

ETFs Outlook



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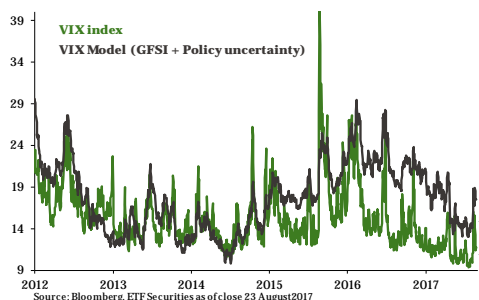
Bond balloon, not bubble

Artificially low market volatility

Across asset classes, volatility has moderated, and the underlying macro landscape has improved on a global basis, prompting greater investor optimism. Political uncertainty has also moderated, with two key exceptions: the Trump administration and the Brexit negotiations. Risk and the implied complacency of investors that low volatility presumes are key issues in financial markets, the current 'risk-on' environment where equity markets are reaching record highs looks increasingly untenable.

At the centre of this low volatility is loose monetary policy and vast central bank bond purchases which have prompted an investor hunt for yield. The first option for yield hunters was in the lowest risk free assets such as investment grade bonds, but it has now also pervaded high yield bonds, equities and the options market, distorting market valuations and driving down perceived risk. Consequently, we believe the ever-falling level of VIX options (market-implied volatility) doesn't reflect real world uncertainty but market-priced volatility brought about by this hunt for yield.

VIX Index versus actual risk (modelled)



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

Lurking behind the apparent market serenity are potential geopolitical flare-ups and the unknown consequences of unwinding loose monetary policy. As is the very nature of risk, timing of unexpected events is unknown but typically lead to sharp spikes upward in volatility. The issues surrounding the Trump administration, not least the North Korean situation have tested the market's resilience. Other potential instigators of volatility spikes could include a China debt crisis, a central bank policy error, an oil price shock or upcoming debt ceiling negotiations in the US.

Despite our concerns, the global economic environment, in the face of a US tightening cycle, is continuing to improve in both the developed and emerging world, supporting

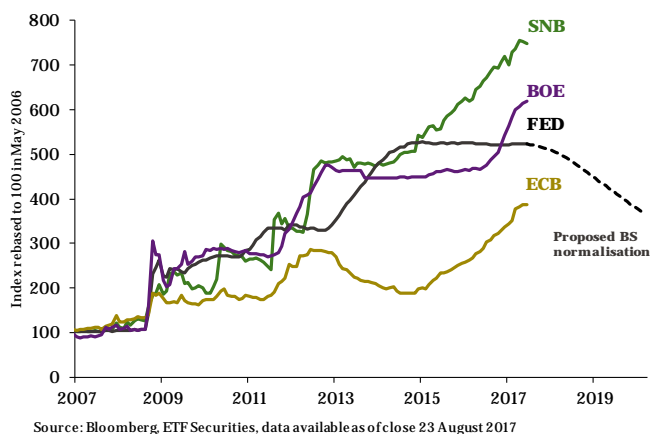


strong corporate earnings results. The most recent earnings season has been very positive for global assets. European corporate revenues were flat, but stripping out foreign revenues reveals continued growth. We continue to see Europe as having the best earnings recovery outlook while being, on a relative basis, attractively valued. The tech sector despite having relatively attractive valuations has suffered from recent poor price performance. We believe the tech sector sell-off is now overdone as delivered results have convincingly beaten analysts' expectations. Both earnings and revenue growth have been positive, highlighting fundamentals remain intact.

Bond balloon, not bubble

Nonetheless, investors are questioning the underpinnings of the equity rally in the face of what we feel is a misnamed bond 'bubble'. Although global bond yields are hovering near the lowest levels in history, it is not necessarily a bubble in the traditional sense. Yields are artificially low, driven by extraordinary levels of central banks stimulus. In this framework, we would characterise the situation as a bond balloon, not a bond bubble. The critical difference between a balloon and a bubble is what happens at the end: central bankers are keen to deflate the balloon, rather than burst the bubble. The gradual deflation of the bond balloon is a key aspect of what central banks are keen to achieve with the unwinding of asset purchase programmes.

Central bank balance sheet levels



Communication is crucial to forming investor expectations about the path for tighter monetary policy. Another 'taper tantrum' would suggest that policymakers have not achieved the objective of a measured and orderly removal of stimulus, and would also highlight the fragility of investors' optimism that is currently pervading markets. It seems there is little appetite amongst policymakers for being overly aggressive, even in the face of stronger wages and consequent inflation. Central bankers are aware of the damage volatility spikes and market instability would have on global economic confidence and in turn activity.

It is paradoxical that quantitative easing (QE), the very tool used to alleviate market stress, could be the root of renewed market stress when it unwinds. Policymakers want to avoid a negative feedback loop, whereby they react to this market

stress by reversing tighter policy decisions that instigated market volatility. Deviating too far from market expectations on policy could cause this market stress, forward guidance and transparency are therefore essential. Central bank communication is improving and we feel it is unlikely there will be another taper tantrum as was seen in 2013. Nonetheless, we believe that the market has misinterpreted central bank rhetoric in some instances. Along the monetary policy continuum, the US Federal Reserve sits firmly at the 'tighter' end of the spectrum, with the Bank of Japan similarly at the 'looser' end of the range. In between the two are the Bank of England and the European Central Bank.

Market mispricing the Euro, USD upside

Failure to understand where the central banks are positioned is a source of market mispricing risk, particularly in the FX space. The overcrowded trade that has a clear downside risk is the 'long Euro', whereby investors are underestimating the desire of the ECB to engender inflation pressure while supporting the underlying economy.

The strength of the Euro is not a comfortable position for the ECB, as it threatens the firmer footing that inflation had been building - core CPI is at its highest level since 2013. Dovish rhetoric from the ECB could be the catalyst for the near record long futures positioning to unwind quickly.

While we expect the US Dollar to gain ground in H2 2017 against major currencies broadly, lower volatility should see the Japanese Yen move sharply lower as the central bank remains accommodative and investors look offshore for yield. Lastly, we expect uncertainty surrounding Brexit negotiations to overshadow the increasing willingness of the Bank of England to tighten policy against a relatively stable domestic economy. To the extent that deliberations give rise to some clarity surrounding a constructive economic outcome for both the UK and the EU, we feel GBP has upside potential, especially against the Euro. Rising real yields should support the Pound and cooling volatility will allow investors to focus on fundamentals.

Macro environment should buoy commodities

There are two macro issues that stand in the way of significant further upside in commodities in 2017: how aggressive will the US Federal Reserve be in tightening policy and to what extent will geopolitical issues upset recent improvements in global growth? These issues have led to gyrations in gold, conflicted by the threat of rising interest rates but seen as a safe haven when geopolitical issues escalate. We expect the Fed to remain cautious in policy setting, particularly when inflation looks to have cooled-off in the shorter-term and believe the fair value for gold is US\$1260 for year end. We continue to see growing demand for commodities at a time when there is a continued lack of investment, particularly in the mining industry. We therefore see industrial metals as the most attractive commodities subsector.

Unwinding Fed's balance sheet to have limited impact on US yields

By Morgane Delledonne – Fixed Income Strategist / morgane.delledonne@etfsecurities.com

Summary

The new “normal” Fed’s balance sheet should hover around US\$2.5tn by 2026.

Taking into account the effect of QE tapering, the pace of the tightening is similar to the ones in previous cycles.

We expect the 1-yr to 5-yr US Treasuries to be the most impacted by the reversal of QE.

New “normal” balance sheet

At its June 2017 meeting, the Federal Open Market Committee (FOMC) announced it intends to reduce the Fed’s securities holdings by gradually decreasing its reinvestment of the principal payments received from maturing Treasury, agency debt and mortgage-backed securities (MBS) bought through the quantitative easing programme (QE). The cap on reinvestments will increase in steps of US\$6bn per month for Treasuries and US\$4bn per month for agency debt and MBS at three-month intervals over a year until it reaches US\$30bn and US\$20bn per month respectively.

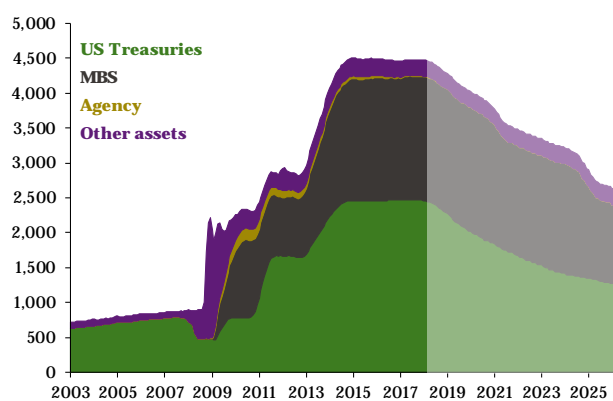
For context, the Fed’s balance sheet rose from just under US\$1tn in 2008 to US\$4.5tn as of August 2017. Today, the Fed holds about US\$2.5tn of Treasuries (18% of the market) and US\$1.8tn of MBS (33% of the market) as assets. On the liability side, the currency in circulation represents US\$1.5tn, while banks’ excess reserves account for US\$2.3tn. Prior to 2008, banks held the minimum required reserves (which represent only 5% of the total reserves today) and needed to borrow reserves from other banks to meet requirements (i.e. the Fed funds market). The Fed used to buy or sell reserves, in order to control the Fed funds rate at which banks exchanged funds overnight. After the global financial crisis, the Fed’s large-scale purchase of Treasuries and MBS from the banks added over two trillion dollars of excess reserves. As a result, the Fed funds market became obsolete and the Fed now controls the interest rate paid on excess reserves (IOER rate) which is set at the top of the Fed funds rate range (currently at 1.25%).

Thus, the interest paid to banks on their excess reserves increases with the Fed funds rate, while interest rates paid on short-term securities also move in parallel with the Fed funds rate. The Fed might decide at some point in the future to reduce

the incremental rise of the IOER rate relative to the Fed funds rate to increase the yield differential between interest rates paid on securities and IOER rate paid on excess reserves. This would encourage banks to use their excess reserves to buy more securities and earn the extra yield, and consequently reduce the Fed’s balance sheet.

There is no consensus on the “normal” size of the Fed’s balance sheet. Some economists have argued that the relatively small size of the Fed’s balance sheet in 2008 was inappropriate to respond effectively to the severity of the financial crisis. Former Fed Chairman Ben Bernanke argued that the critical level of reserves needed for monetary policy to be effective required at least US\$1tn of banks reserves. Thus, we believe the minimum level of the Fed’s balance sheet to be around US\$2.5tn. The graph below uses the recent FOMC guidelines to project the Fed’s balance sheet over the next decade. We have estimated that the Fed’s balance sheet will reach approximately US\$2.5tn by the end of 2026 if the Fed starts normalising its balance sheet in January 2018.

Projections of the Fed's assets (US\$bn)



Source: Federal Reserve, ETF Securities, data available as of close 14 August 2017

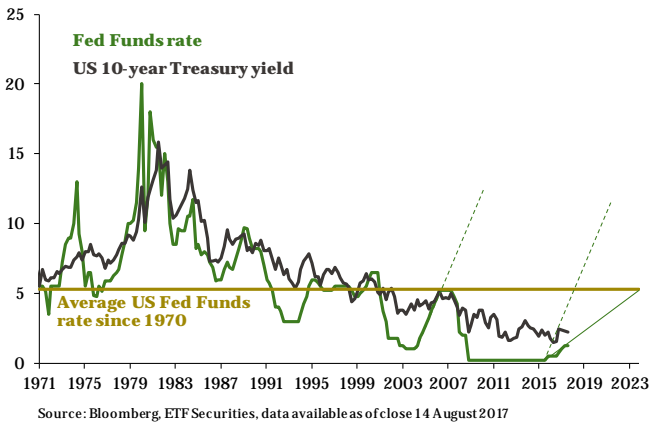
Fed’s tightening not that “gradual”

We expect one more rate hike this year and the Fed to begin to trim its balance sheet sometime in the beginning of next year, as the recent moderation in inflation may have delayed the need for immediate policy action. As such, a firming labour market is not reflected into wage gains and thus not into inflation. FOMC members increasingly acknowledge that low inflation comes more from structural factors such as “technological disruption” than cyclical drivers. In particular, New York Fed president

Dudley said that if secular forces are pushing inflation lower, it is possible that the unemployment rate could fall further before it precipitates higher wages and prices.

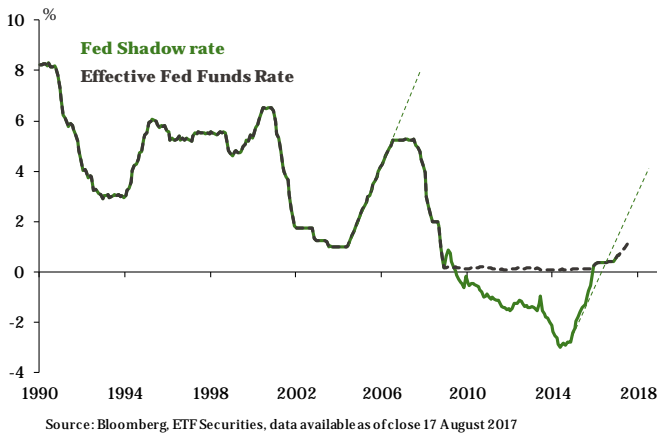
The low growth and inflation environment requires lower benchmark rates than in the past. The current level of the Fed funds rate target is “likely to remain appropriate over the near term” said Minneapolis Fed president Kashkari, adding the US economy is stuck with low growth. Thus, we believe the Fed will not increase the Fed funds rate to 5% where it was at the end of the previous tightening cycle, but instead gradually increase it toward 2%. Dallas Fed President Kaplan said in August that the “neutral” interest rate (i.e. the rate at which real GDP is growing at its trend rate and inflation is stable) was closer to 2% than 3%. From an historical perspective the rise of the Fed funds rate from the zero lower bound is following a much flatter trend than in past cycles. If the Fed continues to tighten at the same pace it would reach the long-term average level of the Fed funds rate by 2023.

Slow rebound from the zero lower bound



Now, considering the shadow rate – a metric for the stance of monetary policy below the zero lower bound – and taking into account the effect of QE tapering, the pace of the tightening is similar to the one from 2003 to 2005. The Fed has already tightened the effective Fed funds rate by 400bps, which is more than the average tightening of 380bps in previous cycles.

Fed has tightened by 400bps since end-2014

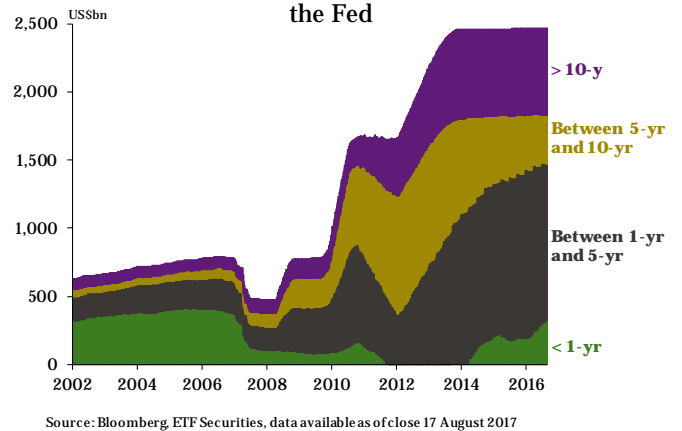


US Treasury yield curve impact

In the short term, most of the announcement of a reduction of the Fed’s balance sheet scale back has been priced into the market. Janet Yellen stated that the expectation of the balance sheet normalisation has already increased US bond yields by 15bps (equivalent to two rate hikes of 25bps in the Fed funds rate) this year.

The long-term consequences of the unwinding of the Fed’s balance sheet on interest rates depends on many parameters that still have to be specified. In particular, details on the “normal size” of the Fed’s balance sheet, the date and the long-term path of the balance sheet’s reduction are missing. A group of the Fed’s economists (Engen et al.) have estimated that the three rounds of QE have led Treasury bond term premiums to decline by 120bps from early 2009 to 2013. In other words, the Fed’s QE resulted in a 30bps decline in bond yields per year, along with an increase of the Fed’s balance sheet by an average of US\$925bn per year. As aforementioned, we have estimated that the Fed’s balance sheet will reach US\$2.5tn by the end of 2026, with an average decline of US\$200bn per year over the next decade. Based on Engen et al. estimates, we estimate that the unwind of the Fed’s balance sheet would result in less than 10bps increase in US Treasury bond yields per year for the next ten years all else equals. This estimate is broadly in line with recent comments from Fed members including Kashkari and Evans who stated that the balance-sheet adjustment is going to be very gradual with low impact on financing conditions.

Maturity distribution of US Treasuries held by the Fed



Almost half of the Fed’s holdings of US Treasuries has a maturity between 1-year and 5-year. Thus, this segment of the US Treasury market will probably be the most impacted by the reduction of the Fed’s balance sheet. Overall, we believe that the effects of rising short-term rates coupled with the Fed’s balance sheet normalisation will lead to slower flattening of the Treasury yield curve compared to previous tightening cycles. The gradual pace of Fed funds rate increases should place greater upward pressure at the front-end of the yield curve relative to the long-end. We believe the subdued inflation outlook coupled with the structural demand for long-dated bonds will partly offset the upward pressures on the term premiums caused by the normalisation of the Fed’s balance sheet.

Fed's gradual tightening to maintain appetite for EM debt

By Morgane Delledonne – Fixed Income Strategist / morgane.delledonne@etfsecurities.com

Summary

Global risks to emerging markets (EM) remain broadly balanced.

We believe Trump's volatile administration will keep interest rates and the US dollar relatively low.

EM sovereign bonds remain attractive in the current gradual monetary tightening environment.

Global risks broadly balanced

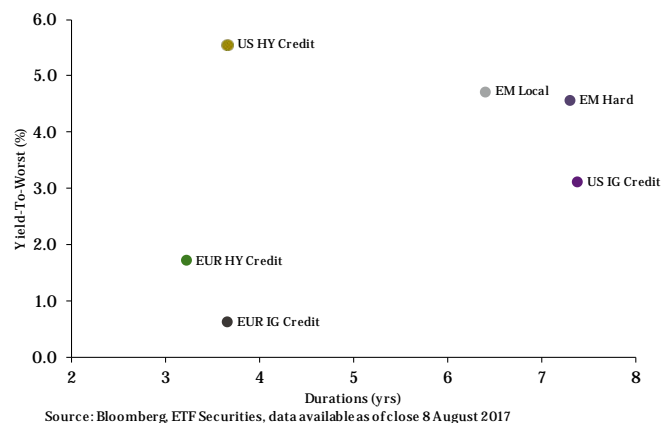
The cautiousness of the Fed in hiking rates has lent support to the continuation of the search for yield since the beginning of the year. A likely rebound in US economic activity and employment toward year-end should provide support to the US dollar and reverse the weakness seen earlier this year. However, US monetary conditions remain loose from a historic standpoint. This has been preventing the US dollar from appreciating strongly. We expect one additional 25bps increase of the Fed funds rate this year followed by the announcement of the Fed's balance sheet normalisation, likely in December.

Besides, the continued political instability in the Trump administration poses risks to the US economic outlook while also lending weakness to the US dollar. Geopolitical risks have risen with the tensions between the US and North Korea over nuclear threats. In general, the EM debt market has been resilient during recent market risk-off episodes such as the one that followed Donald Trump's pledge to meet threats made by North Korea "with fire and fury". We believe the escalation of tensions between the two nuclear forces could lead to further flights-to-safety that could temporarily affect EM debt prices and currencies.

EM debt: 2nd best risk-adjusted yield

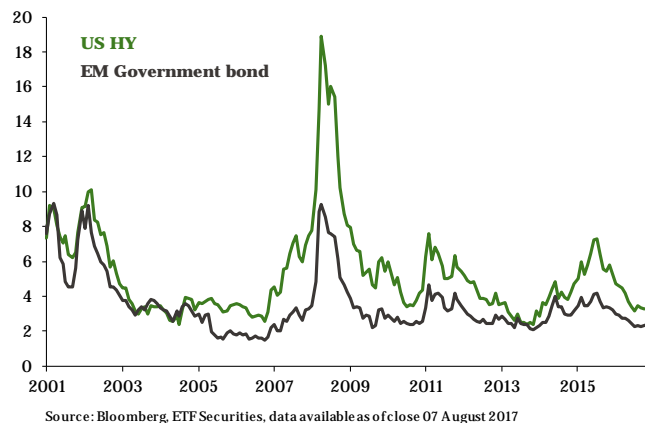
Overall, emerging markets bonds remain compelling in our view for investment diversification and capturing higher yields. As of August 2017, the emerging market bond yield spread over US Treasuries has tightened by 1.2pp from a year ago, standing at 2.3% slightly lower than US High Yield spread (3.1%). By contrast, yields on US money markets hover around 1%, and yields spread of US Investment Grade corporate bonds over US Treasuries stands at 0.2%.

Risk/Reward Profiles



EM bonds offer the second best risk-adjusted value after US HY credit, while typically having lower volatility.

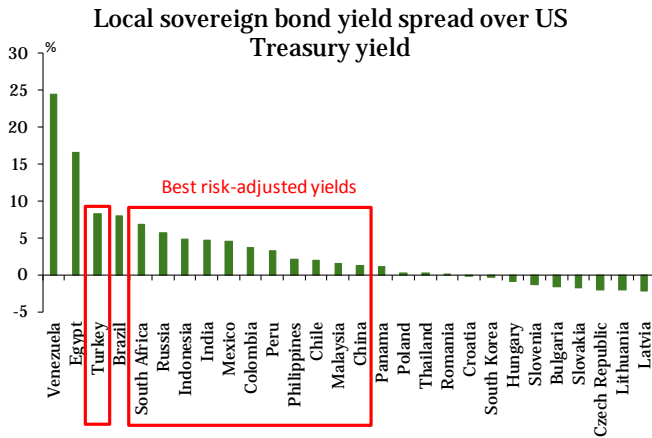
Spread over US Treasury yield (pp)



Asia, Latam and Turkey are attractive

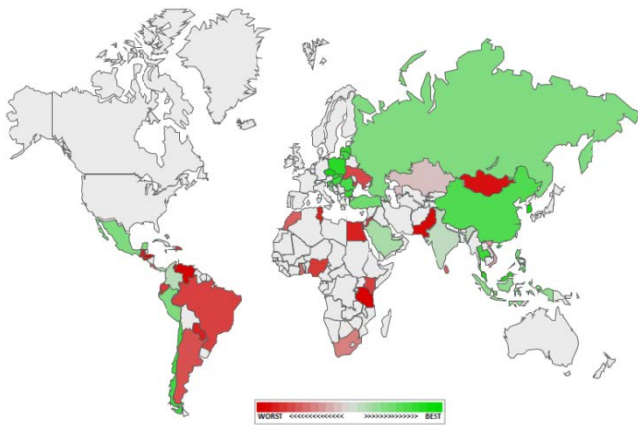
Notwithstanding some regional variations, improving EM fundamentals, a stabilising outlook for commodities, rising global demand and increased competitiveness should make EM assets resilient during monetary policy normalisation that will take place in developed markets. We expect the Chinese Renmimbi to gradually appreciate against other Asian currencies along with the gradual appreciation of the US dollar, generally improving the competitiveness of other Asian countries. Emerging Europe is likely to be resilient against the changing environment in the US, benefiting from the ECB's accommodative monetary policy and a pick-up in demand from Europe. Latam and large commodity-exporting currencies remain undervalued and should gain from a stable commodity

outlook and rising global trade. In our view, Turkey, Mexico, India, Indonesia, Russia, and South Africa offer the best risk-adjusted yields within the EM complex.



Source: Bloomberg, ETF Securities, data available as of close 08 August 2017

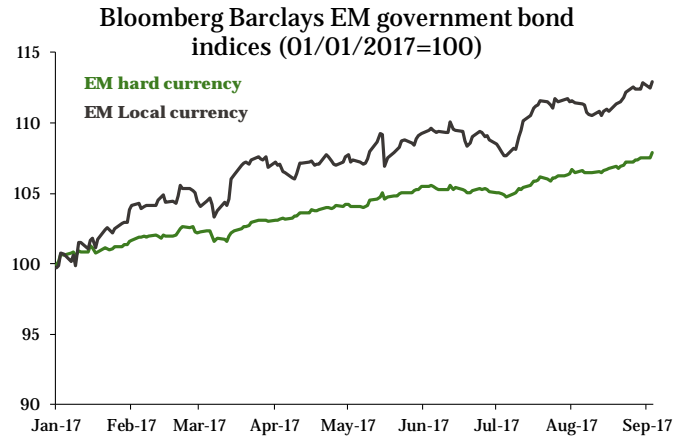
The average local currency bond yield over US Treasury yield for the aforementioned countries is 5%. These countries also have a relatively stable country risk outlook according to the credit risk score from Bloomberg. This country risk assessment provides comprehensive risk profiles for the selected emerging countries and aggregates scores across financial, economic and political sectors. The map below shows the emerging countries with the highest score (i.e. the lower risk) in green, while presenting the countries with the lowest score (i.e. the higher risk) in red.



EM local vs hard currency

The returns of local and hard currency emerging market debts are generally correlated as both share the same global drivers such as the global economic activity, knock-on effects from global financial conditions and the appetite for risk from investors. However, some local factors differ. In particular, sovereign credit quality change, such as credit rating downgrades, are affecting to a greater extent hard currency debt relative to local debt as it relates to the capacity to service the debt with a currency risk. Overall, fiscal and global factors have a greater impact on hard currency debt, while domestic monetary policy and inflation have a greater impact on local debt.

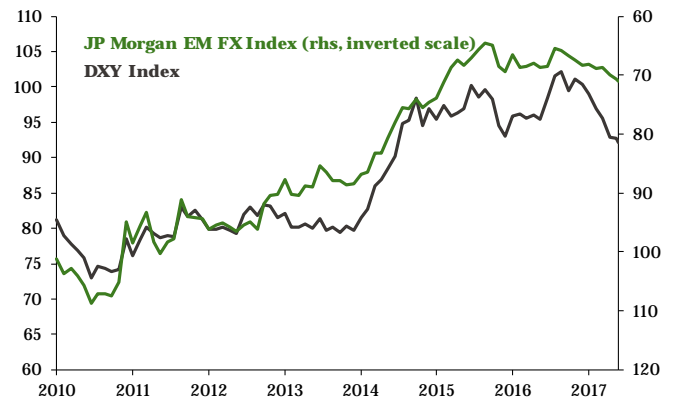
The Sentix investors' sentiment indicator for EM debt has been positive since January. The US dollar weakness, the interest rates differential between EM and developed market (DM), and a higher growth momentum in China have attracted capital flows into EM. EM currencies have gained 7.5% year-to-date, according to the JP Morgan emerging market currency index. As a result, EM local currency government bonds have outperformed external debt (hard currency) since the beginning of the year, with returns of 10% and 6% respectively.



Source: Bloomberg, ETF Securities, data available as of close 06 September 2017

In our view, investors in EM local currency debt should benefit from a relatively stable US dollar towards year-end. From 2018, we expect the US dollar to appreciate gradually along with a stronger US economy and rising interest rates, in particular after the Fed starts trimming its balance sheet, which we expect early next year. We would advise investors to monitor this potential currency risk and expect some investors to consider a gradual switch of investment positioning from EM local currency to EM hard currency debt during 2018.

DXY weakness favourable to EM FX



Source: Bloomberg, ETF Securities, data available as of close 06 September 2017

We believe the gradual tightening of the Fed's monetary policy will not result in a scenario where investors massively pull out their money from EM debt. EM debt is likely to continue providing a decent extra yield over DM debt, as monetary policies in the developed world remain loose from an historical perspective.

China Congress: The making of a strongman

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

Summary

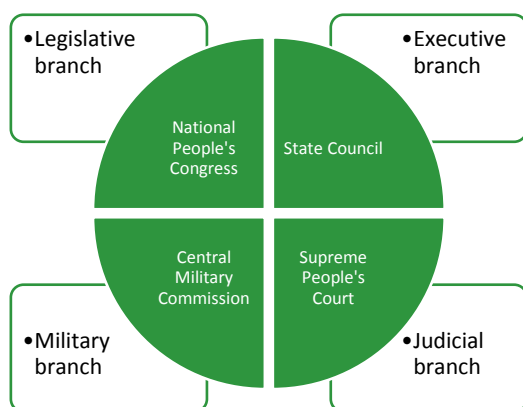
The upcoming Congress meeting is Xi Jinping's opportunity to consolidate power.

The extension of Xi's powers could see the status quo maintained: little progress in reducing the scope of state-owned enterprises or addressing economic imbalances including excessive credit expansion.

The continuing lack of reform is likely to leave China vulnerable to a large shock.

Political rotation

The legislative branch of the Chinese government is set to host its five-yearly power transition meeting on October 18th: the Communist Party's 19th Congress. If tradition is upheld, older members of the political elite – the Politburo Standing Committee - will retire to make room for younger ones. Of the seven members, five are expected to be replaced. The remaining two are the General Secretary/President¹ (Xi Jinping) and the Premier of the State Council (Li Keqiang), who are young enough to lead for the next five years. When Xi Jinping took the helm of Party in 2012, he had very few trusted allies by his side. Five years on, through rounds of reshuffles and a war on corruption, he has purged more than 200 senior officials from their posts and replaced them with his cronies. He has successfully placed supporters in various branches of government.



¹ The President is the head of state with a largely ceremonial office and limited powers. However, since 1993 the presidency has been held simultaneously by the General Secretary (the leader of the Communist Party).

Rising stars are at risk. Sun Zhengcai, once considered a contender for the Politburo Standing Committee and possible future leader, was replaced last month as Party Secretary of Chongqing by Xi's protégé, Chen Min'er. Accused of corruption, Sun Zhengcai appears to be the latest victim of Xi Jinping's exercise to remove opponents.

Bending the 'rules'

The so-called 'rule' requiring members of the Standing Committee over the age of 68 to retire is unwritten. A senior member of the Party recently described the requirement as 'folklore'. If the 'rule' is ignored, Wang Quishan – a close ally of Xi in the current Politburo Standing Committee could be retained. Also breaking precedent this year could allow Xi Jinping to stay on the Committee at the 20th Congress in 2022, when Xi would turn 69. Also the size of the committee has fluctuated from as low as five and as high as nine. There is potential for the Committee to trim down from seven currently to remove likely threats to Xi's influence.

The current constitution allows the President to serve a maximum of two terms. Therefore, Xi would have to hand-over this role in 2022. Although the role of the President and General Secretary have gone hand-in-hand in the past, Xi could pass the baton on to one of his protégés in 2022, but continue to exert influence on policy from within the Committee if he can successfully manoeuvre around unwritten rules.

Economic status quo

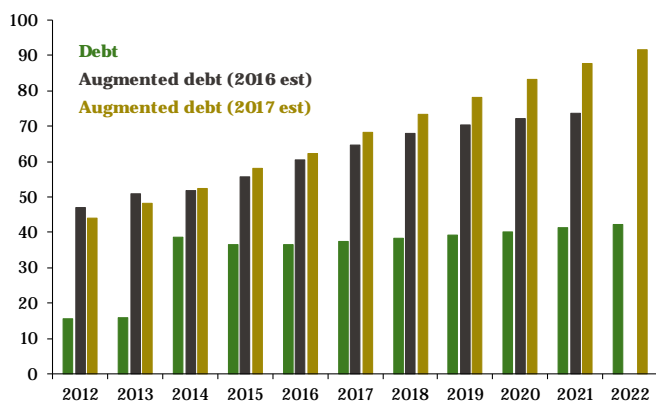
While setting out an ambitious set of targets for economic reform in the Party's Third Plenum in 2013, progress on this front has been rather pedestrian. Chinese leaders had pledged to give markets a "decisive role" in resource allocation. However, there appears to be a constant distrust of markets. There have been countless interventions in the equity and property markets to avoid prices from falling harder. Maintaining a steady economic growth rate of 6.5% to 7% seems to be the product of accommodative monetary policy, credit growth and a reluctance to scale back on over-production. Most examples of capacity constraint can be linked more closely to environmental concerns rather than market-enhancement objectives. Placing so much emphasis on an economic growth target has driven debt levels to unsustainable levels. The efficiency of credit is very poor. In 2015-16 it took RMB4trn (US\$600bn) in new credit to increase nominal GDP by RMB1trn (US\$150bn). In 2007-2008, it only took RMB1.3trn (US\$169mn) in new credit to increase GDP by RMB1trn

(US\$130).

China's debt balloon

It is widely acknowledged that China has a debt problem. While central government debts are low in comparison to other emerging markets, the headline figures fail to account for all the debts, in particular those of local governments which are used in a fiscal capacity. In 2014, the International Monetary Fund (IMF) created an 'augmented' deficit and debt calculation to account for the off-balance sheet funding in China. In its latest estimation, the IMF widened the perimeter of its augmented deficit and debt calculation, to include new avenues to fund quasi-fiscal units. In 2014, China implemented a number of changes to bring local government financing through opaque financing vehicles back on balance sheet. Local government on-balance sheet borrowing increased from 0.3% of GDP in 2014 to 2.4% of GDP in 2016. Also the government brought a large stock of local government financing vehicle debts on balance sheet (amounting to 22% of GDP). Despite the efforts by the central government to bring transparency to funding, by encouraging local government debt to be put back on balance sheet, new methods of financing local governments have emerged. The IMF includes these new forms of financing in its latest estimate of government debts.

China government debt (% GDP)

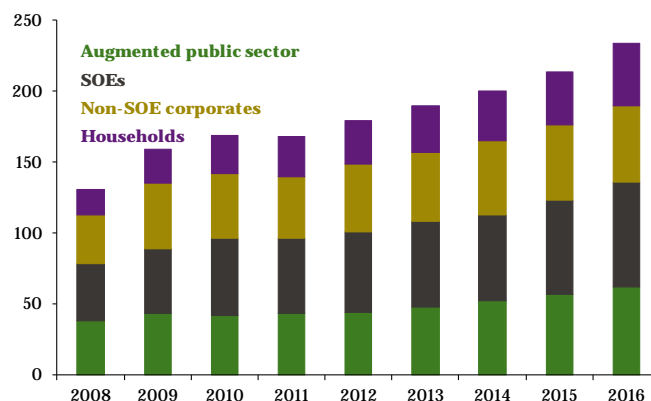


Source: IMF, ETF Securities, data available as of close 18 August 2017

Meanwhile private sector debts are large and expanding. Particularly those in the state-owned enterprise (SOE) sector. While the share of industrial output from SOEs has fallen from 40% 15 years ago to 15-20% currently, SOEs account for an outsized share of corporate debt (around 57% of corporate debt or 72% of GDP).

The continuous growth of SOE credit is likely to further crowd out financing to commercial organisations and increase non-performing loans.

Total credit to non-financial sectors



Source: IMF, ETF Securities, data available as of close 18 August 2017

SOEs need to be reined in, but reform in this area has been sub-par. The Chinese government has taken aim at cleaning up “zombie” companies – particularly SOEs – by giving them a menu of exit options. However, a lack of details on how these companies have actually been wound up (or otherwise dealt with) makes it difficult to assess progress. Other reforms of SOEs include consolidating central SOEs, phasing out their social functions to workers, transferring state-owned equity to social security funds and individually incorporating subsidiaries of SOEs. Progress in these areas has been lacklustre. For example, transfer of SOE profits to the budget has been far less than the 30% target level.

Financial buffers

China has unique mitigating features that can help it deal with a disorderly fallout from the credit market. It has a high household saving rate, a current account surplus, small external debts, large foreign exchange reserves, interest rates significantly above the zero bound and a skilled central bank accustomed to injecting liquidity and using quantitative measures. But these features do not mean that China will be completely immune. Sticking to and enhancing the reform agenda is therefore important, especially with regards to reducing the scale of SOEs and improving efficiency in resource allocation. A combination of all these features is required to deflate the Chinese debt balloon, rather than burst the bubble.

Will a strongman help or hinder reform?

If Xi Jinping emerges from the political events this year and beyond as a strongman, there is a risk of “more of the same”. Surrounded by cronies, the appetite to challenge the status quo will be lacking. With a support-base including neo-Maoists and a trend of rising inequality in China, a populist backing could drive China to reject market-based decision making in favour of the communist ideology that has eroded over the past 20 years. There is an outside chance that Xi uses his paramount powers to accelerate reform, but, market-oriented reform is likely to alienate the very people that have supported him and for that reason we think it is unlikely to happen.

US oil production record driven by non-conventional

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

Summary

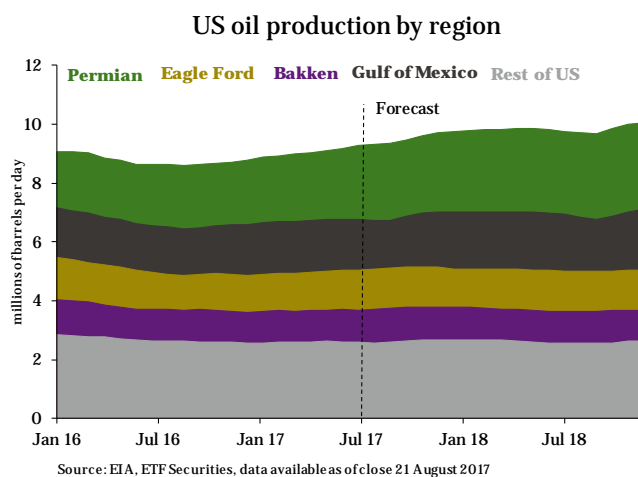
US oil production is set to hit an all-time high in 2018 despite prices at half of 2014 levels.

Shale oil from the Permian Basin, a key driver of growth, is likely to continue to expand.

Off-shore oil in Gulf of Mexico will need further investment to keep contributing as strongly to growth, but increasing efficiency bodes well.

US production at an all-time high

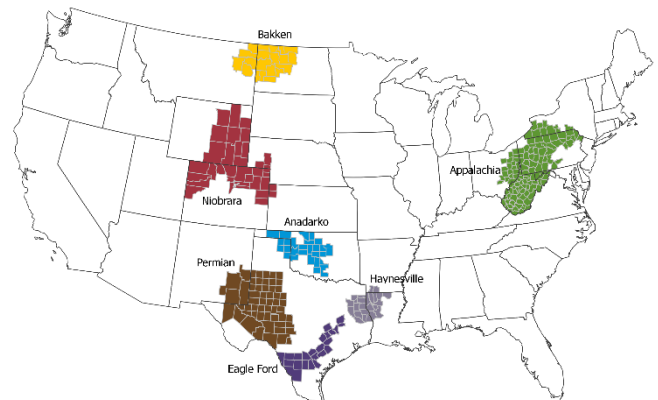
US production of crude oil will reach an all-time high in 2018 according to the Energy Information Administration (EIA)'s forecasts. At 9.9 million barrels per day (mb/d), crude production in 2018 will surpass the prior high reached in 1970 of 9.6mb/d. That reflects the resilience of the US market and a failure of OPEC's strategy to squeeze out what they believed was high cost production in 2014 (see [Energy Wars: OPEC fighting a losing battle](#)). The engine of growth in the US is widely acknowledged as shale oil. But looking at the detail, it is mainly shale from the Permian Basin that has been driving oil production higher, followed by offshore oil production in the Gulf of Mexico.



Shale oil dominated by Permian Basin

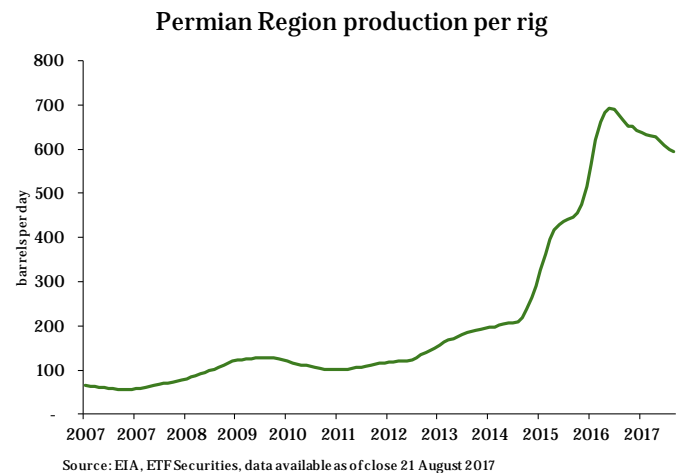
Out of the major shale oil producing regions in the US, the Permian Basin is the largest and fastest growing. Of the 940 oil rigs in operation in the US, about 377 are in the Permian Basin.

US Prolific Drilling Areas



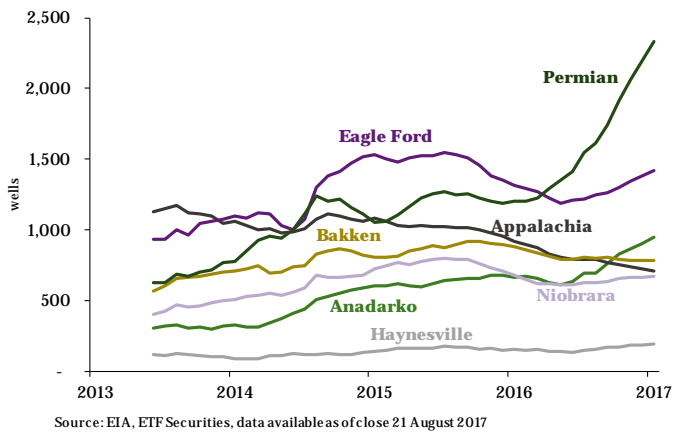
Source: EIA Drilling Report, ETF Securities
EIA estimate of production per day in thousands of barrels for September 2017

Production per rig – traditionally a measure of efficiency – seems to have peaked in the Permian Region in July 2016. However, interpreting that as a decline in efficiency would not be correct.



Many oil operators have decided to drill but not complete wells. The oil in these wells is therefore close to being available, but intentionally not extracted. This skews the production per rig data downwards. The reason for not completing these wells could be linked to minor transportation constraints. The discount of WTI-Midland to WTI-Cushing from January 2017 to July 2017 could be an indication of this.

Drilled but uncompleted wells

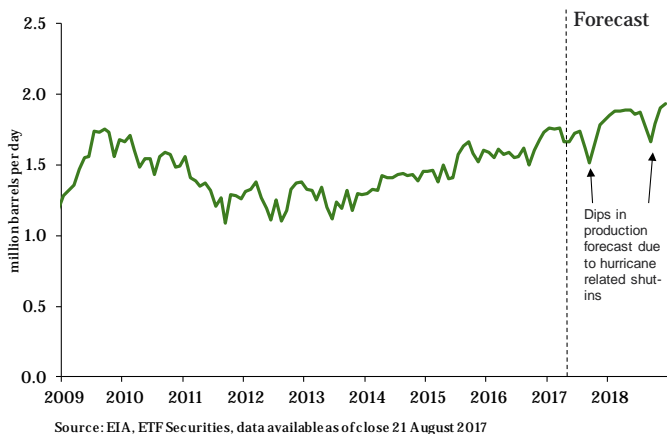


There may also be a lag in completion due to a change in drilling strategies. Pad-drilling – the practice of using a “pad” to house wellheads for multiple drilled wells – has increased drilling efficiency in many shale oil plays. The adoption of this technique is about two years behind in the Permian Basin compared to other major plays. Completion times may be slower than in the past, because multiple wells are being drilled before completion takes place. As completion picks up, oil production per rig is likely to rise.

Gulf of Mexico production

Oil production in the Gulf of Mexico is mainly off-shore. While the narrative about US’s production resilience is usually centred around shale oil, off-shore oil production in the US has been rapidly growing despite price weakness that we have seen since 2014. Crude oil production from the Gulf of Mexico had already set an annual high in 2016, surpassing the previous high in 2009.

Gulf of Mexico oil production

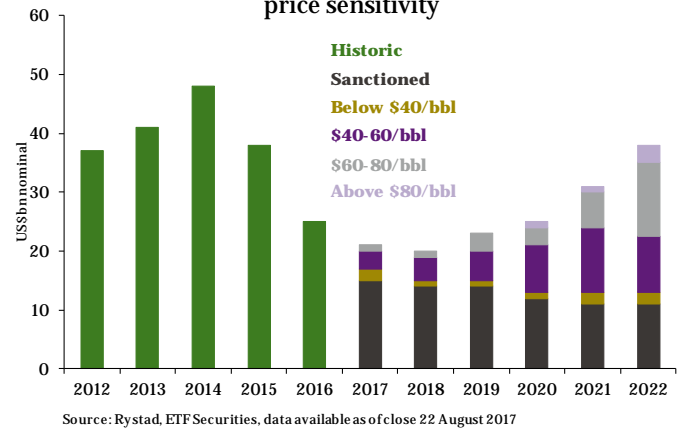


While shale oil can be very price responsive (rigs can be turned on and off in a matter of weeks in response to changes in price), off-shore oil has a much longer investment cycle and so is less price responsive. A large proportion of the growth in production in the past three years came from projects sanctioned before the price downturn. In 2016, eight projects came online in the Gulf of Mexico and another seven are expected to come online by end of 2018. According to EIA forecasts, the average production in the Gulf of Mexico will increase to 1.7mb/d in 2017 and

1.9mb/d in 2018 from 1.6mb/d in 2016.

Continued growth from this source will require further investment. Based on Rystad’s analysis of investment sensitivities to price, off-shore oil investment is likely to take place, but at a more subdued level. We believe that oil will trade in a range between US\$40-55/bbl over the coming year.

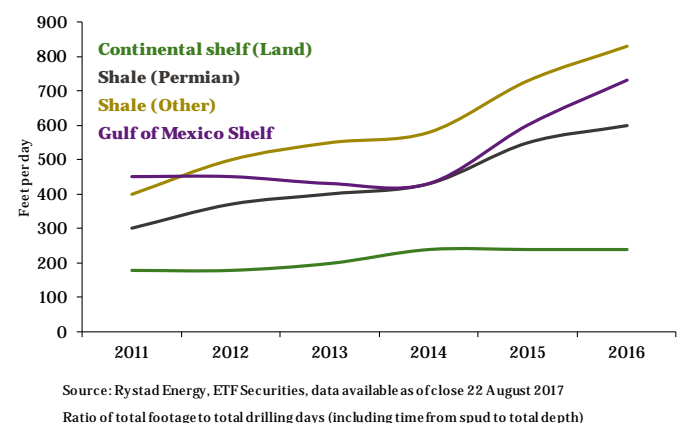
US and Mexico offshore investments, by oil price sensitivity



However, just like on-shore shale oil, off-shore oil production is seeing gains in efficiency. Cost reductions, standardisation and simplification have benefited off-shore oil as well. According to Wood Mackenzie, global deepwater project costs have fallen by more than 20% since 2014. According to their analysis, some oil companies in the Gulf of Mexico have brought breakeven costs down from US\$70/bbl to US\$50/bbl.

Average footage per rig-day has increased rapidly in the Gulf of Mexico. Part of that is due to high-grading (accessing the easiest to extract oil first). However, cost discipline and improving technology will continue to aid efficiency.

Drilled footage per rig-day by year



While both off-shore oil from the Gulf of Mexico and Shale oil from the Permian Basin have been the engine of growth in US production since the price downturn that started in 2014, the Permian Basin has most scope for further gains in growth after 2018. Output from projects already sanctioned will see the Gulf of Mexico production contribute strongly to the record high production expected in 2018. Structural changes in drilling techniques likely account for the falling production per rig statistics in the Permian Basin, a trend we think will diminish.

Commodities vs Producers – an in-depth comparison

By James Butterfill and team contributions – Head of Research & Investment Strategy | research@etfsecurities.com

Summary

Commodity prices have outperformed their respective producers with a lower price volatility.

Commodities historically are less sensitive to equity factors and a better source of diversification.

Reduced supply and capital expenditures may benefit commodities to detriment of producers.

Commodities are key alternative investments that may offer diversification benefits for portfolio allocations and may improve the overall investment experience. The choices around accessing this asset class, however, remain in dispute with investors split among implementing their commodity exposure directly through commodity futures or indirectly through equities of the producers of these raw materials.

Price and yield – an on-going debate

Much of the maligned sentiment towards commodities in recent years has been due to a negative performance experience. Extending the picture a bit further back, however, reveals that commodities have offered a positive risk adjusted return over the past two decades - both through the prices of commodity futures as well as equities of global producers.

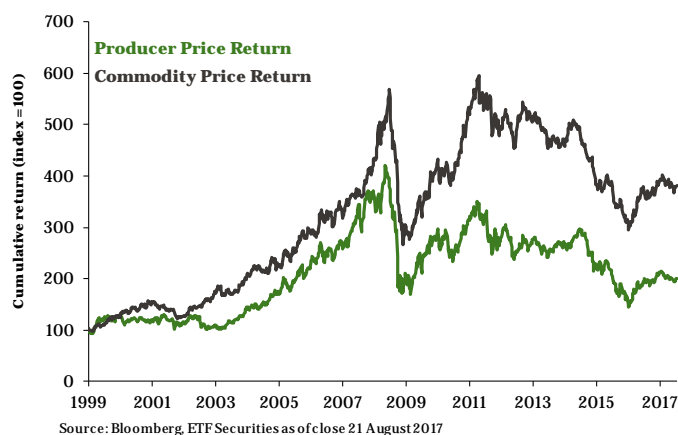
Investing in commodities and producers has yielded positive risk adjusted total returns historically

Total Return Measures (as of 7/21/17)	MSCI ACWI Commodity Producers Index	MSCI World Commodity Producers Index	Bloomberg Commodity Index (BCOM)	Bloomberg Commodity Index 3 Month Forward
Cumulative Return	208.14%	191.13%	49.41%	216.51%
Annualized Return	6.23%	5.91%	2.18%	6.38%
Annualized Volatility	23.16%	22.93%	16.29%	15.06%
Equity Correlation (S&P 500)	0.70	0.69	0.29	0.31
Bond Correlation (Barclays Agg)	-0.13	-0.14	-0.07	-0.07
Commodity Price Correlation	0.62	0.61	0.98	0.97

Source: Bloomberg, ETF Securities. Table data from 12/31/98-07/21/17. For illustrative purposes only. See important information for further details

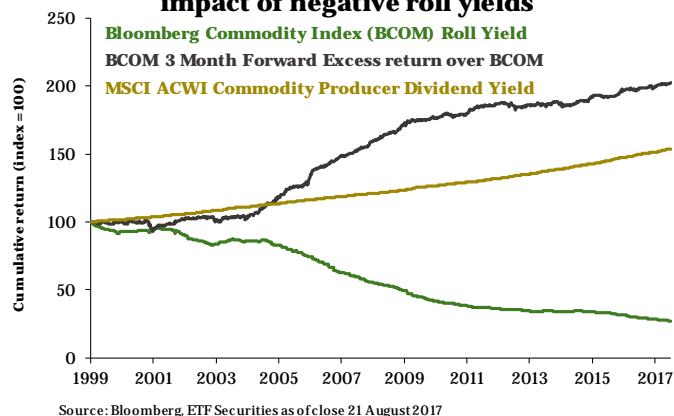
Over this period, an equity investment in commodity producing companies (~6.2%) outperformed the underlying commodities (~2.2%) on a total return basis by about 400 basis points. This outperformance has come with a 42% higher volatility compared to commodities as well as a higher equity correlation. This picture, however, isn't a reflection of commodities lagging their respective producers' economic activities.

Commodity prices outperform



In fact broad commodities significantly outperform producers on a spot price basis. While commodities lack the cash flows offered by producer equities, the true source of underperformance stems from commodity futures contracts rolling into a new, higher-priced contract at maturity (i.e. contango). This negative roll yield is quite significant over time relative to the positive dividend yield provided by commodity producers.

Longer dated contracts can reduce impact of negative roll yields



Selecting commodity contracts further into the future may help provide a positive yield for investors. Historically, the roll yield for longer-dated commodity indices garnered a higher total return than commodity producers (6.38% vs 6.23%) as well as a lower volatility than producers and standard commodity indices.

Look to commodities for diversification

Beyond performance, investors should evaluate the

diversification and risk management benefits that commodities may provide in context to their asset allocations. In this category, broad commodities provide several advantages for portfolios compared to producer equities.

Starting with a moderate risk portfolio (60% equity/40% bond), the addition of a 10% allocation to either commodities or producers may help reduce portfolio drawdowns and improve portfolio efficiency as evidenced by higher portfolio Sharpe Ratios. Commodity producers and longer-dated commodity futures could boost portfolio returns to 5.3% respectively compared to the 4.9% portfolio return from an allocation to the Bloomberg Commodity Index (BCOM). Yet given that producers are equity investments, they increase the overall portfolio volatility and beta, while broad commodities significantly reduce these measures – highlighting their ability to better serve as a risk management tool.

Stock/Bond portfolio:	Without commodities	w/ Commodity Producers	w/ BCOM Index	w/ BCOM 3M Fwd
Commodity Allocation	0%	10%	10%	10%
Annualized Portfolio Return	5.07%	5.30%	4.90%	5.31%
Annualized Portfolio Volatility	9.14%	9.30%	8.51%	8.50%
Correlation to 60/40 Portfolio	1.00	0.99	0.98	0.99
Beta to 60/40 Portfolio	1.00	1.01	0.92	0.92
Maximum Draw down	-35%	-34%	-33%	-32%
Sharpe Ratio	0.34	0.36	0.35	0.40
Commodity Risk Contribution	n/a	18.67%	11.53%	11.16%

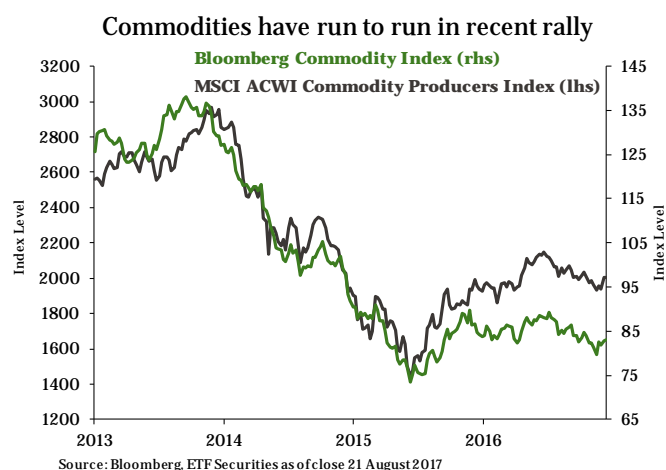
Source: Bloomberg, ETF Securities. Portfolio returns and volatilities are calculated on an annualized basis. Table data from 12/31/98-12/31/16. For illustrative purposes only. See important information for further details

Another measure that demonstrates the diversification benefits of commodities over producer equities is their lower risk contribution to total portfolio volatility. The fundamental factors that impact commodity prices directly help offset those equity factors inherent to producers. Therefore, many broad commodities provide an efficient source of diversification with their overall weight of portfolio risk (11.5%) significantly less than producers (18.7%).

Outlook: relative valuations and supply cuts may continue to favour commodities

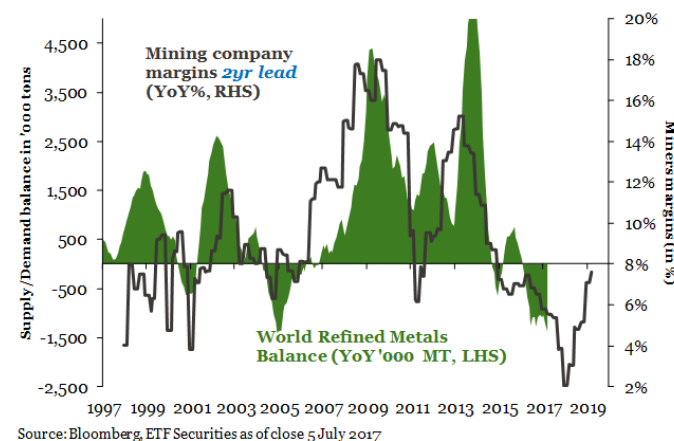
The current recovery in commodity markets has thus far been less pronounced for broad commodities than their producers, who have benefited from rising equity indices and rising profit margins through reduced costs and debt repayments.

Commodities may see further upside capture as continued supply side destruction in response to multiple years of overproduction and supply gluts may provide a boost for prices. Additionally, while falling capital expenditure has boosted producer profitability in the short term, without sufficient investment into new supply and technology, long term profitability may suffer.



This impact on producer costs is particularly prevalent among metals with a lack of investment for the last 4 years having already begun to damage supply in the coming year.

Miners Margins vs Supply/Demand



In focus: Gold vs Gold Miners

While gold miners are valid investments, they are an investment in equity not gold and shouldn't be viewed as a perfect substitute. Investors should view gold miners as distinct from gold allocations within portfolios in order to potentially benefit from gold's unique investment and risk management characteristics.

Gold miners are a poor proxy for gold allocations because they depend on industry competition and company specific factors beyond the gold price. Their valuation is dependent on profitability, operational costs, financial health, and other company specific risks while industry outlook and growth prospects dictate investor sentiment.

Gold has a proven track record with an average return of 7% during market drawdowns of more than 10% in the S&P 500 since 1987. Turning to gold miners, however, their ability to hedge against large equity pullbacks is less enticing. The Philadelphia Stock Exchange Gold & Silver Index², a broad gold mining equity index, on average has posted a total return of -7.2%, offering limited downside protection.

² Philadelphia Stock Exchange Gold & Silver Index (XAU) is a capitalization-weighted index composed of companies involved in the gold or silver mining industry

A look into Logistics Automation

By Jeremie Capron – Director of Research, ROBO Global | jeremie.capron@roboglobal.com

Summary

The boom in e-commerce is compounding the major labour challenges faced by the \$5trn global logistics industry and putting tremendous strains on supply chains.

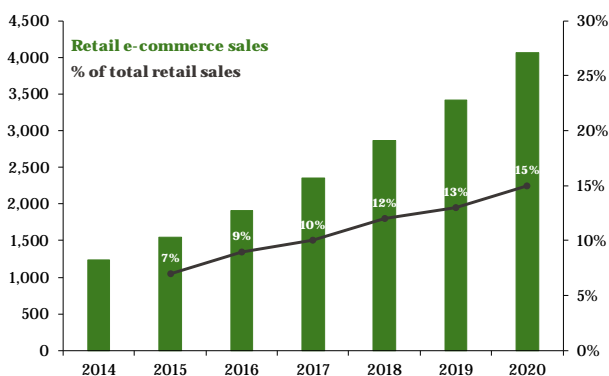
The \$22trn traditional retail industry is undergoing a major transition as it strives to respond to the rise of e-commerce.

We estimate the warehouse and logistics automation market to be worth over \$40bn today and see a long runway for growth in the high-single-digits to low-teens annually.

At ROBO Global, we believe logistics is one of the most promising applications for Robotics, Automation and Artificial Intelligence, or RAAI (pronounced ray), from an investor's perspective. Today, we all take shopping online for granted and investors largely understand that e-commerce is still in its relative infancy. However, investors are yet to fully appreciate the resulting, dramatic shake up of the logistics industry and the key role played by RAAI technologies to support this momentum.

Online retail has grown at more than 20% per annum in recent years to reach nearly \$2trn³ globally in 2016 and looks set to double to \$4trn by 2020, as the share of online sales continues to increase from just under 9% today. In fact, e-commerce already represents 18% of retail sales in China.

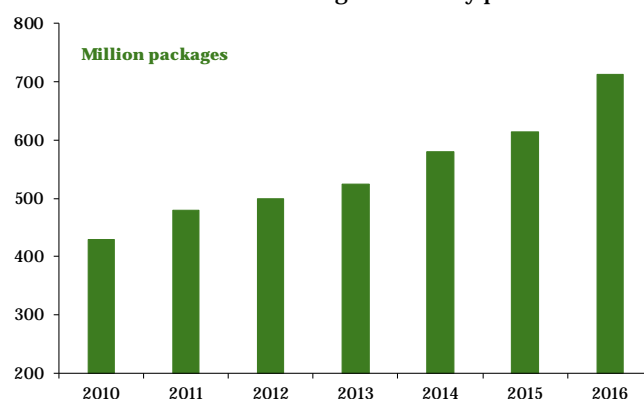
Global e-commerce sales (US\$bn)



Source: eMarketer, August 2016

This boom in e-commerce is compounding the major labour challenges faced by the \$5trn global logistics industry and putting tremendous strains on supply chains from freight to parcel handling to last-mile delivery. Parcel delivery and postal services companies around the world increasingly struggle to meet rapidly increasing volumes and control costs. United Postal Services shocked the markets when it presented a downbeat profit outlook for 2017 and pledged to boost capital investments by a massive \$1bn or 33% to automate more package-sorting facilities and open new distribution centres⁴, after a 25% increase in 2016.

UPS deliveries during the holiday period



Source: UPS, ROBO Global, ETF Securities, data available as of close 23 August 2017

More recently, UPS announced⁵ delivery surcharge fees for Black Friday and Christmas orders to recoup increases in labour and infrastructure costs during the busiest periods.

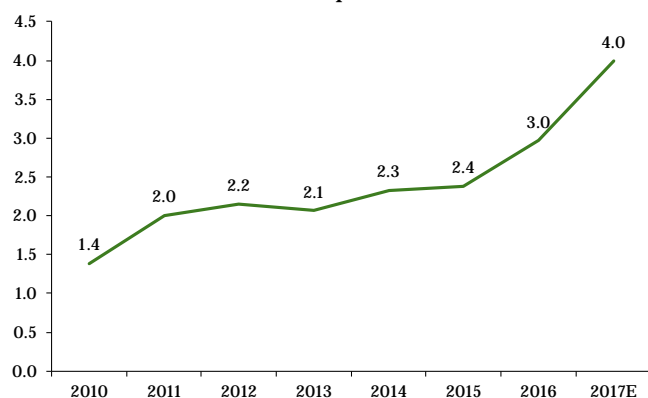
Meanwhile, the \$22trn traditional retail industry is undergoing a major transition as it strives to respond to the rise of e-commerce, social-media and mobility-driven change in consumer buying behaviour. The overwhelming trend today is omni-channel marketing, which seeks to integrate physical and digital channels to offer a unified customer experience and meet demand from every channel (web store, ERP, point-of-sale, call centre, mobile app, etc.). All bricks-and-mortar retailers are in the process of upgrading their supply-chain operations to provide better inventory visibility and deliver high-level consumer experience.

⁴ UPS 31 January 2017 earnings call

⁵ <https://www.wsj.com/articles/ups-to-add-delivery-surcharges-for-black-friday-christmas-orders-1497883509>

³ E-marketer

UPS annual capex in US\$bn



Source: UPS, ROBO Global, ETF Securities, data available as of close 23 August 2017

The reality is that RAAI has become a key success factor in e-commerce and is about to make a very large impact on the world of logistics. From autonomous mobile robots and automatic storage systems to track & trace technologies and advanced supply chain software, it is a game changer enabling increasingly speedy, safe and error-free distribution, shorter time to market and ultimately lower costs to businesses and consumers.

Amazon is leading the charge. Today tens of millions of Prime members enjoy fast, free, unlimited shipping on more than 30 million items⁶ and even two-hour delivery on tens of thousands of items in certain cities. Prime has cost Amazon millions if not billions of dollars over the years, but eventually proved sustainable with scale and automation. It is now the de facto benchmark, setting consumers' expectations in terms of shipping performance at a very high level for the entire industry. Prime would not be viable without leveraging cutting-edge advances in RAAI technology. Five years ago, Amazon made a bold, \$775m move to acquire Kiva Systems, which pioneered a revolutionary approach to order fulfilment by using autonomous mobile robots for warehouse automation. Kiva robots navigate autonomously around the warehouse, moving dynamically-stored shelves of ordered items to packers to fulfil orders, in a smooth robotic dance choreographed by cutting edge control software. With Kiva technology confined to Amazon warehouses since 2015, many companies have scrambled to fill the void and we are now seeing a proliferation of mobile robotic systems with various degrees of autonomy, language perception, machine vision and machine learning capabilities. Amazon upped the ante yet again with the intention to acquire Whole Foods Market. We think it will mark a seminal moment in the US online grocery market, which remains in its infancy at just 2% of total sales.

Mobile autonomous robots are only the tip of the iceberg. In terms of automating the order fulfilment process alone, there are a wide range of options available today, from warehouse management software and RFID tagging to mechanised solutions such as conveyors and automatic packing and labelling machines, industrial robotics and high-density storage.

At the high end, fully automated solutions can cost upward of \$40m.

However, just 5% of the US' nearly 17,000 warehouses are automated, according to St Onge. We estimate the warehouse and logistics automation market to be worth over \$40bn today and see a long runway for growth in the high-single-digits to low-teens annually. Innovation and accelerating M&A point to a rapidly transforming industry. Four of the top-10 players in logistics automation were acquired in the past 3 years alone.

To learn more, download [A Look Into Logistics Automation](#), our July 2017 whitepaper on the evolution and opportunity of logistics automation.

⁶ <https://www.amazon.com/p/feature/zh395rdnqt6b8ea>

Quantum computing brings cyber security apocalypse

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

Summary

Quantum computers pose a burgeoning threat to internet security that could have significant detrimental economic consequences.

Encryption is crucial for online transactions, passwords, digital currencies, cars, medical devices, military use, businesses and pretty much anything that requires security.

If quantum computing scales as expected, then we will be in a race against time to deploy post-quantum cryptography before quantum computers arrive.

The most common form of security for all things internet-based is 256-bit encryption, but what does that really mean? Encryption is essentially a numerical key of fixed length to help verify the integrity of a message, crucial for online transactions, passwords, digital currencies, cars, medical devices, military use, businesses and pretty much anything that requires security or privacy in an electrical device. Given such a broad use across systemically important organisations, any vulnerability exposed by quantum computing could therefore have large-scale detrimental economic consequences.

It's hard to crack encryption

Today's encryption algorithms, such as those used for online transactions, can be broken, but their security derives from the wildly impractical length of time it takes to do so. Using the so-called brute-force method, where an ordinary computer cycles through all possible keys until the correct one is found is a daunting task. For example, 128-bit encryption has 340 undecillion (36 zeros) variants. To put that into context, a computer that could test 1 trillion keys per second would take 10.79 quintillion years⁷, that is 785 million times the currently accepted age of the universe. 128-bit encryption used to be the standard, but during the WikiLeaks furor in 2013, it became evident that secret service agencies were purportedly able to crack variants of these codes. As a result, there has been a migration towards 256-bit encryption.

Key size	Possible combinations
1-bit	2
2-bit	4
4-bit	16
8-bit	256
16-bit	65536
32-bit	4.2×10^9
56-bit (DES)	7.2×10^{16}
64-bit	1.8×10^{19}
128-bit (AES)	3.4×10^{38}
192-bit (AES)	6.2×10^{57}
256-bit (AES)	1.1×10^{77}

Impractical alternatives

There are known alternatives to the brute-force attack. Acoustic cryptanalysis employs a method of listening to a computer processor with a microphone. Using this method, analysts were able to crack very high levels of encryption. Some 256-bit encryption standards such as AES can currently be hacked within five minutes using an antenna that measures the power output of the encrypting computer. However, these techniques are not practical due to the need for the measuring equipment to be in very close vicinity to the computer doing the encryption work. Interestingly, most current cracking methods involve listening-in or intercepting the signals made during the encryption process.

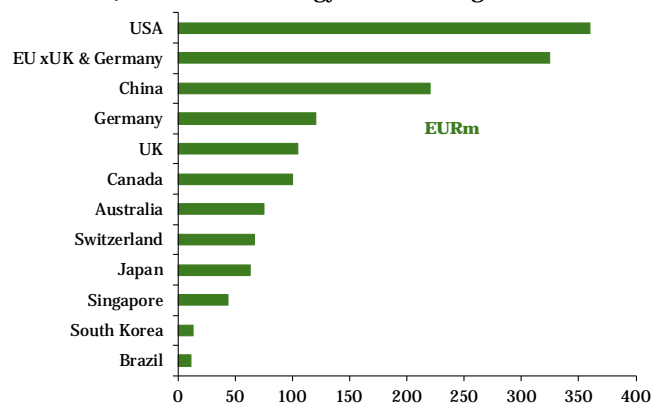
Quantum computers will change everything

The impracticality of cracking methods is the reason why these forms of hacking is thankfully not prolific, but this may be about to change in the coming 5 to 10 years. Quantum computers are different to traditional computers in that the improvements are not from a rise in the clock speed but from an astronomical reduction in the number of steps needed to perform certain computations. They essentially use the properties of quantum mechanics to probe for patterns within a large number, making current encryption very vulnerable. All forms of public key encryption, most commonly used in every day transactions over electronic devices, could theoretically be cracked by quantum computers within seconds, using Shor's or Grover's algorithm⁸.

⁷ Computerworld.com

⁸ Post-quantum cryptography – dealing with the fallout of physics success, Bernstein & Lange

Quantum technology annual budget 2015



Source: Netherlands Government, ETF Securities, data available as of close 10 August

Only government administrations who use the much more secure symmetric encryption would remain protected from quantum computing, but this requires keys to be securely delivered to each site involved in the communication, with couriers carrying locked briefcases, thus not a practical solution for every day security.

Name	Function	pre-quantum security level	post-quantum security level
<i>Symmetric cryptography</i>			
AES-128	block cipher	128	64
AES-256	block-cipher	256	128
Salsa20	stream cipher	256	12
GMAC	MAC	128	128
Poly1305	MAC	128	128
SHA-256	hash function	256	128
SHA-3	hash function	256	128
<i>Public-key cryptography</i>			
RSA-3072	encryption	128	broken
RSA-3072	signature	128	broken
DH-3072	key exchange	128	broken
DSA-3072	signature	128	broken
256-bit ECDH	key exchange	128	broken
256-bit ECDSA	signature	128	broken

Source: University of Illinois, Bernstein & Lange

When will quantum computing arrive?

Current experimental quantum gates such as the Google and IBM computers, the forerunners to a full blow quantum computer, process “qubits”, a unit of information on a quantum computer. These qubits are currently not very powerful and lack reliability. For every 1 million qubits processed, only one qubit is reliable at present, but this will improve over time, as did current computer processors when processing bits. It is very difficult to estimate how long before there is enough processing power to crack encryption, as there is no defining technology for quantum processors.

Experimentalists are using four technologies at present, quantum optics, trapped ion, nuclear magnetic resonance and superconductors. Each technology, according to Dr Renato Renner, head of quantum information theory at ETH Zurich, has differing potential for its processing power. Dr Renner conservatively estimates that a reliable 1 million-qubit power

computer required to crack encryption will be delivered within 20 years.

It is difficult to tell how realistic this is. Dr Francois Weissbaum, a cryptography scientist from the Swiss Department of Defence, estimates that a true quantum computer based on existing technology would require the energy of an entire nuclear power plant. Similar projections were made for existing computers processors back in the early stage of their development, but as the technology improved, they became much more efficient at consuming power.

A post-quantum solution

There are post-quantum algorithms being developed that tackle the risk that quantum computers pose to security, and some of these approaches have been in development for many years. Lattice-based, multivariate and hash-based cryptography are examples, but these typically involve some trade-off, be it higher costs, higher processing power or greater network traffic. Some proposed post-quantum encryption systems would increase key sizes from a few thousand bits to 1 million bits⁹. The rise in processing power and network traffic could be extremely taxing on mobile devices processing power and consequently on battery life.

Organisations must act now

If quantum computing scales as expected then we are in a race against time to deploy post-quantum cryptography before quantum computers arrive. 20 years seems like enough time to be prepared. However, it is estimated it would take at least 10 years to modify existing cryptographic infrastructure. This entails modifying all existing systems that use public key cryptography, which includes most electronic devices that connect to the internet. We are already beginning to see initiatives employed by the ETSI (European Telecommunications Standards Institute) that are attempting to standardise the approach to post-quantum cryptography. Other initiatives will have to be developed to modify existing connected devices, develop the architecture for new quantum-safe devices and software. At present, quantum computers pose a burgeoning threat to internet security that could have significant detrimental economic consequences to organisations that do not begin to act now to mitigate the risks. The investment needed to upgrade systems is a potential opportunity for investors.

⁹ Introduction to post-quantum cryptography, Bernstein

Can digital/crypto currencies influence monetary policy?

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

Summary

Widespread usage of cryptocurrencies has the potential to impair the transmission and aim of monetary policy.

Cryptocurrencies are unlikely to impact monetary policy because scale and volatility are key barriers to adoption.

Digital Vs Crypto

Digital currencies have been around since computers enabled the electronic storage of account balances online. A digital currency can be broadly defined as money stored in electronic form that can be used to make and receive payments. Cryptocurrencies are a much more recent phenomenon, with Bitcoin the most widely recognised. A cryptocurrency is a subset of digital currency whereby encryption techniques are used to regulate the creation and transfer of currency units. Cryptocurrency market capitalisation reached US\$1.3bn by end – July 2017, according to website www.coinmarketcap.com, which is divided among about 1000 currencies. Usage is therefore growing quickly, but can they be considered money?

Is it money?

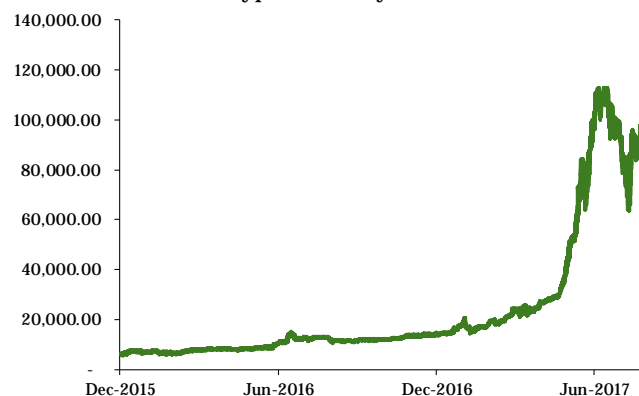
The short answer is no. In order to be considered currency, a form of money (i.e. digital currencies) must be used as a unit of account, a store of value and a medium of exchange.

Cryptocurrencies are being used as a store of value (although with significantly higher volatility than traditional currencies) but broadly fail to satisfy the other two criteria. Scale of usage is certainly an issue that is unlikely to see cryptocurrencies impact monetary policy in the foreseeable future.

Cryptocurrencies do not have intrinsic value. Although limited as a resource – bitcoin and other cryptocurrencies have a finite supply - investors mainly trade on the ability to exchange the cryptocurrency for a higher value in the future rather than the ability to purchase other goods and services (although usage for other initial coin offerings are rising).

As a medium of exchange, cryptocurrencies are only used to a limited extent to purchase goods and services. Additionally, purchases are also generally transferred back to sovereign currencies, like the US Dollar or Euro, and as such cryptocurrencies are not used for accounting purposes, therefore do not satisfy the unit of account characteristic.

Cryptocurrency AUM (USD)



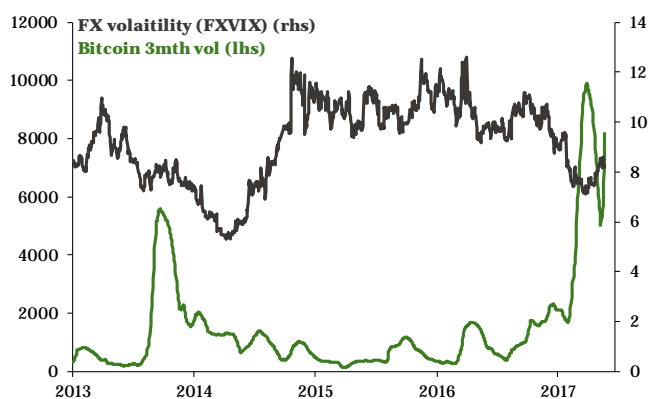
Source: coinmktcap, ETF Securities, data available as of close 10 August 2017

Trust is lacking, volatility is not

Volatility is a hindrance for the universal acceptance of cryptocurrencies to garner a wide following and for paying and settling transactions, a unit of account and a store of value. Digital currencies exhibit extreme volatility: buying power is therefore constantly changing.

Price stability is critical for currencies to be a trusted medium of exchange: if a particular basket of goods costs 100 pounds today and 50 pounds in a week's time, then this provides disincentives to widespread adoption. If the digital currency value is dropping, it encourages consumers to get rid of it as quickly as possible, and if it's rising, to hoard the currency.

Bitcoin extremely volatile



Source: Bloomberg, ETF Securities, data available as of close 21 August 2017

Monetary policy implications

In contrast to sovereign payment systems and other digital

currency, the innovation of the distributed ledger (that was developed for Bitcoin), whereby transactions are recorded and verified by a decentralised group of network participants called miners, digital currencies do not need a trusted third party to exchange and settle transactions between two independent parties to a transaction. Cryptocurrencies, through their decentralised nature circumvent the normal monetary channels. In this way, monetary policy would be undermined if the scale of usage were to expand and challenge fiat currencies for dominance as a means of payment. Furthermore, cryptocurrency are global, exacerbating the potential problem, because usage bypasses sovereign (and central bank) jurisdictions. Monetary policy would need to become more globally coordinated in order to have an impact in a world of cryptocurrency dominance.

Another issue with cryptocurrencies in implementing monetary policy is the limited supply. Without the ability to manipulate money supply, the problems with potential hoarding being able to decrease supply are twofold. By not being able to increase money supply, the supportive nature of policy is reduced. In a world of quantitative easing, a fixed supply of (digital) money is clearly an impediment to the effective transmission of monetary policy. Moreover, the reduction of the money supply can lead to deflation by reducing demand.

Central bank digital currencies

In a time of crisis, a decentralised digital currency framework is not likely to engender confidence in the case of a financial crisis, as there is no one institution standing behind the value of the digital currency. Cryptocurrencies have a decentralised distribution network, and unlike fiat currencies or a central bank issuing digital currency, there is no trusted counterparty that, in essence guarantees, the currency. Indeed, recent 'hard forks' in both Bitcoin and Ethereum highlight the uncertainty of a cryptocurrency's value.

A digital currency issued by a central authority (clearly the antithesis of the rise in popularity of cryptocurrency) but using a distributed ledger framework could reduce the number of intermediaries and enhance the effectiveness and efficiency of monetary policy in several ways. Firstly, transactions would be independently verifiable and this would arguably increase transparency. Secondly, currency being settled outside of a single entity could potentially save time and be less costly. Importantly, by funding being distributed straight to the consumers and businesses, the transmission of policy would be more direct, essentially bypassing the banking system.

The ECB highlights issues of remuneration: the interest rate for digital currency could influence demand. If the central bank remunerates at the deposit rate (for many this is currently negative) it would dissuade the usage of the currency and be more compelling to hold deposits at normal banks which generally do not charge negative interest rates. If the central bank put the deposit rate at 0% (instead of a negative rate), this could also cause problems: banks could set up non-bank subsidiaries that would be able to hold digital currency at the central bank for no cost, thereby undermining the effects of monetary policy.

The bottom line...

Many major central banks, including the Bank of England (BOE) the Bank of Canada and the European Central Bank, have tested or considered the ability to use digital currencies and distributed ledger technology in the monetary policy arena. Due to elevated volatility and the lack of widespread usage, crypto (or digital) currencies will not impact monetary policy in any significant way.

A central bank issued digital currency has the potential to make monetary policy more effective, however, there are many hurdles that need to be overcome in terms of the framework for pricing and distribution.

Make Way for Millennials

By James Butterfill and team contributions – Head of Research & Investment Strategy | research@etfsecurities.com

Summary

Concentration of Millennials in developing world likely refocus global growth to these economies.

Headwinds for US Millennials sparked a shift in consumer and financial behaviours.

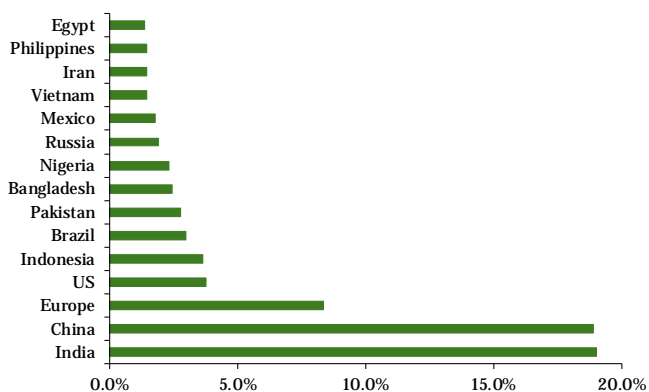
Millennials and Baby Boomers may create barbell growth engine impacting different sectors.

The Millennial Majority

Millennials, those born between the years of 1982-2000, are a difficult group to define with very different starting points, spending habits, and financial goals than previous generations. Yet one generality about this generation is clear: their size.

With global population estimates ranging from 1.7 to 2.0 billion or more, Millennials are a core factor for future global economic trends. The vast majority of this population, however, is located outside of the developed world.

Top 15 Largest Millennial Populations



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

According to 2015 United Nations data, approximately 86% of Millennials live in the developing world, with China and India alone accounting for over a 1/3 of this demographic. Young populations coupled with a higher consumption utility will likely create a growth conducive backdrop for frontier and emerging markets as Millennials continue to age.

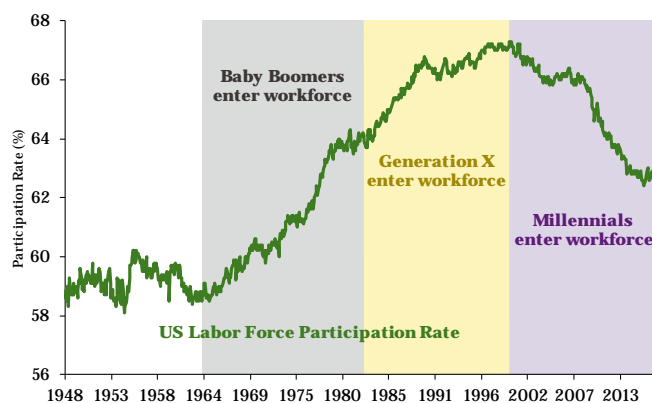
Within developed economies, the Millennial population has also expanded and now exceeds the Baby Boomer generation (those born between 1946 and 1964). This generation shift is particularly dominant in the United States (US), which is home to approximately 84 million Millennials compared to the 75 million Baby Boomers.

Lower Starting Point for US Millennials

US Millennials have faced significant economic headwinds including two recessions and increased labour competition stemming from globalisation and technology. This has delayed their entry into the workforce as evidenced by a structurally lower labour participation rate in the US.

This delay has also coincided with Baby Boomers qualifying for pension benefits (with Baby Boomers reaching age 65 in 2011) and rotating towards retirement. These trends aided in lower productivity and a drag on growth for the overall US economy, a trend indicative of other developed economies as well.

Millennials enter labor market as Boomers exit



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

Fewer labour opportunities have also been met with lower starting incomes for Millennials in recent years. In fact, workers aged 25-34 years old in 2013 who financed an advanced degree with debt earned approximately the same median income as their peers in 1989 without any such degree (see Table 1).

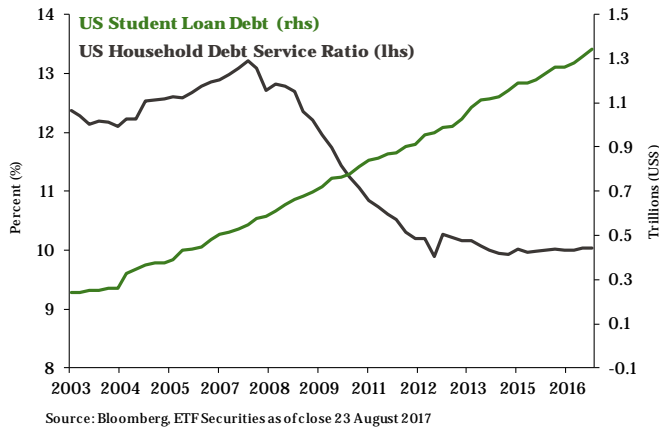
Table 1: Median income for Millennials lower than prior generations along with levered educations

Category	1989	2013	Percent change
Ages 25 to 34			
Degree without debt	\$75,422	\$61,886	-18%
Degree with debt	\$67,880	\$50,727	-25%
No degree	\$49,024	\$36,523	-25%

Source: "Measuring Generational Declines between Baby Boomers & Millennials", Young Invincibles, January 2017. Adjusted to 2013 dollars.

Another critical headwind reducing discretionary spending from Millennials is student loan debt. Millennials' educations are highly levered with total US student loans hitting a record \$1.4 trillion as of March 2017, despite overall debt service ratio dropping for US households following the 2007 credit crisis.

Burden from Student Loans Continues to Grow



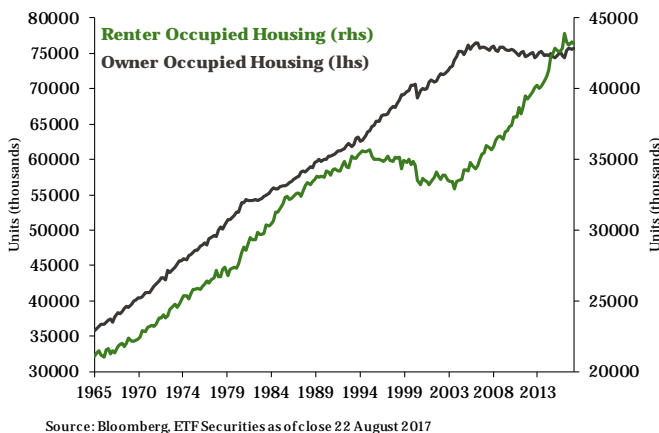
According to a 2015 PricewaterhouseCoopers survey, 80% of college-educated Millennials deal with at least one form of long-term debt, while more than half of Millennials worried about their ability to repay student loan debt.

Dealing Through Disruption

In response to these short-term financial headwinds, Millennials have shifted their spending habits and consumption preferences. The evolution of sharing based economies and other disruptive businesses (primarily rooted in technology) can be viewed as a response to these new budgets.

Millennials generally put more emphasis on asset sharing compared to asset ownership. This trend is affecting travel and automotive industries, and greatly reshaped the US housing market. Since 2000, the increase of renter occupied housing has far exceeded owner occupied housing as Millennials have hit adulthood.

Homeownership slows in favor of renting



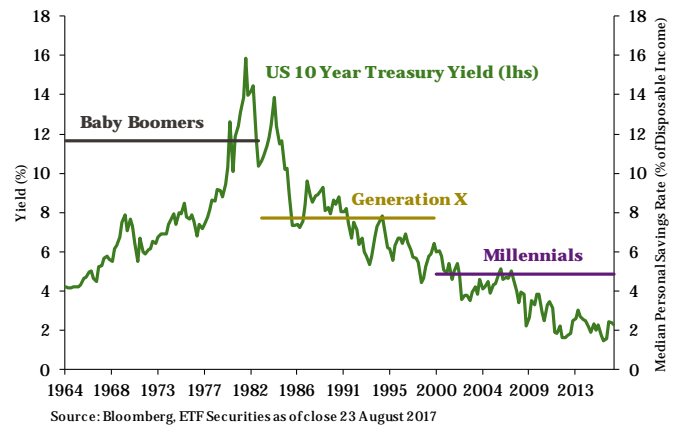
Financial security had been synonymous with home ownership, yet Millennial preferences driven by financial delays have adapted and shifted housing market demand dynamics.

A Generation of Savers

Millennials are characterised as focused on financial freedom and less concerned with retirement. This is reflected by a higher savings rate compared to previous generations. Yet this above

average rate of savings comes at a period of record low personal savings among US households. Additionally, Millennials are disadvantaged by having to deal with record low and falling yields.

Low rates spark generational gap in savings

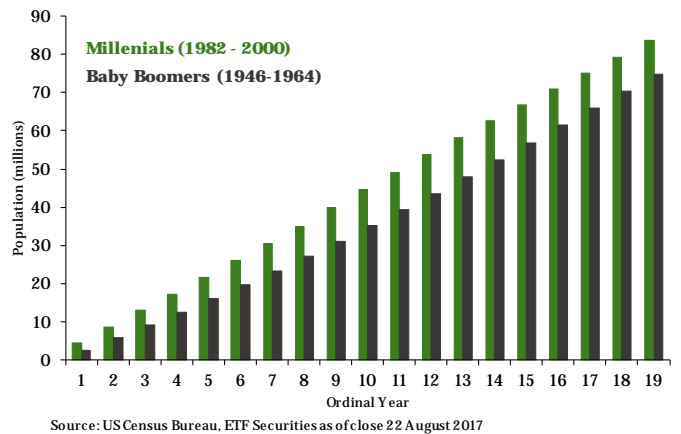


Millennials & Boomers: the barbell economy

The magnitude of the Millennial demographic has brought them into the limelight, but they come with very different starting points, spending habits, and financial goals than previous generations.

We believe the prospects for Millennials are only delayed, not deterred. Economic gains from Millennials are likely since they have yet to enter their peak earning ages. They are currently more focused on saving and less focused on debt fuelled spending characterised by other generations.

Millennials & Baby Boomers Driving Growth



Additionally, other demographics, particularly the Baby Boomers should not be discounted in terms of their on-going economic impact. Rising longevity, increased health care services, and demand for travel and leisure spending as they continue to seek retirement are likely to be economically beneficial.

How to invest in low carbon economy

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

Summary

The transition from fossil fuels to clean energy has been taking place for many years in the electricity sector and has also started in the transportation sector.

Financial incentives and environmental policies have been the main contributors in reducing carbon dioxide emissions. More price support is needed on the carbon market to efficiently support the Paris agreement.

A portfolio with 10% in alternative energy equities outperform the benchmark by 1% and improve the Sharpe ratio by 3.75% to 0.49 since 2001.

One way to fight against greenhouse gas (GHG) emissions is to put a cost on carbon dioxide (CO₂) and incentivise corporates and individuals to include environmental issues in their investment plan. Combined with more ambitious international and regional environmental policies, the transition from fossil fuel to low carbon economy may accelerate in the next decade. This note analyses the different options available to investors to potentially benefit from this transition to low carbon economy.

A bit of background

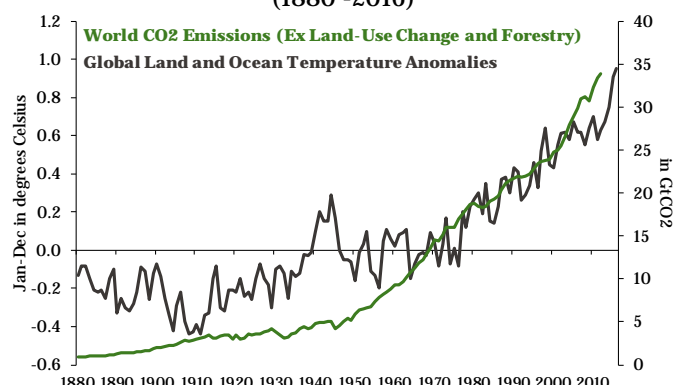
The Kyoto protocol was adopted in 1997 during the third conference of the parties (COP3) and ratified in 2005. During its first commitment (2008-2012), members had constraining binding targets on six greenhouse gases based on their respective 1990 level. Developed countries were under more pressure due to their historical responsibilities in global warming. In 2012, the conference of the parties in Doha brought amendments to the protocol, taking it to its second commitment. However, the Doha amendment never came into force as only 66 states signed it over the 144 required. This led to the adoption of the Paris agreement in 2015 and its enforcement in August 2017.

As opposed to the Kyoto protocol, the Paris agreement is non-binding but more ambitious. Each member is free to set its own target as long as it goes beyond previously set targets. They will present their Nationally Determined Contributions (NDC) plan at the COP24 in 2018, which will then be reviewed every five years. The agreement aims at limiting and sustaining the increase of the global temperature to 1.5°C above pre-industrial levels as opposed to the previous 2°C limit.

Meanwhile, total CO₂ emissions in 2012 were 56% above 1990

level, according to the World Resources Institute, while the global average temperature increased by 1.08°C between 1880 and 2016, knowing that pre-industrial period is prior to 1800.

Global warming and carbon emissions (1880 -2016)



Source: World Resources Institute, NOAA, ETF Securities

The International Energy Agency (IEA) estimates that carbon emissions should peak in 2030 if governments and local entities can stick to the Paris agreement. The rise of populism is, however, posing a threat to the agreement.

The inefficiency of the carbon market

The member states have the choice between three mechanisms defined in the Kyoto protocol: the clean development mechanism (CDM), a joint implementation (JI) and an emissions trading scheme (ETS). The CDM allows developed countries to offset their emissions by investing in emissions reduction projects in developing countries while the JI allows investments in developed countries to generate emission credit for the same or another developed country. An ETS, on the other hand, is a market-based initiative that allows the creation of a market for carbon with the price of one permit determined by supply and demand.

ETS are the most popular choice to comply with international requirements. According to the World Bank Carbon Pricing Watch 2017, the number of carbon pricing initiatives grew from 2 in 1990 to 40 in 2016, covering 14.6% of global GHG emissions and with the EU ETS the largest of all. With the launch of China ETS, the total number of carbon pricing initiatives is expected to cover 22% of the global GHG emissions by the end of 2017. If all parties stick to their NDC, the share of global GHG emissions covered by carbon pricing initiatives could reach 58%. At this stage, an integrated international initiative could be considered.

90% of all the carbon allowances under existing ETS are however priced at less than 30 euros per tonne, the minimum

environmental cost of one tonne of CO2 estimated by the Organisation for Economic Co-operation and Development (OECD). Initial mistakes, combined with the introduction of environmental policies and the global financial crisis, led to a persistent negative sentiment on the carbon market. The price of carbon allowances in the EU ETS (EUAs) has been continuously declining since its launch in 2005.

Carbon EUA prices

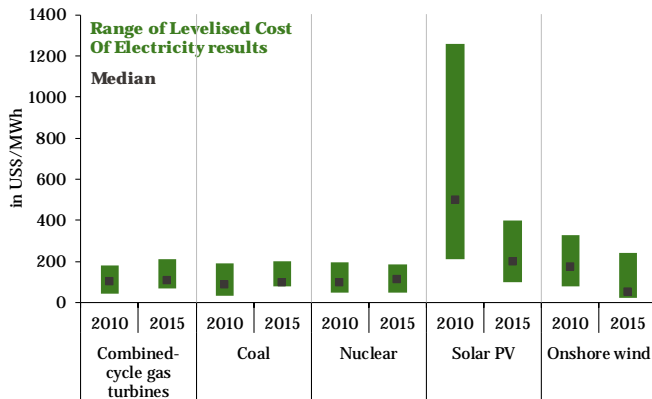


Source: Bloomberg, ETF Securities as of 06 September 2017

A boost for alternative energies

Meanwhile technological improvements have helped reduce the levelised cost of electricity (LCOE), making previously expensive alternative sources of energy now affordable and economically viable compared to more traditional sources.

Global Electricity Cost Generation

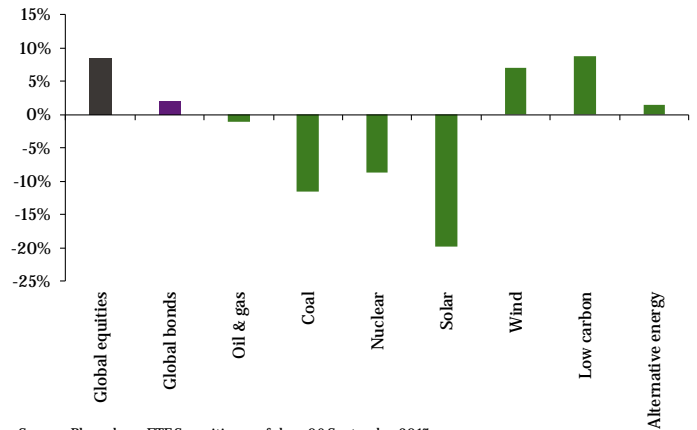


Source: IEA and NEA Projected Costs of Generating Electricity 2015, ETF Securities

Most indices exposed to the sector have been launched within the past decade and tend to have high correlation to global equity benchmarks, such as the MSCI AC World index. The following chart shows that wind and low carbon indices are the best performer, while solar companies continue to struggle despite falling production costs.

Alternative, renewable or clean energy indices usually provide exposure to solar, wind, hydro and biomass power producers. Low carbon indices select companies based on their ESG ratings and allocate a higher weighting to companies with a greater environmental rate. Fossil fuel free indices exclude companies that own fossil fuel reserves from benchmarks.

Annualised returns since 2010

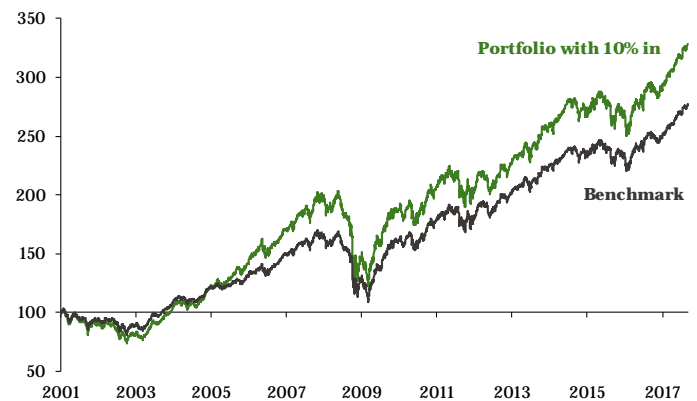


Source: Bloomberg, ETF Securities as of close 06 September 2017

Alternative energy in a portfolio

While the alternative energy index has the lowest return, allocating 10% of a portfolio of 60% global equities and 40% global bonds in alternative sources of energy outperforms the benchmark by 1% per year on average since 2001.

Portfolio outperformed by 1% per year



Source: Bloomberg, ETF Securities as of 06 September 2017

The portfolio is more volatile than the benchmark but has a higher Sharpe ratio and recovers faster to its previous peak.

	Benchmark (60/40)	Portfolio (55/35/10)	Global equities	Global bonds	Alternative energy
Volatility	9.1%	10.9%	15.9%	4.1%	23.7%
Annual returns	6.1%	7.1%	5.0%	4.7%	4.5%
Max drawdown	-10.6%	-13.1%	-19.2%	-6.7%	-30.7%
Max recovery	0.9	0.8	1.2	1.1	2.0
Beta	1.0	1.19	1.71	0.01	2.01
Correlation to benchmark	1.0	0.99	0.98	0.01	0.77
Tracking error	0.0%	2.3%	7.1%	9.9%	17.6%
Sharpe	0.47	0.49	0.20	0.72	0.12
Information ratio		0.47	-0.15	-0.13	-0.09

*Based on daily data in USD from January 01, 2000 to September 06, 2017. Volatility and returns are annualised. Max drawdown defines as the maximum loss from a peak to a trough based on a portfolio past performance. Max recovery is the length of time in number of years to recover from the trough to previous peak. Risk free rate equals to 1.8% (a simulated combination of the IMF UK Deposit Rate and the Libor 1Yr cash yield). Source: ETF Securities, Bloomberg

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