017.

Investors scramble for cobalt

The continued trends of mobilization, electrification, and internet of things have been key to cobalt which is the only cathode component for Lithium Cobalt Oxide batteries. Further, certain electric, hybrid, and plug-in vehicles as well as power cells utilize cobalt in their battery mixture.

With approximately 42% of cobalt demand applied for battery technology according to the Cobalt Development Institute, investors have picked up on this theme. The price of cobalt traded on the London Metal Exchange has sky rocketed over 125% since June 2016, with a 64% return in year to date as of March 27, 2017.

Speculation in cobalt is on the rise



Source: Bloomberg, ETF Securities as of close 29 March 2017

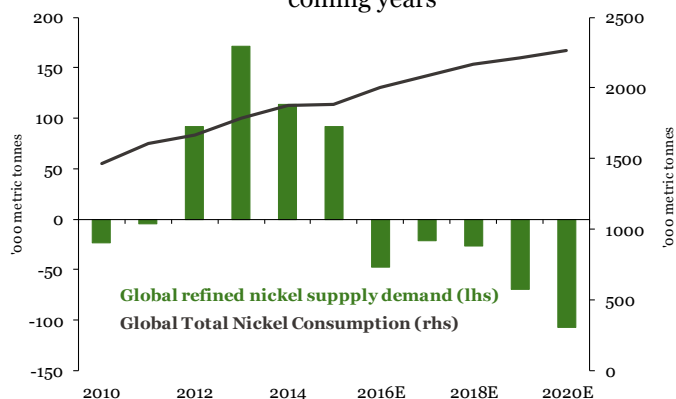
Nearly all cobalt (94%) is produced as a by-product of nickel and copper, with only 6% of production focused on primary operations. This leaves cobalt supply at risk to broader industrial activity, with anticipated supply deficits through 2020 due to limited supply projects according to Macquarie Research.

Manganese and nickel participation tied to specific electric vehicles growth

Evaluating Li-ion technologies applied to current electric vehicle fleets, we find that the most common batteries are those that incorporate manganese and nickel within their cathodes.

Manganese is traditionally associated with its use in steel production, and still remains under the radar compared to the attention lithium, graphite, and cobalt have received, in relation to the battery trend. Incorporating manganese into batteries has several benefits over cobalt including lower cost, increased safety, and higher power (but lower capacity). These characteristics have proved attractive for electric vehicle manufacturers in particular for use in electric powertrains.

Nickel is expected to meet reduced supply in coming years



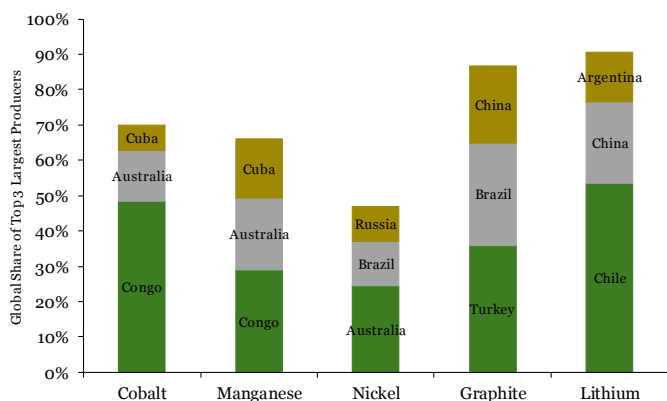
Source: RBC Capital Markets, ETF Securities as of close 28 March 2017

According to RBC Capital Markets, the global nickel market is expected to experience supply deficits through 2020 with growing demand. Nickel demand for batteries is expected to follow suit, however, the amount of nickel is small (between 7 and 18 kilograms per battery) and batteries will likely remain a minor share of the overall nickel market with a limited impact to prices.

Resource concentration and geopolitics

As with any natural resource, supply chain and reserve concentrations are important considerations for manufacturers. This appears to be especially key for battery production and related industries.

Supply reserves are heavily concentrated



Source: US Geological Survey, Bloomberg, ETF Securities as of close 28 March 2017

Among the major materials in Li-ion batteries, all (except nickel) have significant concentrations in a handful of countries

with over 2/3 of economically viable global reserves located in only 3 countries.

Cobalt remains the most susceptible to supply disruptions. Nearly 50% of global cobalt reserves are concentrated to the Democratic Republic of Congo which suffers from continued political instability and conflict. Congo is more than 3 times the size the next largest producer, Australia, which makes alternative sources difficult when supply is disrupted.

Other beneficiaries

Currently normal internal combustion engine cars use 20kg of copper, hybrids use 40kg and electric vehicles use 80kg, primarily in the wiring harnesses that transmit power to the drivetrains, the drivetrain themselves and the battery. According to BHP Billiton, if the electric vehicle market rises to 140m cars by 2035 as they expect, then this equates to around one third of total copper demand.

Electric vehicle motors also use rare earth metals such as dysprosium and terbium with many manufacturers being at the mercy of supply bottlenecks. Automakers are developing new ways to reduce their exposure to these metals. Honda has recently developed a high performance magnet that doesn't require any rare earth metals. Prices in rare earth metals have been lacklustre due to lack of supply constraints in China.

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