



konzept

13 Tipping points in 2018

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January 2018

Cover theme

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Against expectations, economies and markets powered ahead in 2017. Many predict more records to be broken in 2018. Yet, in many sectors, things are more complicated and 2018 may be the year of tipping points that augur unexpected change – both positive and negative. In this issue, we probe these tipping points and analyse the effects on economies and industries that investors may have ignored.

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Editorial

Welcome to Konzept, Deutsche Bank Research's flagship magazine. In this twelfth edition we use our global platform to identify 13 potential tipping points in 2018.

We have a cross section of macro and micro themes which are tied together by the belief that unexpected developments could lead to an abrupt change of circumstances.

From a macro perspective, 2018 is a crucial year as we're likely to see the effect of diminishing technicals in the fixed income market for the first time in seven years. Every year since 2010 we've seen G3 (US, Europe and Japan) central bank purchases of government bonds increase relative to net issuance. However this will start to reverse as quantitative easing is substantially reduced, with the Fed and ECB leading the way.

Indeed, loose monetary policy has distorted bond markets around the world but perhaps nowhere more than in Germany. Is 2018 the year when investors look at the German economy growing at a nominal rate of four per cent and conclude the ten-year bund yield, which stayed under half a per cent for most of 2017, is completely wrong? Given bond yields have been a key driver of buoyant markets across large parts of the world in recent years, the ramifications of higher yields are significant.

Inflation is next on the agenda. In keeping base rates and bond yields low, central banks have helped keep economies growing above trend and the post-crisis output gaps have closed in the US and should do so in Europe this year. With that in mind, 2018 could be the year when inflation starts to surprise on the upside and we discuss the cyclical and structural reasons for this.

Overall it's fair to say that low levels of both inflation and bond yields are the glue that holds the financial system together in its current form, particularly given high debt levels across the globe. A transition in 2018 could therefore impact the serene global environment for economies and markets.

Against this changing macro backdrop, our company analysts highlight some major themes that may alter investor perceptions in the year ahead. Amongst these are the emergence of cryptocurrencies in mainstream financial transactions, a shakeout in US equities, imminent threats to asset managers, the problem with the link between Chinese real estate and consumption, and the surprising way in which performance cars are propping up the auto sector. Watch out also for big leaps forward in artificial intelligence and augmented reality with the latter now having an Apple operating system as a playground to develop in. Elsewhere, new accounting rules will force European companies to disclose their diversity policies. This could cause a rapid rise in funds allocated to diversity-based strategies with consequences for companies that score poorly.

We hope readers enjoy the range of topics included.

Jim Reid

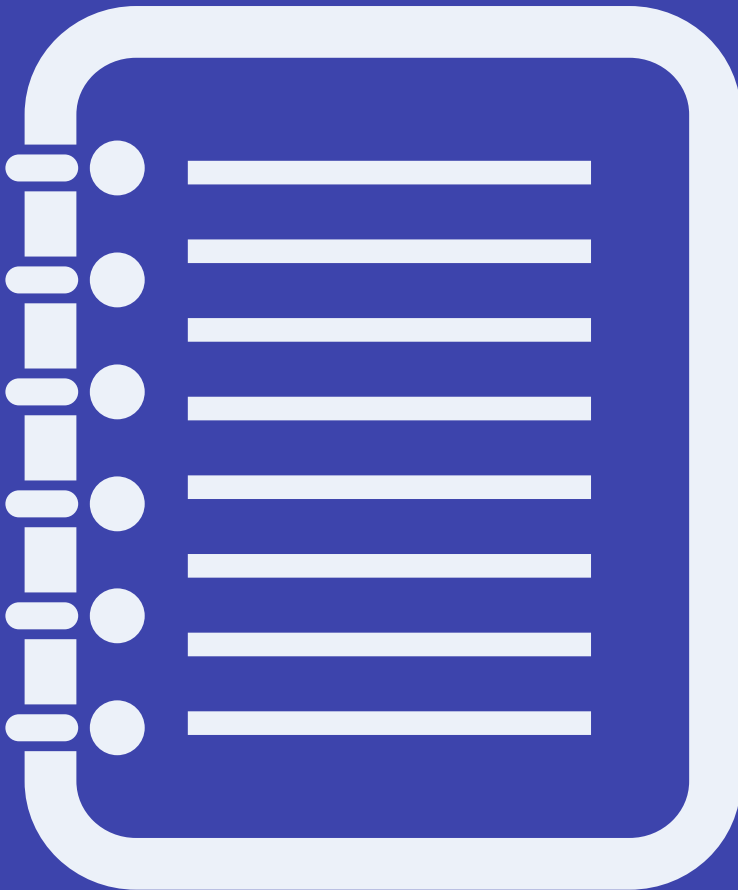
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➤ To send feedback, or to contact any of the authors, please get in touch via your usual Deutsche Bank representative, or write to the team at luke.templeman@db.com.

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Summaries



US inflation – Ready for a breakout Jim Reid, Craig Nicol

While the threat of deflation has receded, normal levels of price growth have proved surprisingly elusive despite the unparalleled levels of central bank money printing since the financial crisis. A tipping point may be close at hand. First, manufacturing and economic growth data have risen and inflation generally follows these, albeit with a lag. In addition, lessons from the 1960s show that when the unemployment rate falls to four per cent, closing the output gap, inflation suddenly picks up.

Blockchain – Cutting through the current noise of cryptocurrencies Ryan J Todd, Ricky Dodds

While 2017 saw the market focus on bitcoin's price, 2018 may be the year that other cryptocurrencies take centre stage. Just one year ago bitcoin comprised 90 per cent of the cryptocurrency market by value; today it is less than half. More importantly, cryptoassets will also begin to make inroads into the processes of stock exchanges and central banks. If central banks can use crypto-assets to create a proper retail-oriented digital currency, they may transform the way monetary policy is conducted. In practice, that might prove too disruptive to commercial banks. However, a central bank 'Fedcoin' that is limited to wholesale settlement between banks is not far off.

Diversity disclosures – The effect on capital markets Luke Templeman

Diversity-focussed investments in Europe could jump in 2018 as new accounting rules force European companies to disclose their diversity policies. Our guide is the experience of the Paris climate conference in 2015, which acted as a catalyst to boost sustainability-themed investments. Should the 'Paris effect' repeat itself, diversity-focussed investments could see a sudden boost in exposure and popularity and could become significant activist shareholders. Investors who ignore the theme may soon find their stocks struggle in the capital markets.

Emerging markets – The wind from the west Elina Ribakova

Given that developed markets were a significant part of the rocket fuel that propelled emerging markets upwards in 2017, it follows that the potential tipping points in emerging markets in 2018 will involve effects from developed regions. Specifically, two risks are in play. The

first is possible sanctions against Russia and the second is the fallout from incorrect predictions of US treasury yields. There are significant opportunities, however, for emerging markets to chart their own course, particularly as they can leverage gains in productivity, demographic trends, and structural reform, particularly around central banks.

Chinese property – Propping up consumption Zhiwei Zhang

"A place to live in," is how China's president Xi Jinping described residential property at the recent party congress. It wasn't the first time he had said as much so with such a clear tone from the top, it is no surprise that China has been tightening controls on real estate speculation for over a year now. As a result, growth of property sales turned negative late last year while property prices softened in many cities. Expect 2018 to be the year when these controls really bite, not just on the property market but on overall consumption that has been propped up by the property wealth effect.

Artificial intelligence – Finally out of the lab Ross Seymore

2018 is a year in which AI will transition from training to doing. The catalyst for this will be new chips, the so-called specific integrated circuits, due to be released this year. The first area to benefit is industrial automation, in which assembly-line robots can register higher success rates because of rapid and collaborative machine learning. Autonomous transport will also see big gains, with more carmakers taking their autonomous cars out of the testing phase and onto the road. Smart cities, like the new district in Toronto being developed by Alphabet, will also benefit from these new AI capabilities, primarily from the integration of machine learning into surveillance cameras.

Performance cars – The new growth engine Tim Rokossa

Performance cars have been quietly revving up the bottom lines of carmakers. And 2018 may be the year that investors take notice. Mercedes sold about 140,000 AMG performance cars last year, about one-third more than in 2016 and triple the number just three years earlier. These cars generate margins well above those of mainstream passenger cars. This profitability means AMG is responsible for one-third of Daimler's market value despite accounting for just one in every 20 cars sold.

Fixed income – The five trials ahead

John Tierney

Debate in the US fixed income market is now primarily around whether bonds are in a coupon clipping trading range or headed for a bear market. Aside from the expectations of four interest rate rises in 2018, the yield curve will be key. But the hope that normalisation might be around the corner has been around for years. Heading into 2018, the wisest approach may be to assume the unwind process will be less a return to normal and more of the ongoing new normal.

Augmented reality – No longer seeing things

Rob Sanders

For all the talk of augmented reality being the next big thing, the failure of Google Glass suggested the actual reality would be far different. But 2018 may prove to be the year when augmented reality finally hits the road. The catalyst is Apple's new operating system that integrates AR capabilities that will allow developers to use their imagination and come up with new apps. Even more sophisticated devices are planned for late 2018 and 2019 and Android is not far behind. Meanwhile, chipmakers including Qualcomm have a slew of AR-enabled chip releases in 2018. For suppliers, there is a \$14bn revenue opportunity by 2020.

Asset managers – the independent advantage

Kinner Lakhani

There are four threats stalking asset managers and 2018 is likely to be the year that either they will be forced to act, or be subject to M&A. Low-cost passive products continue to gain popularity, regulatory burdens are rising, technology is promoting transparency, and the threat of a broad market turn is real. Independent managers are best placed to weather the storm given their low costs, however, bank and insurance-owned managers will need to cut costs by either scaling up, specialising, or looking to M&A.

US equities – The dividend shakeout

Luke Templeman

Equity investors point to the dizzying heights of price-to-earnings multiples as reason to fear the market is dangerously overvalued. But history shows the PE multiples are terrible buy and sell signals. Rather, investors should be concerned that 2018 will see a reckoning in the reliance on dividend valuation. A jump in bond yields will remove the 'bond proxy' trade that has seen investors jump into reliable dividend payers. The companies that have unsustainably raised their

dividends to try and muscle in on the action will be among the first affected.

Oil – How DeCAF helps find carbon cash cows

Lucas Herrmann

Intuitively, the oil price should matter, so as volumes decline, value can still be created. But it is not that simple and 2018 is the year which will clarify which of the oil majors have the potential to morph into carbon cash cows – highly profitable entities that rely on relatively scarce and declining volumes. At least three things need to happen for the oil majors to become profitable on declining volumes. Capital discipline must be enforced, stranded asset and carbon pricing risks need to be contained, and investors should be aware of political decisions that are increasingly influencing which assets are developed in which countries.

Asian technology stocks – Creating alphabet soup

Will Stephens

The parade of technology stock acronyms has become more ostentatious: FANGs, FAANMGs, BATs, HATTS, SuNRiSe etc. Yet the acronym phenomenon is important as it helps foster speculative bubbles. That appears likely in 2018 with the FAANMG expected to add two-thirds to their price and the BHATTS to almost double. But the lack of coherence in the acronym grouping poses a risk. True, they each benefit from the ubiquity of technology and the internet, but in vastly different ways. Having treated these firms as successful momentum plays, in a downturn investors may not know why they should own them.

US inflation – Ready for a breakout

It was only two years ago that American economists were flirting with the idea of deflation. Yet while that threat has receded, normal levels of price growth have proved surprisingly elusive despite the unparalleled levels of central bank money printing since the financial crisis. Investor scepticism was reinforced by five successive misses in core inflation data in late 2017. No wonder yields on ten-year German bunds and US treasuries are only a little above their all-time lows.

A tipping point appears close at hand which may make 2018 the year that inflation finally picks up. First, the year starts with good momentum. Following November data, core inflation has run at an annualised rate of 1.9 per cent over the past three and six months, two-tenths higher than the annual rate. In addition, the three-month annualised rate of the Fed's preferred inflation measure, the core personal consumption expenditure index, has risen to 1.9 per cent, quadruple the level earlier in the year, following the removal of some one-off factors that held down prices.

Of course, positive momentum is not enough to predict normal levels of inflation. So it is encouraging that the recent uptick is consistent with a number of macro models. These suggest that leading signals from the likes of rising import

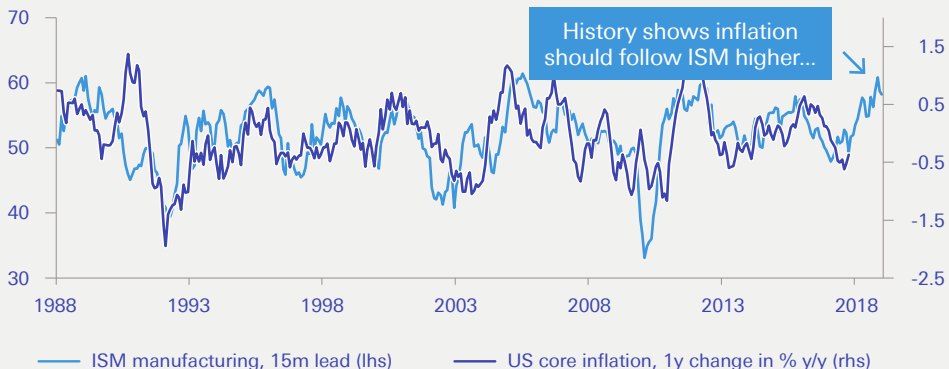
prices, an expanding manufacturing sector and, most notably, stronger economic growth all help explain the trend. The following two charts show the relationship. The ISM manufacturing reading has been a fairly reliable leading indicator for US core inflation with a five-quarter lag. Similarly, real economic output has historically been a decent proxy for core inflation with a six-quarter lag.

Given economic growth returned to a more impressive 2.3 per cent in 2017, should the historic relationships hold, core prices should comfortably hold above the Fed's target rate of two per cent.

With that in mind, one argument for why inflation mostly disappointed over the last year was that it was responding to weak growth in late 2015 and early 2016 which followed the US energy sector collapse following a huge decline in the price of oil.

Despite this evidence, inflation sceptics still abound. They cite a broken Phillips curve, technology, and the 'Amazon' effect depressing retail prices as factors explaining why inflation is low and will remain so. However the relationships between ISM manufacturing, economic growth and inflation detailed above suggest that inflation is merely responding as usual to the ebbs and flows of the business cycle rather than misbehaving.

ISM manufacturing (leading 15 months) and core inflation



Source: Bloomberg Finance LP, Deutsche Bank

Jim Reid, Craig Nicol

US real economic output and core inflation growth (18-month lag)



Source: Bloomberg Finance LP, Deutsche Bank

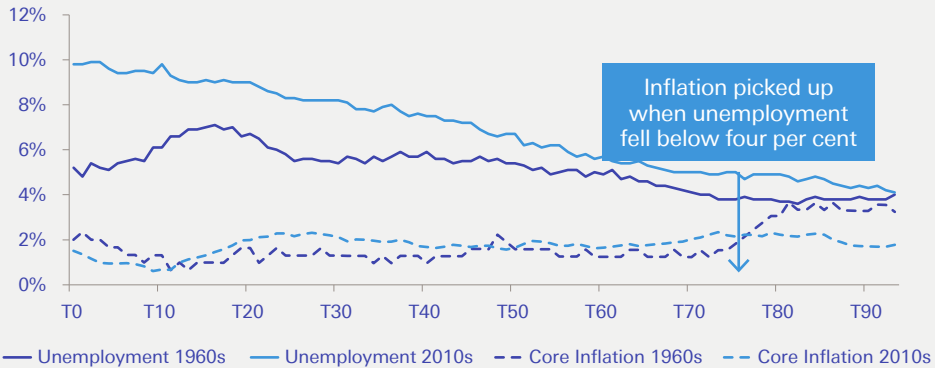
The narrowing of output gaps across the developed world lend credence to predictions of rising prices. The theory states this should translate into stronger pricing power for both companies and labour, both of which are inflationary. That tipping point could be breached in 2018. Output gaps in the US, Europe, and advanced economies more broadly have clawed their way back towards full capacity after the post-crisis dip and in some cases are now in positive territory. In the US, the output gap turned positive in the second half of last year. In other words, the US is back to operating at full capacity, a full ten years after last being at this level. Europe is expected to return to a flat output gap in 2018 which will then turn positive in 2019. Similarly, other advanced economies are expected to see a positive output gap this year. In fact, given the growth momentum at the end of 2017, particularly in Europe, the upside risks may be underestimated.

While most economists still predict US core inflation will stay 'only' in the low two per cent territory, there is historical precedent which suggests a more persistent surge upwards could be possible soon. In the 1960s, unemployment was on a steadily declining path towards four per cent with little or no evidence of core price and wage inflation rising significantly above the relatively subdued levels they had held for some

time. Consistent with low inflation, expectations were also stuck at low levels. There was also a similar belief that the level of unemployment that does not cause inflation, the NAIRU, was low and could be falling. Finally, the Phillips curve was flat given the absence of inflation pressure despite declining unemployment. All of these factors appear eerily similar to today.



Unemployment and core inflation in the 1960s and 2010s (months from beginning of decade)



Source: Bloomberg Finance LP, Deutsche Bank

As today, inflation in the first half of the 1960s routinely undershot two per cent. The tipping point for inflation, however, occurred in early 1966 just after unemployment fell below four per cent. The chart above shows inflation from January 1960 and January 2010. It took 76 months from the start of the 1960s for core CPI to sustainably rise above two per cent. The drop in the unemployment rate below four per cent marked a significant turning point as it indicated that aggregate demand had risen well above the economy's 4.5 per cent potential rate of growth at the time. As a result, a sudden and sustained uptick in inflation followed.

It is true that these movements were partly attributable to a significant pick up in government spending associated with the Vietnam War. Yet it is also true that the increase in core inflation was broad based. In fact, one of the most significant areas of inflation was medical care following the introduction of Medicare and Medicaid in 1965. Healthcare services prices rose nearly three times as fast as overall consumer prices over the next five decades. Fast forward to today and the Affordable Care Act has been argued to have contributed to the significant slowdown in health care inflation in recent years. Given the various political noises for it be repealed in part or full, healthcare costs may push higher.

There are certainly differences between the US economy in the 1960s and today. Aside from war spending, there was a higher labour force participation rate in the 1960s, while the Fed today has drawn on past experiences and has been more pre-emptive about tightening policy. However the 1960s offers clues as to

what could support inflation expectations normalising again. For one thing, the Phillips curve could again prove to be dormant rather than dead. Analysis of state-level data indicates the Phillips curve relationship is weak until the unemployment rate drops significantly below historically normal levels. Yet when it does fall more than a half a percentage point below historic levels, wage inflation emerges. Furthermore, fiscal stimulus via tax cuts could help push up the deficit again while a rolling back in bank regulation and health care reforms could create a more elevated era for prices akin to the late 1960s.

A more medium to longer term story to the upside is based around demography. Over the last 35 years, the developed world has seen a surge in its working age populations which has been super-sized by China's relatively sudden integration into the global economy in the late 1970s. The combination created an excess of labour and depressed global wages. This surge in workers, however, has begun to reverse. This means workers may start to accrue higher levels of pricing power. While some argue that technology, such as artificial intelligence, may replace labour and further depress wages, history shows no such long-term effect. Arguably, the pace of today's technological development is as fast as it has ever been, yet the developed world is close to full employment. Growth, then, will likely continue to find demand for workers, even if it is in new areas.

So in a world where the general view is that prices will stay low for a prolonged period of time, there is much evidence that the US is at a point where 2018 may be the year where prices enter a period of structural growth. ●

In a world where the general view is that prices will stay low for a prolonged period of time, there is much evidence that the US is at a tipping point on inflation and 2018 may be the year where prices enter a period of structural growth.

Blockchain — Cutting through the current noise of cryptocurrencies

Few stories captivated the financial world last year more than the rise of bitcoin and the blockchain (or distributed ledger) infrastructure that powers it. Coinbase, an app where users can buy and sell bitcoin, became the most downloaded iPhone app in the US and now counts more accounts than the second largest US brokerage, Charles Schwab.

The exuberance is not just affecting bitcoin customers. Last year, a small UK business changed its name from “On-line Plc” to “On-line Blockchain Plc”, and subsequently saw its shares quadruple the day after the announcement, the largest jump since they started trading two decades ago. This trend is likely to continue into 2018. In Canada, 50 firms tied to blockchain and cryptocurrencies are set to list.

Unsurprisingly, views on the topic remain extremely polarised. Zealots claim the technology will bring about a wave of decentralisation that will upend banks, governments, and the world’s largest internet companies, while sceptics dismiss the phenomenon entirely, suggesting fraud and tracing predictable parallels to the 17th century Dutch tulip mania. The reality will likely be found between these two extremes.

Whichever camp you find yourself in, one thing that can be agreed upon is the market’s obsession with bitcoin’s price. What is missing is a deeper understanding of the major developments occurring in both the cryptocurrency and blockchain ecosystem. In turn, many may miss some of the watershed moments in the technology that are likely in 2018.

Before going further, what exactly are blockchain and cryptocurrencies? Blockchain is a computer network technology for setting up digital ledgers to record transactions between peers on the network. A cryptocurrency – of which bitcoin is the best known – serves as the



medium of exchange in that network. A key feature of blockchain is that it is decentralised in that there is no need for a third central party. Think of it as transacting with someone in cash versus giving them a check where the check has to be deposited and cleared through a bank before the counterparty is paid.

The first decentralised application was a peer-to-peer payment network introduced around 2010 which has come to be known as bitcoin. But there is nothing to keep other networks from developing blockchain-based ledger systems with their own cryptocurrency. Indeed this has been happening. Just one year ago, bitcoin comprised 90 per cent of the cryptocurrency market. Now it is less than half. Competitors have sprung up, such as ethereum, litecoin, z-coin, and others offering initial coin offerings and tokens. The initial coin offering mania of 2017 led to \$4bn being raised via this method.

The thousand or so alternatives that have sprung up are not strictly comparable with bitcoin. They have different properties and can be used for different purposes, ultimately to

Ryan J Todd, Ricky Dodds

enable decentralised applications, which offer a service, such as payments, ride hailing, anonymity, or social media, without the need for a central party to maintain operational control. As the bitcoin, or cryptocurrency equivalent, is merely the medium used to enable stakeholders in the network to participate in the distributed network, they might be better thought of as cryptoassets rather than cryptocurrencies.

For the unbanked and citizens in parts of the world with hyperinflated currencies, unstable governmental rule, and strict capital flow restrictions, digital, decentralised currencies are a novel and powerful solution to bootstrapping financial inclusion and freedom.

Yet the benefits of blockchains go beyond currencies. For instance, distributed ledgers can also provide new ways of assuring ownership and provenance for goods and intellectual property. Everledger, for instance, provides a distributed ledger that assures the identity of diamonds, from being mined and cut to being sold and insured. In a market with a relatively high level of paper forgery, it makes attribution more efficient, and has the potential to reduce fraud.

The use of bitcoin sometimes creates suspicion among citizens and policymakers because of its association with criminal transactions and 'dark web' trading such as on the Silk Road. But digital cryptoassets are of interest to many other legitimate parties as well, and 2018 may see their use extended in those quarters.

One place to watch in 2018 is Australia, where the first live implementation of an enterprise-grade distributed ledger will replace the current infrastructure of the Australian stock exchange. Should all go to plan, it will validate the technology and prove it has the scale and performance required for a large, financial exchange.

Watching closely will be a consortium of banks which are expected to launch a so-called

utility settlement coin in late 2018. This system allows parties to settle the purchase of securities across borders without having to wait for the traditional post-trade cash settlement and trade process. The settlement coin will sit on a distributed ledger backed by cash assets held at central banks and convertible at parity with bank deposits in major global currencies. It will also be used solely within the interbanking market in hopes of settling within seconds rather than days. For this to work, only securities that reside on a distributed ledger themselves can be settled with the settlement coin.

The project was originally launched by UBS, and now counts members including Deutsche Bank, Banco Santander, HSBC, Barclays, and Credit Suisse. Of course, it could be years before clearing houses are fully removed from the post-trade settlement process but the speed at which it has become a possibility is itself telling of the trend.

The exuberance for the technology is also making inroads in universities. Academic institutions are already offering courses in the technology. In the US, Stanford will offer its first comprehensive course on both cryptoassets and distributed ledgers in 2018. Wharton and Harvard Business School will unveil similar courses this year.

The next area where distributed ledger technology may be used is in central bank circles. A recent study of 57 central banks found that over four-fifths were exploring the potential to issue central bank digital currencies on a distributed ledger. In addition, two-thirds said they were currently testing proof-of-concept projects regarding distributed ledgers. One-fifth expect live implementation within the next one to two years.

The idea of a central bank digital currency, sometimes known as 'fedcoin', is nothing new. It was in fact suggested in this magazine in 2015.¹ As cash is the only way the public can hold central bank money, a banking system utilising deposits is necessary for a functional financial market. But if people could hold central bank currency directly, the entire system could be simplified. In fact, the Bank of England estimates a digital currency could boost output by three per cent.

While those discussions were thought of as merely academic before the financial crisis, they became more widespread in its aftermath when post-crisis quantitative easing sent interest rates negative in some countries. Yet this could only be applied to funds within the financial system, and not to cash. The great fear was, therefore, that at a certain point, negative rates could precipitate a bank run. A fedcoin was the solution to all this, and the distributed ledger would allow the fedcoin to come into being.

A central bank digital currency would have several advantages for consumers. First, it would fully eliminate counterparty risk from commercial banks. Second, the safety of a digitally-distributed ledger would make transactions more secure. Third, a central bank digital currency could also deepen access to the central bank balance sheet on top of what is currently offered today from commercial banks. If consumers had accounts directly at the central bank, it would give central banks another powerful tool to implement monetary policy by incentivising people to save or spend.

The potential impact of central bank digital currencies on commercial bank deposits ultimately depends on the instrument design. If the digital currency is issued as a one-for-one substitute for cash (or a claim on the central bank's balance sheet) and offered to large institutions at the wholesale level for settlement purposes, the effect on deposits would probably be minimal. Things could become interesting, however, if the digital currency is retail-oriented and includes the optionality of offering yield on it when stored at the central bank. This is an academic discussion for the moment because banks mostly exempted consumers from negative rates during the post-crisis period. But that may not necessarily be true during the next crisis.

The question for those advocating fedcoin is how it would affect the banking system. In today's world banks take in deposits and lend them out. If there were to be a major shift to a central bank digital currency then commercial banks would suddenly face competition as deposit-taking enterprises from a central bank. There are very real concerns over how this would

impact the funding and supply of credit to commercial banks. Taking deposit flow out of the commercial system could limit banks' ability to offer loans and they would need to lean on the wholesale market for funding, which is prone to drying up in times of financial stress. To the extent that deposits flowed from commercial banks and towards a central bank, the system would inherently begin deleveraging as central banks hold only liquid assets whereas banks leverage fractional reserve lending.

If fedcoin were to gain traction in the foreseeable future, it would probably be limited to wholesale settlement between banks. This would essentially entail replacing central bank systems for managing and transferring reserves among banks to a blockchain ledger. It is far more difficult to conceive of fedcoin replacing cash and bank deposits in the broader economy anytime soon.

That brings the discussion back to the rise and rise of bitcoin's price. It is concerning that most buyers are not doing so to gain access to distributed applications. Rather, they are speculating on price appreciation. Yet the underlying technology is genuinely revolutionary. Humans can transfer and store value, however volatile, anywhere in the world without the need for a central third party. The data would also be free from censorship. But before it can become embedded in daily society as something more than an instrument of speculation bigger things have to happen, including advances in education, regulation, infrastructure, and demonstrated live uses cases. It seems highly likely that this will continue in 2018. ●

¹ Please see Fedcoin—how banks can survive blockchains, Konzept #06, October 2015.

Humans can now transfer and store value, however volatile, anywhere in the world without the need for a central third party.

Diversity disclosures – The effect on capital markets



Staff diversity issues rarely feature in accounting conversations, however, the recent year-end enforcement priorities announced by the European Securities and Markets Authority revealed an unusual focus. This year, it will pay close attention to how companies implement a new accounting directive that requires various disclosures on staff diversity.

If history is a guide, these disclosures could have a tangible impact – unlike many of the other corporate governance disclosures companies are required to make. In fact, they could force investors to prioritise non-financial information into their stock analysis.

Specifically, the rules require most listed companies to at least disclose their diversity policy, something that will no doubt cause some companies to draft one. Companies that don't disclose will have to explain why but the negative publicity associated with non-disclosure will

undoubtedly push most firms into disclosure. Many companies already disclose much more than this and additional investor attention in this area will no doubt push companies towards best-practise norms.

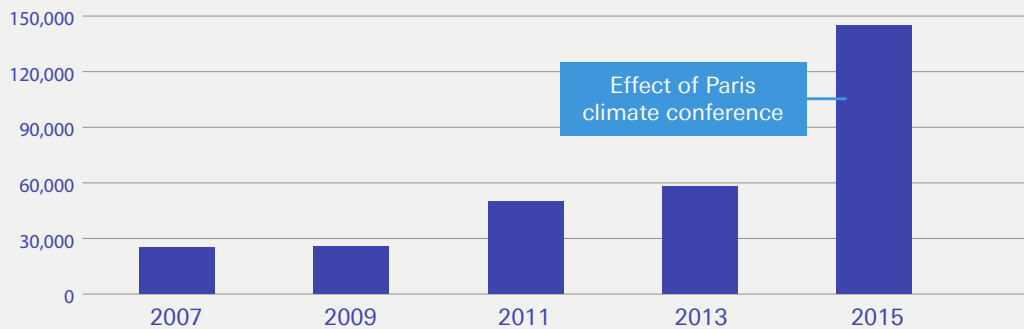
Already, there is wall of money that uses non-financial factors to discriminate among stocks. One of the highest-profile examples is Norway's trillion-dollar sovereign wealth fund, the world's biggest. It maintains a list of companies that are excluded from its investments due to various non-financial factors. Furthermore, the Church of England's £8bn endowment fund recently said it will increase scrutiny on mining companies.

If we look wider than equities, the funds allocated towards socially responsible investments have grown very large. Across all European markets, Eurosif estimates there are €10tn of funds that actively exclude certain investments that do not conform with their mandate. There are €5tn in funds that use norms-based screening methods and €4tn that actively engage and vote on issues. To put that in context, the Stoxx 600 and the European corporate bond market together are worth about €11tn.

Sustainability-themed investments may act as a guide to how the new diversity disclosures might affect investment allocations. That is because one high-profile event caused a sudden flood of money to flow into the theme. Consider that in the two years to 2013, sustainability-themed investments in Europe grew at the pedestrian pace of 11 per cent annually to €60bn. The 2015 Paris climate conference changed things dramatically. The exposure generated by the high-profile event meant that by the end of 2015, investments in the sector more than doubled to €145bn.

Given the progress shown in sustainability-themed investments, it is likely that funds that focus on gender diversity could tread a similar path. Two of the best known in the US, the State Street gender diversity fund and the Pax Ellevest women's index fund have grown to hold \$500m between them. And similar to the experience of

Growth in sustainability-themed investments in Europe - €m



Source: Eurosif, Deutsche Bank

sustainability funds, if something acts as a catalyst to direct investor attention towards them, their exposure could inflate with unexpected speed. This is important as companies that already disclose the number of women on their boards have one-third more women than companies that do not disclose, according to data from New Financial. In other words, those that don't disclose any details, are far less progressive than those that do. This could soon be a problem for the laggards.

The tangible implication is that if the new diversity disclosures act as a catalyst for funds to flow into gender-based funds in the same way that they flowed into sustainability-themed investments after the Paris Accord, then these funds could soon have a serious say, not only in corporate policies but also on share prices and a company's ability to raise capital.

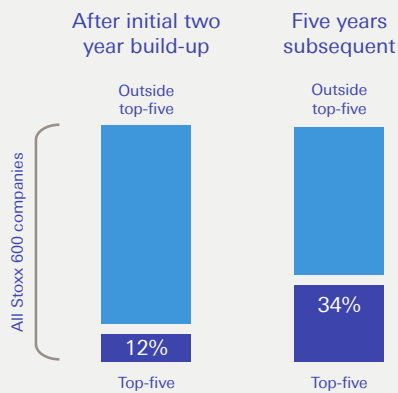
To calculate the effect of funds flowing into diversity-themed investments, consider the €86bn that has gone into funds focussed on sustainability since the Paris climate conference. If we remove from that the €13bn that is likely the result of natural growth (using the growth rate of the prior two years as a guide) we can see €73bn of money allocated to sustainable strategies as a result of the "Paris effect".

On the assumption that the diversity disclosures cause a similar amount of funds to be

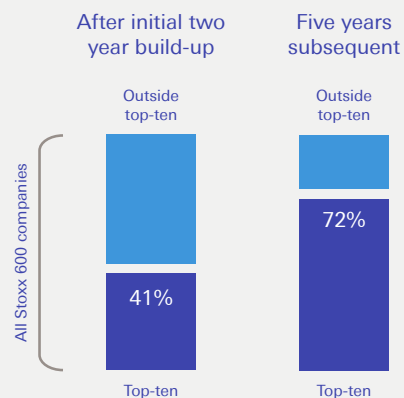
allocated towards strategies with a gender diversity focus, that would equate to 0.9 per cent of the market value of Stoxx 600 companies. Now, if we assume those funds grow at 10 per cent annually for the next five years (based on the growth rate of sustainability-focussed funds reduced by the wider market's rate of fund growth and then including an uplift factor to adjust for the fact that gender diversity funds are starting from a lower base) then these funds will be worth €120bn five years after the initial two-year buildup. That is the equivalent of 1.4 per cent of the current value of the Stoxx 600.

The well-dispersed ownership structure of Stoxx 600 companies makes this €120bn all the more significant. If these funds were allocated across all companies in proportion to their market capitalisation, then collectively, these funds would be the 12th largest shareholder in the average company and a top-five shareholder in one-eighth of companies. Five years after the initial growth phase these funds would be the seventh largest shareholder in the average European company. Breaking this down, they would be a top-five shareholder in one-third of companies and a top-ten shareholder in over two-thirds of companies. Furthermore, they would be a top-ten shareholder in every one of the 20 largest European companies.

Diversity-focussed funds could occupy **top-five** shareholder positions in the following proportion of the Stoxx 600



Diversity-focussed funds could occupy **top-ten** shareholder positions in the following proportion of the Stoxx 600



Source: Deutsche Bank

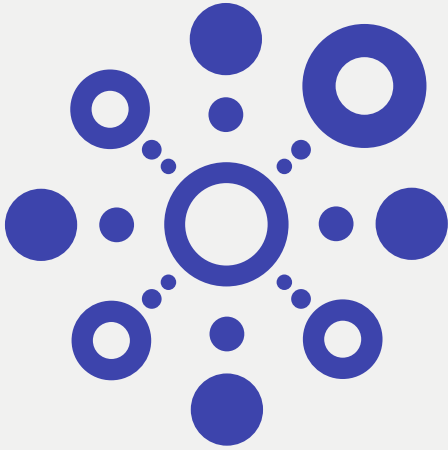
Of course, this effect would be magnified if diversity-focussed funds focus their attention on those companies that have been slow to diversify their workforce. Of course, we are assuming that these funds all filter into equities, something we believe is reasonable given this is usually the best way for investors to advocate to management and other shareholders.

Investors should be aware that one-fifth of firms do not disclose staff diversity information. And these companies almost certainly employ a low proportion of women on their board and in senior management positions. Should the new accounting disclosures increase the focus on these companies, and at the same time encourage investors to direct their funds based on diversity screening procedures, these companies could suffer relative to the broader market. Conversely, if money is directed towards companies that are more progressive, these shares could outperform.

Separately, an increased focus on diversity issues would change capital markets. Companies that wish to raise either debt or equity capital will find it easier to engage potential investors if they can prove adherence to a certain level of disclosure and policies that promote equality. For investors, the risks of not taking diversity issues into account when assessing a stock may be akin to buying a diesel car and hoping the resale value holds up despite the inevitable tide of public opinion and regulation that is making them less and less popular. ●

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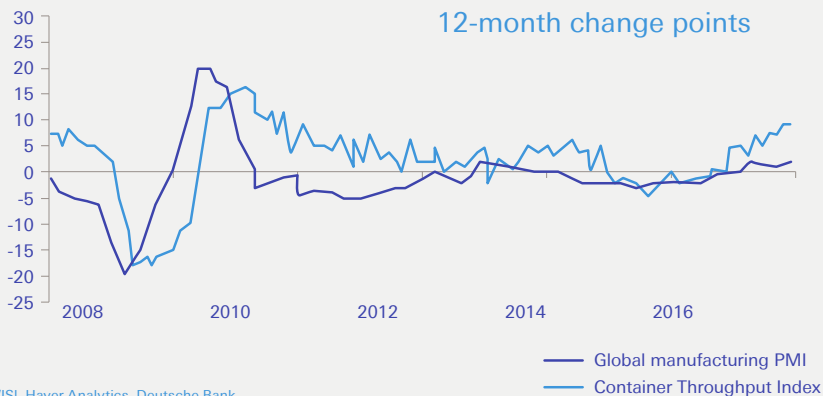
Emerging markets — The wind from the west



To a varying extent, emerging markets have long been reliant upon the more developed world and, at the moment, that dependence is working in their favour. The recent revival in the emerging market growth story has been driven by improvements in global trade, and particularly, demand in the US and Europe. Indeed, over the last two years, container throughput has risen almost 15 points on the back of increasing export volumes in emerging markets. Whereas in Asia throughput was falling just a few years ago today it is experiencing growth rates of ten per cent, while emerging nations in Europe, the Middle East, and Africa are growing at seven per cent. Latin American growth is also positive, though lags the other two regions.

Given that developed markets were a significant part of the rocket fuel that propelled emerging markets upwards in 2017, it follows that the potential tipping points in emerging markets in 2018 will involve effects from developed regions. Specifically, two risks are in play. The first is possible sanctions against

Rising global trade



Source: RWI/ISI, Haver Analytics, Deutsche Bank

Russia and the second is the fallout from incorrect predictions of US treasury yields.

If sanctions are implemented against Russia, they will affect emerging countries much farther afield. That is because being overweight Russia has proved to be the most crowded trade among emerging market investors. Optimism on the country is the result of structural reforms it has implemented, particularly those that have led to the increased credibility of its central bank. Impressively, it has tamed inflation that was running at 16 per cent in 2015 to under three per cent now. As a result, real wages have reversed a downwards trend that saw them losing ten per cent annually in 2015, when inflation was at its worst, to now be growing at 2.5 per cent. Consequently, household consumption has grown to 2.5 per cent, important because it is the key contributor to economic growth.

Yet, should broad sanctions be imposed, there is a risk that significant amount of funds would flow out of the country. In turn, this would affect domestic Russian capital markets and borrowing costs.

Separate from the threat of Russian sanctions, emerging markets remain at the mercy of US treasury yields (see our piece titled: Fixed income – the five trials ahead). One takes one's life in one's hands in making a forecast about the fate of treasury yields. After all, any observer of markets since the financial crisis knows that economists' track record of forecasting these yields is woeful. A year ago, most predicted the ten-year yield would trade in the 3.0 to 3.5 per cent range during 2017, yet it spent most of the year wrapped comfortably around the 2.3 per cent level. Moreover, it is not only the ten-year yield that matters, but also the short-term rate and thus the slope of the yield curve as it influences the dollar and determines the affordability of emerging market borrowings.

During 2018, the future of bond yields are a particular threat as emerging market governments have reduced their monetary and fiscal headroom in recent years. Indeed, when the borrowings of emerging market

governments, corporates and households are aggregated, they are about 1.6 times higher than economic output. That figure has grown by half since the financial crisis.

While these borrowings have increasingly been made in local currency, half of emerging market corporate debt is still denominated in dollars. That leaves their long-term yields fundamentally anchored by developed market policy even as short-term yields are more reflective of domestic monetary policy.

Despite these two sizeable headwinds for emerging markets, there are signs that three developments may boost emerging markets in 2018.

First, improving labour productivity in emerging markets is a positive that could push the EM growth story. Indeed, select emerging market economies show that labour productivity has increased for the past few years and is forecast to increase further, on OECD data.

Second, the next driver of productivity is demographic trends and the effects of this are likely to be highlighted in 2018. In particular, the rise in the working age population of many emerging countries has become undeniable. In fact, since 2010, the working-age population of less-developed countries has risen 12 per cent and by 2030 it will have risen more than double that. Contrast that with developed countries where the working-age population peaked in 2010, has since fallen 1.6 per cent, and should fall five per cent by 2030. Much attention has been focussed on China's working age population peaking in 2016, but across emerging markets, the peak is not forecast until many decades from now.

Third, ongoing structural reform is a key driver of EM prospects. Structural reforms can be a nebulous term used to advocate for all manner of change from increasing the political will of decision makers to reforming laws that restrict a fluid labour market. During the Euro crisis, structural reforms came to be associated with reform requests from creditor countries to debtor countries, therefore it is important to be clear what we mean by the term.

One of the most important structural reform trends in emerging markets is growing central bank credibility. This requires the central bank to create a record of targeting and controlling inflation.

This is harder than it sounds as it involves a trade-off between the short term and long term. Those acquainted with the history of inflation-taming in the US will understand. When Paul Volcker almost doubled interest rates to 20 per cent in 1981 it brought inflation down to 2.5 per cent by 1983, compared with 15 per cent just three years earlier. But what is now widely seen as a success involved a painful short-term trade off.

Similarly, some emerging market central banks have made difficult decisions. Most notably, those in Russia and India have strengthened their credibility via inflation targeting frameworks. Furthermore, some financial stability concerns are finally beginning to be addressed, as with the bank recapitalisations in India. In Brazil, the government has reduced dependence on subsidised credit and is encouraging more borrowing through the main central bank rate. It is true that these countries still have some way to go to reform other areas of their economy, including the quality of institutions, financial and goods markets, and the relatively high level of state intervention in the economy. But their central banks should be commended.

Beyond central bank reform, it is not clear whether there is a general EM story that can be told about institutional reform. What can be said is that countries that have pursued reforms to improve their institutional quality, strengthen their weak financial and goods markets and reduce their high level of state intervention in their economies have benefited. Just examining the decade to 2016, it is possible to detect a positive relation between real economic growth and structural performance indicators. At the top of the reforms list are Hong Kong and Singapore. Both countries boosted their scores in the structural reforms index by up to one-fifth to about 1.5 and both experienced real economic growth of between 2.5 and 4.5 per cent each year. In contrast, countries such as Venezuela and Argentina saw their structural index scores fall further negative and both saw their economies grow between zero and two per cent in real terms.

Moving beyond these themes of productivity, structural reforms and demography that will unite emerging markets in 2018, there are individual countries that deserve special attention. The first is Brazil, a country for which

we hold high hopes but one that has the potential to lose its current momentum of reform. A consumption-led recovery means the recession finally ended in 2017 and, encouragingly, service-based sectors accelerated. Consumption is growing as consumers respond to lower interest rates and a stabilisation in the labour market. Monetary easing should help encourage this. Despite this, reform remains beholden to political processes. One of the metrics we are looking to as an indicator is investment which has continued to perform poorly but should accelerate by 2.6 per cent in 2018, if reforms remain on track.

Colombia is another country to watch. While a recovery depends upon policy stimulus, growth appears to have bottomed out and the recent resilience in oil prices has helped. It is true that corporates and households are postponing credit and investment decisions. However, after elections in the first half of 2018, this uncertainty should fade. One event to watch is the sale of the first of eight concessions of the 4G infrastructure programme which will involve \$4.6bn in investment. On top of that, if the government stimulates the economy further benefits could accrue.

The good news for emerging markets is that conditions in 2018 are likely to remain supportive of productivity growth, the key driver of long-term outperformance. Yet, as emerging markets retain a capital dependency on developed markets, the window for carrying out these reforms is out of their control and may close with the next developed market slowdown. Those countries that take advantage of the current opportunities will be the ones that outperform over the coming decades. ●

The good news for emerging markets is that the conditions in 2018 are likely to remain supportive of productivity growth, the key driver of long-term outperformance.

China property — Propping up consumption



“A place to live in,” is how China’s president Xi Jinping described residential property at the recent party congress. It wasn’t the first time he had said as much, so with such a clear tone from the top, it is no surprise that China has been tightening controls on real estate speculation for over a year now. As a result, the growth of property sales turned negative late last year while property prices softened in many cities. Expect 2018 to be the year when these controls really bite, not just on the property market but on overall consumption that has been propped up by the property wealth effect.

Zhiwei Zhang

For instance, provincial officials in all tier-one cities and many tier-two cities have restricted purchases of second and third homes. In addition, other tier-two cities have increased down payment requirements for second homes. The controls have even extended to first purchases. Last April, two days after China declared it would build a new special economic zone on a piece of rural land in Xiong’an, roughly 80 miles south of Beijing, the government banned housing sales in the region.

Even tighter controls on real estate are likely. On one level that is welcome. A “one-way-bet” mentality has clearly taken hold in parts of Chinese real estate. For one thing, prices of existing residential dwellings are up by half since

mid-2015. Market surveys suggest about one-fifth of residential home sales in 2016 were related to investment demand (buyers of second homes), doubling the average level of six to ten per cent between 2012 and 2015.

As a result, household debt has more than doubled to 46 per cent since the financial crisis. While this is still far below the average OECD level of 102 per cent of output, it is already higher than in some other large emerging economies. Household mortgage leverage could even be higher if down payment loans provided by real estate developers or via shadow banking loans are taken into account. There is anecdotal evidence of excess exuberance, for instance the divorce rate in Shanghai has increased to bypass purchase restrictions.

On another level, however, tightening controls on real estate could prove problematic because the property sector is one important factor driving Chinese consumption growth, and if that slows, the world will feel the pinch. In fact, from a trade perspective, the incremental demand from China (excluding processing imports) was more important than that from the US in 2016 and the first half of 2017. As such, 2018 could see a tipping point where slowing real estate precipitates slower Chinese consumption growth.

The evidence is striking. Consumer confidence in China was recently at a ten-year high – surpassing its levels in 2009 and 2010, when nominal output growth was as high as 18 per cent and when the government launched a \$4tn stimulus package. Imports have soared, pushing China's current account surplus to 1.2 per cent in the second quarter of 2017, about one-third the level recorded in 2010. Moreover, short-term consumer loans have soared, accounting for a tenth of total new bank loans compared to two per cent in 2007.

Even with this level of consumer confidence, and soaring imports and short-term loans, retail sales are stable rather than booming. Imports may have risen 17 per cent last year

(compared with a five per cent drop 2016 and a 14 per cent drop the prior year), but the equivalent figure for retail sales growth was stable at ten per cent in July 2017 – the same level hit in the previous two years.

The divergence between retail sales and other metrics suggest that this round of China's consumption boom is driven by the wealth effect from the property bubble.

That is certainly what is indicated by the fact that the consumption boom seems stronger for luxury goods than staples. This was highlighted earlier this summer with the "consumption upgrade" of Chinese consumers. In effect, consumption of SUVs and entertainment rose much faster than total retail sales.

In our estimate, this is representative of the most important fact in the Chinese economy today: namely that property prices since 2010 have created dramatic "paper wealth" across Chinese cities. The ratio of wealth gain from property price appreciation to disposable income in 2016 was most prevalent in the major cities – 4.9 times for tier one cities, 3.8 times for the top tier two cities, 0.6 times for the bottom tier two cities, and 0.8 for so-called satellite tier three cities.

Far from stabilising, the wealth effect appears to be spreading to tier two and tier three cities. In the first three quarters of last year, the property wealth effect was 1.9 times disposable income in bottom tier two cities, 2.4 in satellite tier three cities, and 1.9 in other tier three cities.

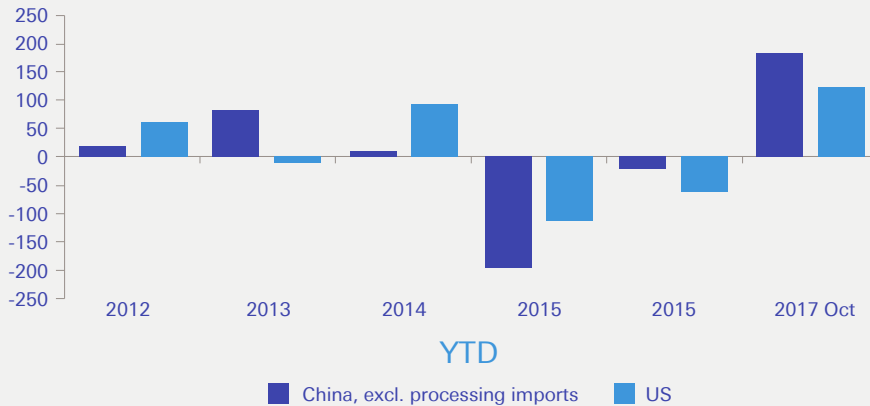
Five years ago, the wealth effect was also high in tier one cities but not in smaller cities. In fact, the ratio of wealth gains to disposable income in the former was 3.1 times in 2013. The macro impact was therefore limited, as the total population in tier one cities was just 71m. But the population in tier two and satellite tier three cities is much greater, at around 250m. Therefore, the current wealth gains are much more significant. The combined population of tier one, two and the satellite tier three cities is 600m, or almost three-quarters of the Chinese urban population.

One way to illustrate this wealth effect is to dig deeper into city level data. We classified 11 cities in Zhejiang province into “rich” and “poor” groups based on their per capita output in 2015. Both rich and poor cities have seen a recovery in consumer confidence indicators since 2016, but a more sizable consumer confidence recovery was witnessed in the comparatively poorer cities. The economic fundamentals cannot account for the divergence in output growth. In fact, real output growth was higher in the richer cities than in the poorer ones. Instead what was decisive was the path of property prices. The comparatively richer cities imposed tighter property price regulations in those cities whereas

the poorer ones have instead allowed prices to take off. At this micro level, it appears to show that consumption is tied to wealth effects from property price gains.

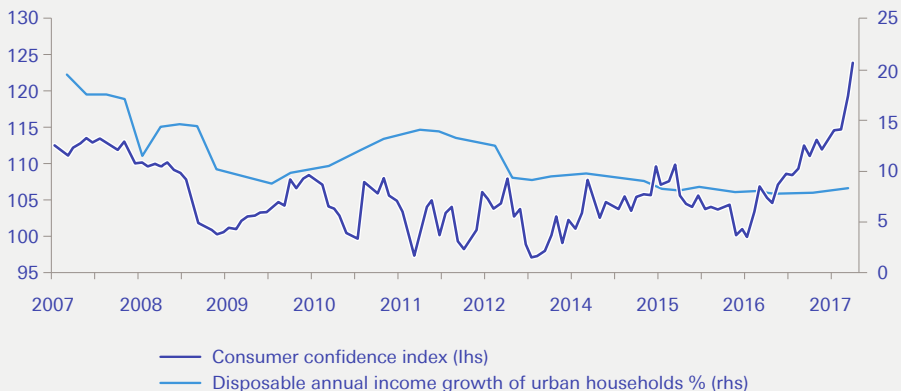
The wealth effect of the property bubble clearly has important implications for China. In the short term the housing boom provides meaningful support for the economy on the consumption side, which has boosted consumer confidence, imports, and short-term loans while even propping up retail sales. But the effect is unlikely to last forever because consumption is not supported by economic fundamentals but by price increases. When property prices drop, Chinese households may have to cut consumption.

Import growth, China against the US (\$bn)



Source: Deutsche Bank, Haver Analytics, WIND

Consumer confidence has rebounded



Source: Deutsche Bank, WIND

The wealth channel may, depending on economic circumstances at the time, amplify rather than dampen economic stress.

This is not just a story for China but for the world. China's wealth effect has been a supportive force for the global economy since 2010, though its contribution has not always been acknowledged. As mentioned earlier, incremental demand from China (excluding processing imports) has become more important than that from the US in 2016 and the first half of 2017.

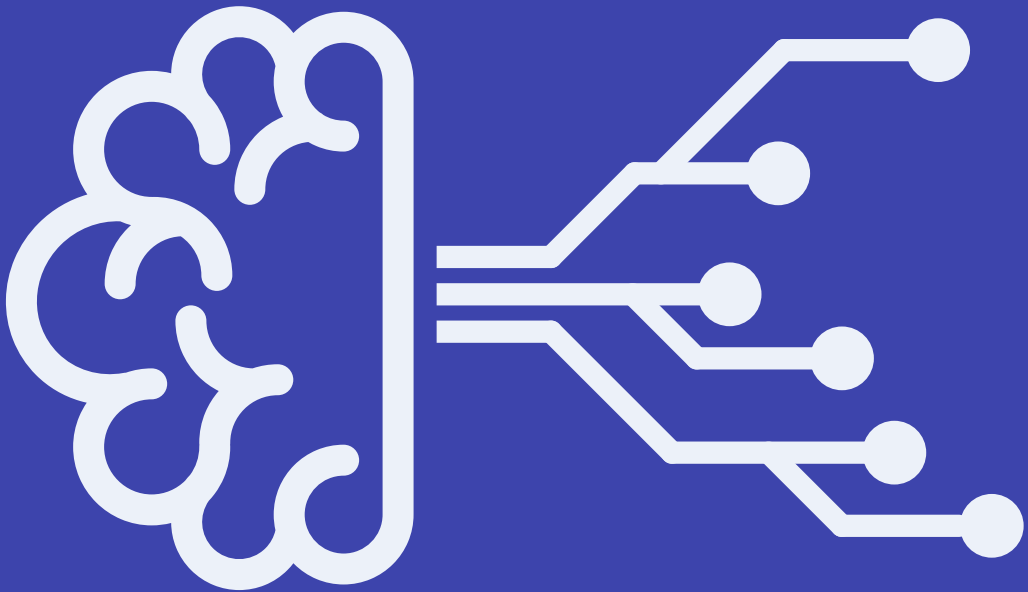
But the wealth effect also has a meaningful impact on Chinese and global current accounts. A current account surplus is simply the difference between what the country saves and what it invests. China's current account surplus is shrinking because of the rise of domestic demand. Because higher consumption levels have the effect of depressing savings they also contribute to a falling current account surplus. In the past four quarters, China's current account surplus dropped to 1.2 per cent of output from 9.9 per cent in 2007 and 3.0 per cent in 2015. If property prices continue to rise, the wealth effect would rise further and drive China's current account surplus even lower. But in doing

so, the world's savings and investments have to balance out. Therefore, greater dissaving in China would arithmetically force greater saving elsewhere in the world, a development that would be transmitted – all things being equal – by higher rates.

Beneficiaries of China's consumption boom should therefore pay attention to the development of China's property cycle. With the continued policy tightening in this sector, growth of property sales turned negative late last year while property prices softened in many cities. The consumption boom for luxury goods may moderate in the first half of 2018 and the government may loosen policies in the property sector by midyear to turn the cycle up in the second half.

The sustainability of the consumption boom in China hinges on the sustainability of property prices. As President Xi has indicated, he aims to design a mechanism that can make the property sector sustainable in the long term. The effectiveness of such a mechanism will have a significant impact on China and the global economy. ●

Artificial intelligence – Finally out of the lab



In the late 1400s, Leonardo da Vinci designed a robotic knight that used a system of pulleys and gears to walk, sit, and work its jaw. But despite the ongoing human fascination with artificial intelligence, it would be 500 years until the technology could claim to have a widespread, practical purpose – in the voice assistant in mobile phones. Since then, the technology has exploded to the point that some of the most in-demand developers in Silicon Valley are those pushing the boundaries of AI. >

Now the technology is established at a basic level, 2018 promises to be a seminal year, a year in which the industry will race to establish the standards that could determine the entire future of the technology and what companies benefit the most.

The first trend to watch is the transition from training to doing, a threshold more and more machines are reaching. That is, from teaching machines how to think to seeing them actually accomplish tasks. The catalyst for this will be new chips, the so-called specific integrated circuits, due to be released this year. That is important as different types of computer processors are useful for learning and doing. For example, training and deep learning functions are best accomplished by graphics processing units, such as those made by Nvidia. These are units that were originally designed to make video games look better and are able to process different types of calculations at the same time. In a test between regular computer processors and graphics processing units (GPUs), the latter was able to learn how to recognise people by watching films for just one per cent of the cost of regular processors.

That has made GPUs extremely important for the current phase of artificial intelligence research which involves the use of large amounts of data to give machines the information to make decisions. The next step, however, involves translating those decisions into action. That requires a different type of computing power and GPUs may be less important than the specific integrated circuits which are made by the likes of Google and Intel. As the shift towards implementing learnt knowledge becomes more widespread, so too will the need for these specific integrated circuits.

As a result of the new chips, this year will likely see the development of so-called Industry 4.0 where artificial intelligence is integrated into everyday products. The first and most obvious use is in industrial and consumer robotics on the production floor. "Smart factories" are being designed where cyber-physical systems monitor the physical processes of the factory and make decentralised decisions.

To demonstrate, a leading robot manufacturer, Fanuc, recently unveiled an assembly-line robot which can learn to pick randomly-orientated objects out of a bin. A video camera picks up footage of each attempt and feeds the subsequent success or failure back into the system for use in the next process. And this learning can easily be shared. In other words, five robots working together for one hour can accomplish what one robot can do in five hours. The same scalability does not apply to human workers who cannot share learning quite so efficiently.

Another example is a loading robot. After four hours of training, the success rate of part transfers rises from 50 per cent to 70 per cent. After ten hours, it rises to 90 per cent, close to the level of a skilled human worker. Finally, artificial intelligence-based breakdown diagnostics can detect problems in a system up to 40 days in advance of a problem. In contrast, humans were only able to detect a problem when it became

noticeable that it was about to break. Some researchers estimate these types of intelligent systems may replace six per cent of US jobs by 2021.

This year is also likely to see the application of deep learning to widespread use in autonomous transport. Here the stakes are arguably higher as lives are on the line and no computer code can be written that can take account of all possibilities. That means the underlying artificial intelligence has to learn to expect the unexpected.

The catalyst for the proliferation of this technology in 2018 may be the electric car pioneer Tesla. While there are about 100,000 Teslas on the road, the company has announced that all future models will be equipped with an onboard “super computer” that can provide full self-driving capability. These computers will use an Nvidia platform, allowing them to process large amounts of data for deep learning.

This deep learning is likely to make it practical to complete the final step in the three-step system for widespread autonomous vehicle implementation. The first step is perception, where the sensors identify objects and classify them. The second is localisation, where the computer integrates what the sensors are saying with landmarks, maps, and position information. The science behind these steps has been relatively well developed over the last few years.

It is the final step, path planning, that has proved difficult. This is the ‘doing’ step (as opposed to the previous two ‘learning’ steps) and is also in some ways the most critical. If companies do not perfect this step before putting cars on the road, accidents could sway public opinion and force politicians to impose regulation on the growing sector. Path planning involves using the data from the first two steps and then integrating it with the learning from the artificial intelligence. This then integrates with the vehicle’s position coordinates and endpoint goal. Altogether, the system navigates around potential obstacles and predicts how other moving vehicles will react and what that means for the amount of free space available to drive the car.

The other catalyst for a 2018 surge in autonomous driving are new chip and systems. Intel and MobileEye have developed their own system while Nvidia will release its Xavier chip this year. This will integrate both a GPU unit that is extremely useful for deep learning, and a regular processing unit that can be more suited for decision making. As a result, more carmakers will take their autonomous cars out of the testing phase and onto the road. The implication for companies that make these types of chips and systems is significant. In fact, the total addressable market could double each year for the next four years and by 2021, these systems will likely be a billion dollar industry.

The next area of artificial intelligence that will likely receive a boost in 2018 is smart cities. Alphabet’s announcement last November of a partnership with the city of Toronto to develop a new waterfront precinct is a big step forward for the roll-out of devices able to connect to

the internet of things. It is true that experiments with smart cities have not succeeded in the past, notably, Dongtan in China and Songdo in South Korea. Essentially, the designers found it difficult to overlay technological infrastructure onto urban environments that already patch together different systems and have a messy format that no one would design if asked to do so from scratch. In addition, existing residents will always have competing ideas about how the infrastructure should be implemented and can usually halt development via local council channels.

Hence the benefit of the new precinct in Toronto. For starters, it will be designed from the ground up rather than overlaid on top of an existing city. Perhaps more importantly, it will be designed in conjunction with input from many different parties. This approach, along with the backing from Alphabet, will likely ensure the drive towards smart cities, and the things that go in them, is sustainable.

The first thing to populate smart cities will be video cameras. While some worry about the Orwellian implications, the proliferation of cameras appears to be inevitable. In fact, some companies believe there will eventually be one billion video surveillance cameras in cities. It has established a partnership with companies in Asia, such as Hikvision and Dahua, which together own one-third of the global market share for video surveillance.

Another company to watch in 2018 is Ambarella. This company is the leader in video image processing for security cameras, as well as drones, sports, and body cameras. In the first half of 2018 it will launch its first "Computer Vision" chip, purpose-built to add intelligence to these devices.

These cameras can then provide the information for artificial intelligence to control everything from traffic flows to disaster response.

The proliferation of cameras is just one of the areas of artificial intelligence that has just reached a critical juncture. In fact, if 2018 delivers on just half its promise then the practical application of the technology will mean people's lives will be noticeably changed by the end of the year. ●

The proliferation of cameras is just one of the areas of artificial intelligence that has just reached a critical juncture.

Performance cars – The new growth engine



Tim Rokossa

When Mercedes revealed its €2.7m Project One hypercar at the Frankfurt motor show last September, many pundits rolled their eyes. Sure, the 275 Project Ones set for production have already been sold to Mercedes' best customers, giving the company a headline revenue boost of €750m. Yet, as the fully absorbed cost of the vehicle is undisclosed, it is easy for many to wonder if its design and production was a hobbyist's folly. >

There is more to the story. Indeed, it may be beside the point whether the Project One car was a good use of Daimler's capital relative to its other production lines. That is because performance cars have been quietly revving up the bottom lines of carmakers. And 2018 may be the year that investors take notice.

First, consider Mercedes' performance car line, AMG. These cars represent only one in every 20 cars sold by parent Daimler, however, they are showing remarkable growth. In 2017, about 140,000 were sold, about one-third more than in 2016 and triple the number just three years earlier. In 2018, similar growth is expected. At rival BMW, the growth of its performance line, M, has also been far higher than the rest of the company's cars, albeit a little behind AMG's growth rate.

With this kind of growth, performance car sales by mainstream car brands are quickly catching up with the sales of pure-play performance brands. If we compare Mercedes' AMG line with Porsche, four years ago, the 30,000 AMG cars sold was equivalent to just one-fifth of Porsche's unit sales. In 2018, the 180,000 expected to be sold will be the equivalent of about three-quarters of Porsche's production.

That unit growth is significant as performance cars are profitable. First, look at Porsche and Ferrari in isolation. The former generates a margin on earnings before interest and tax of 17 per cent. Ferrari's margin is a little higher at 20 per cent. That is double Daimler's overall margin, proving that performance cars can be very profitable if customers are willing to pay up. Of course, Porsche and Ferrari exclusively make high-end performance cars and their customers have a long history of being willing to pay a premium to own either of the two horse logos. But are car lovers willing to pay a premium for a performance car built by a non-performance car brand? After all, while Mercedes and BMW have long been associated with motorsport and particularly Formula One, they are probably best known for building vehicles for everyday driving.

First, we took Mercedes and examined the list prices of the regular cars within the various production classes it produces. We then compared them with the list price of the equivalent AMG-branded car in each class. For example, the entry level A-class hatchback costs €23,000 but the equivalent AMG version costs almost double. Of course, comparisons are muddled somewhat by the fact that the performance car naturally has a better engine and tends to come with additional trimmings, however, these cannot account for the price premium on their own.

If we go up the line and examine Mercedes' higher-end production lines, a similar pattern emerges. The AMG version of the C-class costs more than double the regular version, the AMG E-class is

about two and a half times more expensive while the AMG S-class is about double the price of the standard model. The weighted average selling price on an AMG car is about €90,000.

A similar pattern emerges at BMW. The M performance version of the X5 SUV costs double the regular version. At the smaller end of the BMW range, there is a similar mark-up as the M 2-series coupe costs €60,000, double the price of the non-performance equivalent. The weighted average selling price on a BMW M car is about €80,000.

It is important to note that although there is considerable pricing power for performance cars within each brand, it does not necessarily mean the pricing power holds in the same way between brands. If we examine the performance SUVs of Mercedes, BMW and Audi, and then compare them to the equivalent SUV made by Porsche an interesting discriminator emerges. While the €140,000 charged by Porsche for its SUV is about the same as the Mercedes AMG version, it is 15 per cent higher than BMW's equivalent, and 30 per cent higher than Audi's.

Of course, it costs extra to develop the technology and marginal features of performance cars compared with regular cars. To estimate how these costs affect margins we look to Porsche for guidance. Given the prestige premium Porsche is able to demand, it is unreasonable to expect the performance cars of mainstream carmakers to rival its 17 per cent margin of earnings before interest and tax. However, it is likely that 15 per cent is a reasonable estimate. True, operating margin is not independent of volume, and Porsche outsells its rivals' performance cars, however, for the sake of estimating the increasing importance of performance cars to the industry, a 15 per cent margin offers a reasonable anchor.

Throwing these calculations forward, we can see that BMW's performance cars currently add six per cent to revenue and nine per cent to earnings before interest and tax. That is double the earnings contribution of five years ago and is one reason why the group's operating profit has risen one-tenth over that time. At Mercedes, the impact is even larger. The AMG performance cars contribute 14 per cent to revenues and 20 per cent to earnings. Similar to BMW, the earnings provided by the performance cars at Mercedes have doubled as a proportion of the group's earnings.

Whilst impressive, these figures do not do justice to carmakers' increasing reliance on their performance car divisions. For that, we need to determine what proportion of a company's value is derived from performance cars.

Take Mercedes. In 2017, it sold about 140,000 performance cars under the AMG moniker. If these cost an average of €90,000 each, then that translates into €12.6bn of revenue. If we then apply the assumed 15 per cent margin and take off 30 per cent for tax, the net profit to Mercedes of its AMG division is €1.4bn. If we now apply Porsche's multiple of 18 times earnings (when it was not consolidated into Volkswagen) the implied market value is €24bn. That equates to about one-third of Daimler's market value, despite the fact that an AMG car accounts for only one in every 20 of the cars Daimler produces.

If the growth in performance cars continues in 2018, investors will pay more attention to this theme. However, even though sales of these cars are rising quickly, they are doing so from a small base. That makes it likely that equilibrium has not yet been established in the market. Hence, while 2018 will likely bring increased investor scrutiny on performance car divisions, carmakers will likely experience increased competition. In this case, it seems inevitable that the pricing premium for performance cars will have to adjust to an equilibrium level as competition becomes more intense. Eventually, this may put a squeeze on margins, particularly for those carmakers that are lagging in their development of a differentiated performance car brand. For those carmakers that have established themselves in this niche, the key will be backing up their current offering with new cars that are just as sporty but also stand out from the crowd. ●

Mercedes' AMG line may add as much as one-third to Daimler's market value despite accounting for only one in every 20 cars produced.

Fixed income — The five trials ahead

If there is consensus about anything in the bond market it is probably that the bull-run dating back to the early 1980s is over. The debate now is primarily about whether bonds are in a coupon clipping trading range or headed for a bear market. It would probably take another economic collapse to rekindle the rally, and few, other than some perma-bears, see that coming in the foreseeable future.

As December was winding down, the general view in the market was that rates are headed higher in 2018. With our economists expecting four interest rate hikes in 2018, the Fed funds rate will rise to 2.5 per cent. The ten-year treasury yield is expected to rise to 2.95 per cent. In Europe, the ECB is expected to hold off raising rates until 2019, but the ten-year bund yield is seen rising from 35 basis points to 90 basis points as the ECB tapers its bond buying program.

These projections have strong support, however, it is also a fact that analysts, egged on by the Fed's dot plots, have been expecting rates to rise over the next few quarters for years now. One year ago, expectations were that the ten-year treasury would yield 3.0 to 3.5 per cent in 2017. Instead it spent most of the year wrapped around 2.3 per cent.

It is fair to say few have had much of a clue how the extraordinary monetary policy measures during and after the crisis would play out. And now as the Fed pushes on its unwinding strategy there is also no real template for how it will play out in the coming quarters and years. Instead of positing answers that are sure to be wrong, here are some potential tipping points that investors should watch for.

First, expect more noise out of the Fed in terms of more muddled messaging and static. Depending on how the White House fills the empty positions on the Board of Governors, the Fed could soon have quite a different philosophical bent than the data-driven approach that marked the Bernanke/Yellen years. After all, Jerome Powell is the first Fed governor since William Miller, who left office in 1979, with no formal economics training.

John Tierney

Even if, as is likely, the Fed continues its current path of raising rates and letting its bond portfolio gradually run off in 2018, the meeting minutes could raise more questions about policy over the intermediate term. Marvin Goodfriend, for example, is reportedly not a proponent of the bond-buying program. He could push for a faster runoff. Other appointees could favor a more mechanical policymaking approach such as the Taylor Rule.

The Fed is also starting to consider whether to change its current policy approach of targeting a two per cent inflation rate with a higher rate, or setting another policy target such as nominal economic output growth. While this is unlikely to change in the coming year, a contentious debate could be another source of uncertainty and volatility for markets.

Then there is the vexing question of what the Fed will do if and when inflation hits its two per cent target. Will it apply the monetary brakes, wait to see if inflation settles into a comfortable range, or have a noisy argument? All three possibilities pose distinct challenges for investors.

A second key indicator to watch is the slope of the yield curve. Both US and European yield curves are expected to steepen and if they do they will probably be a non-issue. The economy generally does well in a steeper yield curve environment because it suggests monetary policy is accommodative. The concern is what it means if the yield curve continues to flatten. When the yield curve becomes completely flat or inverts, a recession often follows because monetary policymakers have pushed short rates too high.

This scenario could easily occur if the Fed keeps raising the Fed Funds rate each quarter even if inflation moves only slowly if at all towards its two per cent target. The Fed may lead itself into such a situation because the economy seems strong enough to withstand higher rates, and because the Fed is anxious to raise rates enough to offer capacity to cut in a future recession without hitting the zero lower bound again. It would be ironic if its efforts to do so were to bring on a recession before it reached escape velocity.

There is another scenario. Central banks in some Asia-Pacific countries and Canada have



been turning to macro-prudential policies to rein in hot real estate markets, often through tighter limits on mortgage lending. The goal has been to slow bubbly markets without raising rates. If the US is raising rates while other countries are trying to keep rates low, foreign inflows in US bonds could rise. Indeed foreign inflows are one reason why longer maturity rates did not rise in 2017. If the US yield curve flattens because of a combination of a rising policy rate and foreign demand for bonds, it may not imply that a recession is nigh – although markets and companies might start acting as though one were imminent with unpredictable consequences. In any case the US economy would still be vulnerable to a withdrawal of those funds.

Third, investors should pay close attention to the Fed's QE unwind program. A simple way to look at the unwind is simply as a repeat of the last seven years but in reverse. Since the huge monetary influx did not translate into much lending activity or price pressures – tellingly, M2 velocity dropped one-quarter to 1.5 times – a reversal should not pressure banks to curtail or call in outstanding loans. Likewise, tighter money may not have much impact on inflation or economic activity. Rather, as the money supply growth slows volatility will rise.

Another way to look at the QE wind-down is on a flows basis, or change in the rate of purchases. Looking at global 12-month rolling flows (combining Fed, ECB and Bank of Japan flows), there have been two previous balance

sheet wind-downs; in 2014 and in 2015 flows declined without much market volatility. And Fed flows declined continuously for two years starting mid-2014 and markets took it largely in stride. A sanguine investor may ask why the 2018 wind-down will prove any different.

One key difference is that a few years ago, tapering by the Fed was largely consistent with the reduction in government issuance. In fact, treasury purchases never exceeded net issuance in any 12-month period. In Europe and Japan, QE has been proportionately far larger. In 2017, ECB and Bank of Japan government bond purchases peaked at seven and three times larger than their respective net issuance respectively.

Those multiples are unsustainable, not just because central banks will be looking to wind-down their balance sheets but governments are also poised to increase spending and that presents downside risk. The proposed unfunded tax plan in the US is an example, while the recent UK budget included some loosening of the fiscal purses. In Germany, a new coalition could include some fiscal spending.

To the extent that tapering will coincide with a move towards increased government spending globally, then the ratio of rolling central bank asset purchases versus net issuance will surely fall after peaking in 2017, affecting technicals for bonds. Therefore, 2018 has the potential to be a substantial tipping point in the supply/demand dynamic. This is especially the case in Europe. As the realisation mounts that ECB's quantitative easing withdrawal is much more significant in relative terms to that seen in the US in 2014-15, then fixed income markets could become more vulnerable and volatility spikes should become a much more common occurrence.

In short, just as no one really understood how quantitative easing would work during the buildup, no one knows how the unwind will play out.

Fourth, and closely related to the balance sheet unwind, is how banks respond. Before the financial crisis the ratio of bank loans to deposits in the US was close to one for one – a relationship that had persisted for decades. Following the crisis, deposits resumed growing at near their historical rate but lending languished. Today, the ratio of loans to deposits is less than 80 per cent. Most of those excess deposits are on deposit with the Fed and funding the Fed's bond portfolio. What happens to those deposits as the Fed's bond portfolio runs off?

One possibility is banks invest in securities that the Fed no longer owns. That essentially would be a continuation of QE. A second option is that nonbanks may buy the securities, and in the process, withdraw bank deposits. Third, banks could deploy those deposits as loans. They don't

face the capital and regulatory constraints they did earlier in the decade, and if economic growth remains robust loan demand may rise.¹ That in turn could lead to economic growth and more inflation, and present the Fed with the tough choice of when to raise rates further.

European banks are in a similar position. Most of the proceeds of the ECB's bond buying program remain on deposit with the ECB. Across the eurozone, bank loan portfolios and deposits have been little changed since the crisis. Since the ECB is unlikely to start unwinding its bond portfolio before 2019, this is a less pressing issue. But the robust growth in Europe does raise the question of whether European banks resume lending in 2018, and if so, do they raise new deposits or lend against excess reserves?

A final key indicator to watch in 2018 is the US labour market. Over the past couple years, the labour force has increased by about 1.2m annually, as millennials entering the labour force more than offset baby boomer retirements. It is possible that labour force growth will fall below 1m in 2018 as retirements escalate. While the baby boomers have been in retirement mode now for nearly a decade, the later and largest cohorts with 4m or more people (now aged 53 to 60) are now entering the years when their participation rate falls sharply. The participation rate for 53-year-olds is 77 per cent; that falls to 65 per cent for 61-year-olds and 40 per cent for people aged 66.

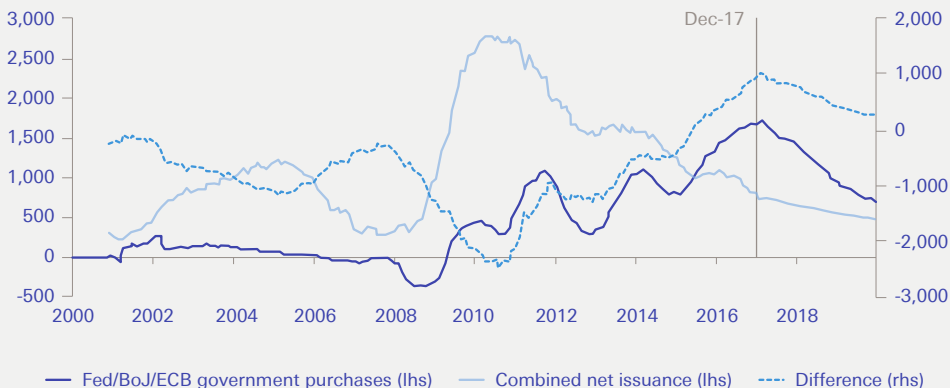
If new entrants and retirements follow the historical pattern, these figures imply that labour force growth could slow to around an average of

85,000 monthly. With the economy near full employment, payrolls should grow by a similar amount. That is well below the average monthly payroll gain of 185,000 of recent years. It is possible that more baby boomers may opt to stay in the work force while the economy remains strong. This could result in monthly payrolls data being rather more lumpy than usual, surging in some months and collapsing in others. The labour market would then become less reliable virtual real time indicator of how the economy is doing.

To conclude, there is much talk about normalisation, and after nearly a decade of 'new normal' it sounds most welcoming. But the hope that normalisation might be around the corner has been around for nearly as long as the 'new normal'. Could 2018 finally see a breakout? Given the new team at the Fed, and QE flows at the three major central banks will no longer be increasing relative to net issuance, bond markets will see an abrupt shift in their supply and demand dynamics. And all this against the backdrop of growing US fiscal stimulus. That means the coming normalisation will take place in uncharted territory, not the standard late-stage of an economic cycle. Therefore, it is likely the environment for fixed income will deteriorate after many years of strength even if many in the market may prefer otherwise. ●

¹ Banks must hold 8% of risk-based capital against loans. After the crisis, bank capital requirements were increased and banks needed several years to build up their capital bases. During this period they didn't have sufficient capital to grow their loan books.

G-3 (US, EU & Japan) QE vs. net government bond supply – fixed income support reversing in 2018 (\$bn)



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Augmented reality — No longer seeing things

For all the talk of augmented reality being the next big thing, the failure of Google Glass suggested the actual reality would be far different. A quick look at Google Trends – a somewhat more successful product – showed that interest in Google Glass peaked in May 2013 and has subsequently dwindled to less than a twentieth of that today. Failure also beset Microsoft's HoloLens 2, which has kicked its release date to 2019. At some moments, augmented reality has seemed to channel Charles de Gaulle's quip that Brazil is, "a country of the future, and will always be."

Yet these false starts may yet give way to a technological revolution. Augmented reality never took off because the price of access was too high, with devices costing north of \$1,000. That led to a classic chicken and egg problem when it came to content: only a few developers were on the platform because only a few customers were, so only a few developers were.

Both those problems show signs of being solved – the number of devices is now on the verge of rising exponentially while costs are falling. As a result, the number of developers is poised to take-off. Indeed, 2018 may prove to be the year when augmented reality finally hits the road.

But first, it is worth understanding what augmented reality actually is. AR places virtual figures or texts onto a real life scene that people can see through their smartphone display or smart glass lens. This contrasts with virtual reality

that completely replaces what the user can see with something else, a technology that to date been held back by clunky software and frequent bouts of dizziness for users.

Today, AR applications are limited to simple apps on a mobile device. Examples include the well-known game, Pokemon Go, an Ikea app for home decoration planning (before a trip to Ikea), a walking tour around a museum for education purposes, fashionistas trying on clothes virtually, or navigating a shopping mall. Another app, Measurekit, allows users to measure short distances between two points on surfaces.

The catalyst for AR to go beyond these simple uses is Apple's recent efforts to jumpstart development of the whole category. The most visible aspect of Apple's commitment to 3D sensing, the key technology that can enable feature-rich AR in the future, is the release of its facial recognition software, called FaceID, on the newly-launched iPhone X, a technology enabled by a new 3D sensing module. Less visible to consumers, Apple's latest operating system update last October brought simple AR features, via its ARKit developer platform, to its smartphone line-up. The move has expanded the base of AR devices into the hundreds of millions, allowing developers to generate revenues from functions, many of which have yet to be conceived (beyond obvious use cases like gaming and home decoration). It is not unfair for Apple's software chief, Craig Federighi, to say that the iPhone is on track to be the "largest AR platform in the world" by the end of the year.

If anything he may have been too modest. Even before the launch of the latest operating system, there were already over five times more ARKit demos on Youtube than Google Tango (another platform) achieved in two years. The buzz among developers is palpable.

By 2019, Apple is likely to roll-out even more sophisticated 3D sensing hardware on all its high-end devices, which will take 3D sensing technology on to the rear of the device, providing motion tracking and environmental understanding to the scene (so for example, the Pokemon will then know to walk around the table, not casually through it). By 2020, Apple will roll out 3D sensing across its portfolio not just its high-end models, further increasing the base of feature-rich AR devices.

No wonder Tim Cook, Apple's usually sober chief executive, exclaimed in February 2017, "I regard AR as a big idea, like the smartphone. The smartphone is for everyone; we don't have to think the iPhone is about a certain demographic, or country, or vertical market, it's for everyone. I

think AR is that big." He doubled down again in June, when he said, "I am so excited about [AR], I just want to yell out and scream."

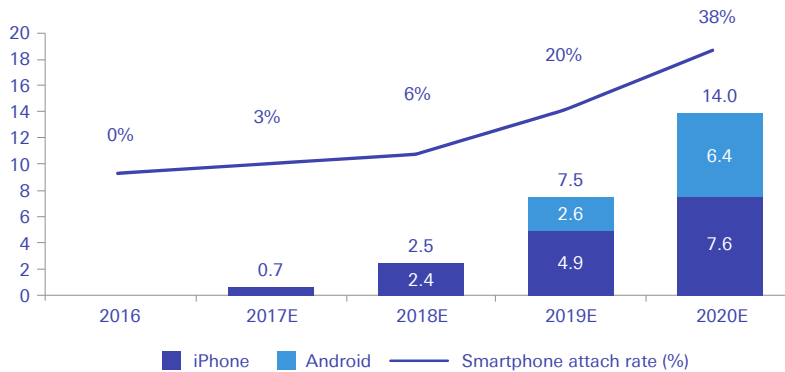
Google's Android is lagging Apple but will likely progress along a similar path and it is reacting in order to stay competitive at the high-end of the smartphone market. Google has already responded to Apple's ARKit by launching ARCore, a developer platform which supports some Samsung Galaxy S8 and Google Pixel phones. In 2018, Qualcomm is likely to ship 3D sensing modules to the Android ecosystem (including for Samsung), and Huawei and Xiaomi are also likely to launch their own versions, initially for facial recognition only. From 2019, the Android ecosystem is likely to develop 3D sensing capabilities for AR too, following Apple, though its slow start means the Android AR experience could be inferior for over two years. By 2020, there will almost certainly be broad adoption of 3D sensing hardware across the high-end smartphone industry to support feature-rich AR.

In terms of sizing the market, 3D sensing modules for smartphones cost between \$15-20 today, which suggests a massive opportunity ahead for key suppliers. When you consider that adoption of 3D sensing technology could grow from just three per cent today to 38 per cent in 2020, this implies good times ahead for key suppliers to the Apple and Android ecosystems. In fact, we estimate a \$14bn aggregate opportunity for suppliers by 2020, of which \$1.5bn will come from illumination (light sources such as VCSELs), \$2.3bn from micro-optics hardware, \$1.4bn from polymer lens hardware, \$4.7bn from semiconductors, and \$3.6bn from complex assembly.

What is an investor to do? For now, the safest suggestion from this discussion is to stick with those who are already well positioned at Apple. Because of Apple's first-mover advantage in a very complex area, other manufacturers will struggle to match its AR experience. The companies sitting tight in the Apple camp are micro-optics firms such as AMS, illumination firms such as Lumentum, polymer lens firms such as Largan, semi-conductor firms such as Tong Hsing, and assembly firms such as LG Innotek.

Of course, to truly take off, augmented reality still needs a "killer app" of the kind that will drive massive consumer pull. It is hard to predict where this may come from, however, it will likely emerge over the next few years as developers create things for a user base that could be in the hundreds of millions. With Apple's seemingly limitless cash pile to help things along, 2018 may be the year AR finally takes off.

3D sensing hardware opportunity (\$bn)



Source: Deutsche Bank

The technical story

As mentioned, 3D sensing is a technology that helps to measure distance or construct a 3D map of a real life scene. The sensing hardware use two devices – a light transmitter and a light receiver – to collect depth data distance. Technically, there are three approaches to making these calculations—time of flight, structured light, and stereo vision. The first two are active range strategies (used in nature by bats, whales, and so on) while stereo vision is a passive range approach (used in nature by humans, cats, and owls). The active approaches tend to be the best fit for AR applications because they deliver more accurate depth data and perform better in a low light or even no light environments. Selecting which active approach to go with is tricky. Time of flight involves counting the time a photon takes to come back from the object in a scene, while structured light involves projecting a pattern and then observing how it is disturbed when hitting objects in a scene. Both approaches have their pros and cons, and selecting which to

go with depends on the required specification and on cost and safety considerations. To simplify though, time of flight performs best in longer ranges like outdoor AR use cases while structured light really performs well in shorter ranges under six metres and benefits from high precision, which makes it more useful for indoor AR applications and facial recognition.

Ultimately, the potential for 3D sensing applications is much broader than just the smartphone. Other application areas include automotive Lidar for collision avoidance, industrial robotics, gaming and gesture control. Potential new features that could make it into smartphones include projection displays. For instance, Apple has already filed patents for projection displays for 3D holographic images and integrated projectors (e.g. for projecting movies or presentations to walls), which one day could make the television a thing of the past.

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Asset managers — The independent advantage



Are asset management companies too profitable? That was the question asked in late 2016 when regulators probed the competition in the UK's asset management sector. It was a fair query given firms generated an astonishing operating profit margin of 36 per cent in the five years to 2015. To put that into perspective, the equivalent figures for Facebook, Microsoft and Alphabet are 34, 33 and 26 per cent respectively. Similarly, investment managers in Europe more broadly returned margins of 29 per cent, comparable to tobacco stocks (27 per cent) and pharmaceuticals (22 per cent).

Yet this may be the wrong question to ask given the four horsemen currently stalking the profitability of the industry. With threats from the rise of passive products, regulation, technology and a possible downturn on the horizon, active investment is already on its way to becoming significantly less profitable.

The question is what asset managers will do in response to this threat and whether 2018 will see a tipping point that leads the most exposed players – bank and insurance-owned asset managers, here known as proprietary asset managers – to pursue consolidation or specialisation. Either way, the status quo is increasingly unviable.

Let us count the ways. The first threat to asset management's profitability comes from passive products. The trend is as predictable as any in financial services. In early 1995, passive investment was just three per cent of funds under management. By 2005, that figure had grown to 15 per cent and is now double that. Current trends imply a shift to 40-50 per cent by the end of the decade. That would imply further fee pressures, pushing industry earnings down a further 12 per cent over the next three years. There is probably an upper limit to the passive juggernaut, but there is no indication it will be reached anytime soon.

The second threat is a regulatory shift in most major jurisdictions from suitability to fiduciary metrics. Suitability asks whether the product makes sense for a client whereas a fiduciary criterion would ascertain whether there are better alternatives. Regulatory developments, like the UK's Retail Distribution Review, are attempting to reduce conflicts of interest whereby an asset manager rewards their distributor for pushing their product over those of a competitor. Even the US Department of Labour, under the deregulatory impetus of President Trump, does not appear to have backtracked on its instatement of a fiduciary responsibility for asset managers.

The third is the push towards transparency from technology, globalisation and regulation across many industries. The possibility of an Amazon-type investment platform could appear. If it gained prominence, it would increase pressure on margins. Moreover, the implementation of Mifid II regulations is also increasing disclosure on costs, allowing clients to better understand their cumulative net returns on investment. Over time, this greater transparency is also likely to weigh on returns.

Finally, after eight years of a bull market adding natural buoyancy to assets under management, earnings cyclicality can be underestimated. Look at what happened in 2008-2009. Profits halved for the major US asset managers. The cost-to-income ratio (operating

costs / operating income) increased to 63 per cent from 55 per cent, while pre-tax margins declined to 37 per cent from 53 per cent. Following an extended bull market it is sometimes difficult to differentiate between an alpha and beta of the industry cycle.

With the four threats to asset management closing in, which firms are likely to survive? For starters, the industry can be roughly divided into two groups – independent firms such as Schroders or Blackrock, and proprietary firms that are owned by banks and insurance companies. Looking at the 25 leading European asset management institutions with a total of €24tn in assets under management, it is clear that independent firms are outperforming their proprietary peers. The independents are delivering average pre-tax margins of 44 per cent versus their proprietary peers of 30-33 per cent. Their cost structures are also leaner. The cost to income ratio for independents averages 58 per cent but runs closer to 70 per cent for bank and insurance-owned asset managers.

This simple benchmarking exercise suggests that if proprietary asset managers were brought up to the efficiency levels of their independent

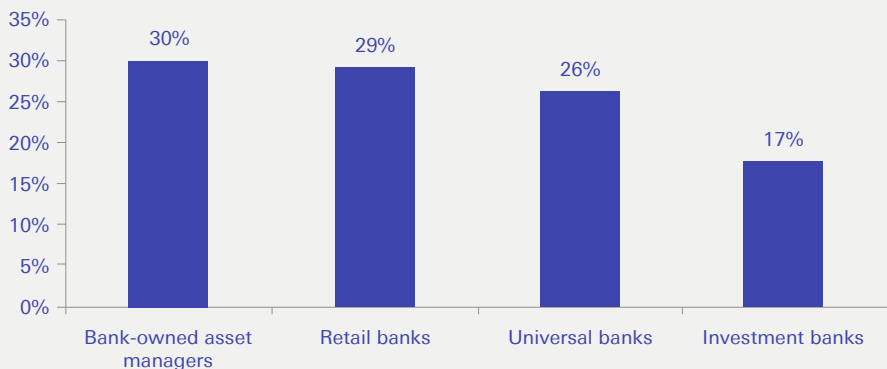
competitors, earnings could improve by one-quarter for bank-owned firms and two-fifths for insurance-owned firms.

There is therefore sufficient scope to improve profitability. To do that, proprietary firms will need to decide whether to scale up or become smaller and more specialised.

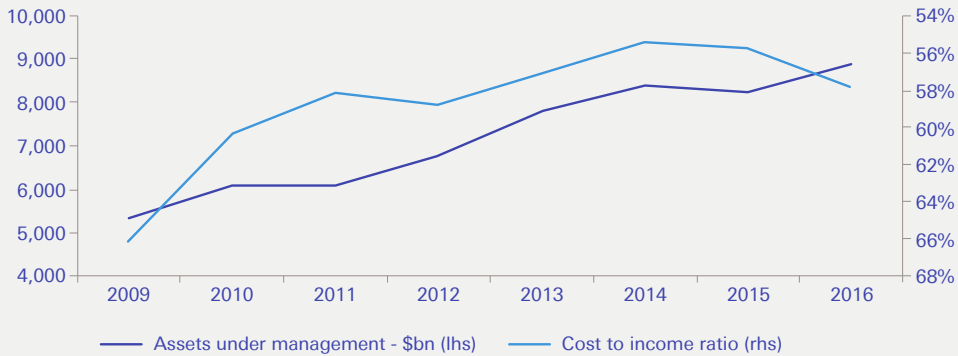
The irony is that from within the traditional banking business, proprietary managers are not seen as troubled at all but have in fact been fêted for profitability in the post-crisis period. For many European banks, proprietary asset managers are the most profitable business they have, generating 30 per cent pre-tax margins on average. That is higher than retail banking at 29 per cent, universal banks at 26 per cent, and investment banking 17 per cent.

Despite seemingly lacking scale, more specialised offerings can be much more efficient and profitable. For instance, franchises like Eurizon (Intesa's asset management subsidiary) and Nordea Asset Management cater to local markets but are extremely efficient with costs equal to 22 per cent and 29 per cent to their income respectively. Similarly, Legal and General, with its focus on passive products and the UK domestic

Europe bank owned asset managers vs banks pre-tax margins



Scale vs efficiency



Source: Deutsche Bank, Company data

market also ranks well with costs at 50 per cent of income. In fact, such firms have efficiency metrics more comparable to global independent players than a global proprietary franchise.

Change is likely to be more necessary at asset managers owned by large, global franchises such as Credit Suisse Asset Management, Axa Investment Management, and UBS Asset Management. Costs at these three firms are between 70 and 80 per cent of income versus the industry average of 64 per cent. These firms can choose to de-globalise and pursue regional strategies in line with the smaller asset managers mentioned above, or they can pursue mergers and acquisitions in the pursuit of scale.

Scale can work. The experience of independent asset managers suggests there is certainly a correlation between size and gross margins. Between 2009 and 2016, costs for independents fell to 58 per cent of income from 66 per cent as assets under management rose two-thirds to \$9tn. Intuitively, in an industry facing commoditisation from low-cost beta products, scale can help to drive down unit costs and support profitability. It comes as no surprise, therefore, that many firms have met the growing structural headwinds in the industry by increasing consolidation. This can be seen with recent mergers, such as Standard Life-Aberdeen, Henderson-Janus, and Amundi-Pioneer. The trend shows no sign of abating. In August 2017, Prudential announced the merger of M&G with its life and pensions operation (Prudential UK and Europe). This combination is expected to create annual cost savings of £145m.

Different firms will pursue different strategies to improve profitability. For instance, as a more specialised player, Credit Suisse Asset Management is targeting an increase in pre-tax profit by over Sfr200m by 2018 by scaling up existing businesses, developing new offerings, enhancing distribution and regionalising their approach beyond Switzerland. Through a mild scaling up it should be possible to improve costs from over 80 per cent of income today to 70 per cent, although this will still be above the industry average of 64 per cent.

For Natixis, majority-owned by French Bank BPCE, scale has already been attained and the key now is to find efficiencies. Natixis' multi-boutique model was always likely to be less efficient than a more centralised business. Nonetheless the franchise is over one-fifth larger than its American competitor, Affiliated Managers Group, which also has a similar operating model, yet has lower costs than Natixis.

However asset managers choose to address the four threats that are currently conspiring against them, it is clear that they will have to do so in 2018 to remain competitive. If they do not address these challenges internally, mergers and acquisitions may be the logical result. Indeed, while dealmaking between asset managers peaked in 2009 at about \$60bn, it has carried on since at the relatively pedestrian pace of under \$25bn each year. If 2018 proves to be the year proprietary asset managers choose to scale up or scale down, mergers and acquisitions in the industry will kick off again. ●

However asset managers choose to address the four threats that are currently conspiring against them, it is clear that they will have to do so in 2018 to remain competitive.

US equities - the dividend shakeout



Pity the equity investor. Over the last year the chorus of voices expressing concern at the dizzying valuations in the US market has grown louder. Yet they are too scared to leave and miss the continued bull run. Their cause for concern seems obvious. The S&P 500 price relative to earnings has traded at a decade-high for most of the last three years. But what if investors are watching the wrong metric? What if it is not earnings-based valuations but dividend-based ones that hit a tipping point in 2018 and that cause a reckoning in equities? Here, we discuss the ways that investors' lack of focus on dividends may lead to an unexpected shake up in the equity market.

In retrospect, GE's 2017 dividend cut may be seen as a key moment in the future direction of the US equity market. Of course, the payout was cut by a new chief executive keen to reinvigorate a company that has underperformed the market for over a decade. Yet, other chief executives were no doubt playing close attention. If the oldest member of the Dow Jones Industrial average could cut its dividend for only the third time in history, after the great depression and financial crisis, then surely that gives a license to others.

But why would anyone want to cut their dividend but be scared about it? Bear in mind the textbooks say that a company's capital payout

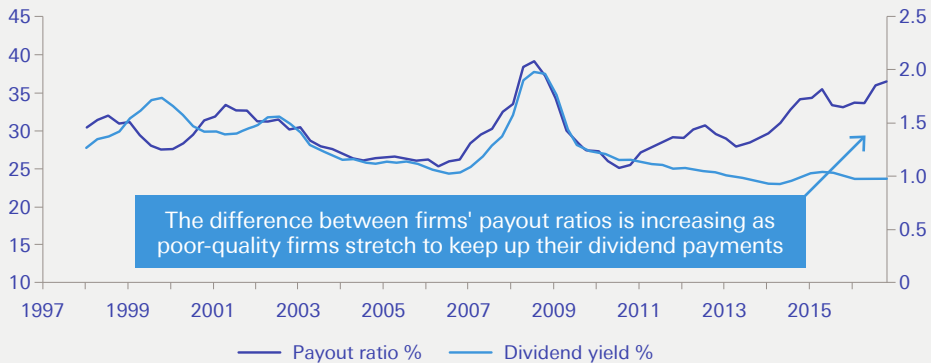
policy does not affect its valuation. And that is exactly why dividends may be the key to understanding where the bubbles lie in the market.

It is first important to examine why high earnings valuations are not necessarily a sign the market is due to drop. That is because these valuation metrics are poor buy and sell signals. Take, for example, the frequently quoted Shiller multiple which, at 31 times ten-year average earnings, is double the long-term average and near the level it reached just before the 1929 crash. Certainly, the multiple has its uses and there is no doubting the correlation between low valuations and high future returns, and vice-versa. However, history shows the Shiller multiple is terrible at indicating the right time to buy and sell. In fact, if an investor had bought the S&P 500 when the multiple fell below its long-term average and sold when it rose above, they would have held shares for just eight months in the last three decades. That would have seen them miss out on most of the 20-fold total return the market has experienced. Even if perfect hindsight could apply buy and sell thresholds at different levels, the result is almost always significant underperformance. Heady earnings-based valuations then, do not necessarily signal future danger.

Dividends, though, do provide a warning signal. Indeed, the evidence shows that market gains in recent years have been propped up by unsustainable expectations of future dividends, and there are signs that 2018 could be the year

Luke Templeman

S&P 500: Dispersion of payout ratios and dividend yields



Source: Factsheet, Deutsche Bank

the trend finally turns. The dividend aristocrats provide a useful illustration. These are a selection of about 50 stocks which have a strong history of paying increasing and reliable dividends. These stocks matter as they comprise about one-fifth of the total market value of the S&P 500 and their post-crisis bull run has been a significant contributor to the overall stockmarket's return. Indeed, since the crisis, they have outperformed the S&P 500 by one-fifth.

More recently, though, the aristocrats' performance has turned. Over the last 18 months, they have underperformed by about one-quarter. One reason for this is that investors have begun to realise they have reached capacity in the amount of debt they can take on to finance both outsized dividends and share buybacks. In the decade before the crisis, the net debt of these stocks was a steady one-third of ebitda. Since then, net debt has more than tripled as a proportion of earnings. This increase in leverage to fund capital returns can only happen once yet investors valued these stocks on the basis it could persist.

Another sign that investors have increasingly valued stocks based on their dividend can be found in the dividend yield of S&P 500 stocks which has been relatively constant since the financial crisis. More importantly, the difference between the dividend yields of stocks, the dispersion, has been falling and now sits at its lowest level in at least two

decades. This is down 15 per cent from pre-crisis levels. Said a different way, market prices have become increasingly sensitive to changes in dividend payouts. Unsurprisingly, managers have paid attention and boosted them. Just before the crisis, the average company paid out one-third of its earnings as a dividend. Now it pays out a half. Furthermore, the dispersion between dividend payments has stayed low, meaning companies have paid attention to their peers and increased their dividends in unison.

Some will argue that the passive investment trend has helped make the performance of companies more similar, or lowering dispersions, as the strategy mandates the agnostic allocation of capital. They argue that as this trend seems unlikely to unwind, the current trends may stay that way for some time. Some studies, though, show that price setting is left to active managers while passive investors are the price-takers.

On top of the feeling many managers will have that they cannot further increase dividends relative to earnings, there are several structural shocks that could compound their misery in 2018. The first is that upwards pressure on wages seems increasingly likely as the unemployment rate continues to plumb multi-decade lows (see our piece on the likelihood of rising US inflation for more details). Second, the price of oil continues to climb. An increase in these two input costs will significantly affect lower quality companies as it will cause a disproportionately

large squeeze on their already low margins. When that happens, investors may realise they have been propping up the wrong companies.

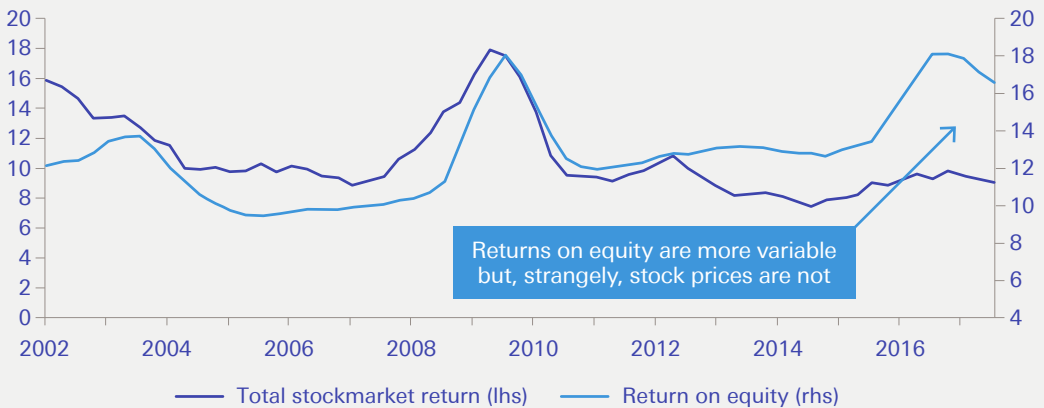
A final tipping point for stocks valued on their dividends in 2018 could be a rise in bond yields. That is because the indicators suggest this year will see inflation rise to structurally-sustainable levels (again, see our piece on the likelihood of US inflation). Yet, as treasury yields are still close to all-time lows, investors clearly do not expect prices, and thus bond yields, to rise much. However, once bond investors see core inflation sustainably on target, they will likely not only push up yields but also steepen the entire yield curve.

The risk to equities of higher bond yields is that it will dampen the bond proxy trade. That is, money that has moved from bonds to equities with reliable dividends and seen as a substitute to investors struggling with low bond returns. To illustrate, before the financial crisis, ten-year US treasuries yielded about four per cent. That was

two-fifths more than the dividend yield on the dividend aristocrats, and double the broader market. Since then, falling bond prices mean the aristocrats now yield 2.2 per cent, only slightly below the ten-year bond yield, and noticeably above the two-year yield. That raises the spectre of the problems discussed above.

So while equity investors remain fixated on the market's valuation relative to earnings, it is the dividend bubble quietly inflating in the background that should be of far greater concern. It is an ever rising dividend policy that so many investors have placed their faith and a company's earnings power has become a secondary concern. These priorities are wrong and it is only a matter of time until there is a reckoning. Given the changing macro backdrop in 2018, that could occur sooner than expected. ●

S&P 500: Dispersion of total returns and returns on equity (%)



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Oil — How DeCAF helps find carbon cash cows

Whilst some predict the destruction of oil demand because of electric vehicles and others point to the threats of carbon pricing and stranded assets, it is easy to conclude that oil companies pose a significant risk to investors in the years ahead. Many investors have gravitated towards the largest producers on the assumption their diversification will provide benefits. Yet the coming energy transition does not have to be destructive for shareholders, particularly if they understand that bigger is not necessarily better.

Intuitively, price should matter. So as volumes decline, value can still be created. But it is not that simple and 2018 is the year which will clarify which of the oil majors have the potential to morph into carbon cash cows – highly profitable entities that rely on relatively scarce and declining volumes.

Even today most discussions on environmental risk for integrated oil companies are focussed on the risk of volume declines. But experience over the last 20 years serves a useful note of caution about the perils of confusing volume with value. As explained previously in Konzept, investors have been better served by favouring industries with the biggest declines, rather than increases, in sales volumes.¹ For example, despite global tobacco consumption shrinking steadily, tobacco companies have delivered a remarkable 13 per cent annualised total return in the last two decades. Not only did this overshadow the 4.5 per cent of the overall market, it also trounced the 2.3 per cent managed by the telecommunications services sector despite volumes tripling across G7 countries.

At least three things need to happen for the oil majors to become profitable on declining volumes. First, capital discipline must be imposed on the largest oil groups to prevent supply from increasing much further. Second, downside risks – from being a stranded asset, from carbon pricing and from the rise of electric vehicles – must be containable, at least in the near term. Third, investors must pay attention to decisions made by policymakers.

The forces pushing for capital discipline are already at work. The collapse in oil prices over the past two years has forced integrated groups to commence the process of portfolio repositioning more aggressively than might have been the case.

Firms have done this by shredding capital budgets, stripping out costs and simplifying projects. They have also placed a greater focus on return on capital, free cash flow, and positioning on the marginal cost curve. They have also emphasised natural gas and near-field exploration, as opposed to exploration on resource frontiers, which has helped monetise these discovered resources earlier than in the past. Firms are undoubtedly in much better shape now than they were just a few years ago when oil traded above \$100 per barrel.

As the industry is forced to deal with relatively greater capital scarcity, it has to concentrate harder on generating a return on that capital for shareholders. One way of thinking about this is a move from a world where lots of capital is chasing relatively few resources, to one where the reverse is true. As a result, the largest companies may be successful investments in the new energy world because the downside risks to their current asset base is not as significant.

Take the stranded asset risk. The term conjures up images of rotting equipment unable to be used as a result of unanticipated write-downs. Yet an analysis of the proven reserves of oil companies suggests otherwise. The average life-span of assets is just under ten years, and two-thirds have already been developed, of which one-third will be developed within the next five years. With this resource effectively already deemed commercial, infrastructure-backed, or committed for commercial development on the basis of prevailing prices, it is extremely unlikely this would not be produced out.

Looking at probable reserves – the so-called P2 reserves – the asset life-span moves out to 20 years for oil and 25 years for gas, so the risk of being stranded may appear greater at first. But similarly, most of this is already infrastructure-backed or in current development. In fact, just ten per cent of the existing P2 resource base in both oil and gas has not been subject to final investment decision. With a present value of \$20bn, it represents just two per cent of the oil majors' market value.

The risk from carbon pricing is more material. Yet, if we take the industry's consensus view that emissions will cost around \$40 per tonne, and assume that any such levy will be tax deductible, it only causes a downside revision of eight per cent, based on the ten-year net present value. Statoil is the least vulnerable, having already been subject to Norway's carbon tax regime, while Exxon is the most vulnerable. Of course, this rough-and-ready analysis overlooks the propensity of different oil-producing regions to tax producers. For example, is it realistic to assume that Saudi Arabia will be as likely to introduce a tax on carbon as, say, the UK? The risk is almost certainly not the same. Factoring in



jurisdiction risk halves the impact to around four per cent, reflecting the bias of most companies' activities towards lower-risk West African countries and, most particularly, the Middle East.

But beyond stranded assets and carbon pricing, the heart of the concern for the largest oil groups over the medium to long term is the demand threat presented by the electrification of one billion light vehicles. The seeming permanence of oil for powering mobility has been the lack of competitive alternatives to the internal combustion engine. Yet as battery technology (slowly) improves, range (slowly) increases and unit prices become more affordable, envisaging a future in which the car pool becomes completely electrified appears increasingly believable.

Yet even on current trends it is not clear gasoline demand will decline until the 2030s at the earliest. To understand the risk from electric vehicles, our models assume the International Energy Agency's scenario which targets a concentration of greenhouse gases to around 450 parts per million of carbon dioxide. That results in a prediction that electric vehicles will account for one-third of the global car park by 2040 – about 700m units. The model sees electric vehicles capturing ten per cent of new vehicle sales by 2020, with around 20m electric vehicles on the road by that time –aggressive relative to a current stock of under two million units.

Under such a scenario, the demand for oil rises from 19m barrels per day in 2015 to a peak of 23m barrels by the late 2020s before moving into a steady annual decline. Despite assumptions of an aggressive rate of penetration, it is striking that only post 2025 will electric vehicles really begin to eat into oil demand. What matters more, until the 2030s, is efficiency. Whereas by 2030 every 100m increase in electric vehicles in the car pool removes 1.3m barrels per day of demand, every one per cent improvement in engine efficiency impacts demand by around 3m barrels per day.

While downside risks – from electric vehicles, stranded assets and carbon pricing – are surmountable, at least in the medium term, the politics of an energy transition are trickier. Take natural gas. The industry consensus is that gas will be the most important beneficiary of any move towards environmental sustainability due to its having lower carbon intensity than oil. It also

can be used for both baseload electricity generation and vehicle mobility. Most of the major integrated oil companies have correspondingly shifted their resource towards natural gas in the past few years.

The fundamentals certainly justify such a move. From a pure supply and demand perspective, despite the current weakness of US and international gas prices, the outlook for gas production into the next decade remains much more robust than for oil. Happily for producers, supply gaps emerge against the current commercial portfolio by 2020 under all scenarios. Over and above assumed supply growth of one-third from North America, this implies a need for the continued development of new areas – East Africa, Russia, and global unconventionals. A slowing of development activity in anticipation of a constrained outlook for future demand looks premature.

But the politics matter too. For example, imposing a carbon price would benefit gas dramatically relative to coal. Gas emits under half the carbon dioxide per hour of electricity produced. This is in addition to the other environment advantages vis-à-vis coal, such as the far lower levels of particulates and noxious gases emitted upon combustion.

Therefore, if a carbon tax were introduced at, say, \$40 per tonne, then even at today's lowly thermal coal price of \$60-70 per tonne, gas would remain competitive at a price of \$7-8. This is broadly the price required for the future economic development of much of the undeveloped resources targeting Asian and European end markets.

Of course, politics could just as easily push in a different direction. Take the case of the UK and Germany. Both have experienced strong renewables growth as a proportion of the power mix with penetration rising by around ten percentage points. Yet whereas in the UK the rise in the share of renewables – combined with the more aggressive taxation of carbon – has reduced coal's overall role, in Germany it is gas that has proven more vulnerable.

Undoubtedly the elevated price of gas relative to coal across much of this period has played a part. However, the politics of coal – for employment and as an indigenous energy source – are also in the way. With over 30,000 miners in Germany, many in marginal electoral regions, against just 3,000 in the UK, and a dependence on Russia as its primary source of gas supply, German politicians have harder economic choices to make than their British counterparts.

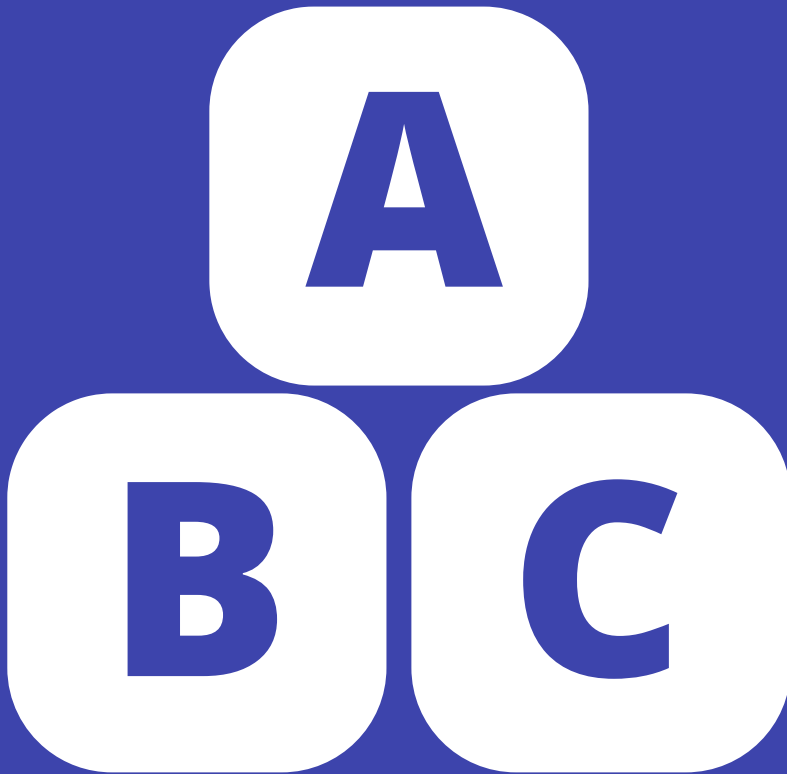
In the US, while gas is expected to remain cost competitive against coal, there is a risk that expectations for nuclear decommissioning takes place later rather than sooner. Given that nuclear and gas are more interchangeable from a clean energy perspective than nuclear and coal, such a policy development which could be more

damaging to gas demand growth than coal. Politics have always been crucial for developments in energy markets, and this time is no different.

Ultimately, no one doubts the risks surrounding an energy transition are formidable. A multi-year transition with no clear end point inherently presents a huge strategic challenge, not least because the evolution of new technologies could drive dramatic and disruptive change. And any change in global warming trends could alter either the economics or politics of the energy sector. For an industry committing substantial capital with a multi-year view it is hard to think of a time when the forward outlook has been as uncertain and as challenging to predict.

Nevertheless, it is also possible to imagine a situation in which having dealt with its own cost structure, external downside risks and the politics, the industry approximates the success of the tobacco firms over the past two decades. Just as facing up to one's own mortality has prompted many a person to reform and pursue new opportunities, so too might the energy revolution prove for big oil. ●

Asian technology stocks – Creating alphabet soup



The parade of technology stock acronyms has become more ostentatious: FANGs (Facebook, Apple, Netflix and Google), FAANMGs (Facebook, Amazon, Apple Microsoft, Alphabet), BATs (Baidu, Alibaba, Tencent), HATTS (Hon Hai, Alibaba, Tencent, Taiwan Semiconductor Manufacturing Company, and Samsung Electronics), SuNRiSe (Softbank Group, Nintendo, Recruit Holdings, and Sony) and so on. Perhaps the multi-decades lows in equity volatility has simply left some analysts with too much time on their hands.

Yet the acronym phenomenon is important, not just as a way of understanding the sum of their constituent parts but as a phenomenon in its own right. Yale economist Robert Shiller has talked about the importance of market narratives in fostering speculative bubbles. To the extent these terms catch on, they become market constructions that do not just reflect the reality but also shape it. That appears likely in 2018 with the FAANMG expected to add two-thirds to their price and the BHATTS to almost double.

We have seen a variant of this story before. In recent market history, acronym usage began with the TMT (Technology, Media and Telecommunications) boom in the late 1990s, followed by the BRICS (Brazil, Russia, India and China and South Africa) in the early-to-mid 2000's.

Those acronyms defined their investing eras. The TMT bubble saw the Nasdaq 100 rally over 400 per cent from in the two years to March 2000. The excitement about BRICS fuelled a 400 per cent rise in the MSCI Emerging Markets index from Mar 2003 through November 2007. Both subsequently saw these historic rallies unwind, with the NASDAQ 100 and MSCI EM declining by 83 per cent and 67 per cent, respectively, over the ensuing peak to trough drawdowns. Given those ups and downs, the current serving of alphabet soup is therefore both an opportunity and a threat.

Certainly the current period is shaping up to be defined by acronym stocks, especially in Asia. In fact, Asian tech leaders like BATs and HATTS have had a more impressive run than the US FANG stocks. Combining the unique constituents of the BATs and HATTS, the group returned an impressive 59 per cent over the last year, over one-quarter more than the FAANMG stocks. True, the latter have added around \$1tn to market capitalisation, compared with \$600bn for the Asian acronyms, but they started from a bigger base.

One of the critiques of the US bull market has been how "narrow" the returns have been, with the FAANMGs accounting for one-quarter of the return of the S&P 500. Yet the situation has been even more extreme in Asia: the BHATTS have accounted for one-third of the one-year returns of the MSCI Asia ex-Japan index.

The importance of technology to Asian indices therefore cannot be overstated. Asian indices no longer consist of the highly cyclical, old economy companies of the 1990s: a mulch of national champion banks and state-owned commodity companies. Today, information technology accounts for one-third of the MSCI Asia ex-Japan index. In fact, four out of the five largest companies are technology names. Financials still represent the second largest sector at 23 per cent. Yet this is down from five years ago, when technology only accounted for 18 per cent of the index, significantly lagging financials at 25 per cent.

Much of this change is related to MSCI's inclusion of US-listed American Depositary Receipts (ADRs) in November 2015, which brought in US-listed Asian tech stocks like Baidu and Alibaba into Asian indices. Since that change, the weight of technology in MSCI Asia ex-Japan has increased from 22 per cent to the current level of 33 per cent. This represents an increase of an astonishing 44 basis points per month.

The transformation of Asian indices by technology is exciting but also poses a risk. There has been an increase in average valuations, both due to the strong price performance of these key technology stocks, but also due to the fact that their larger weightings have crowded out lower-valuation, old-economy companies. While this likely better represents the dynamism of Asia's broader economy, it also leaves investors with less of a valuation cushion if one or two of these firms stumble.

The lack of coherence in the acronym grouping poses yet another risk. Having treated these firms as successful momentum plays, in a downturn investors may not know why they should own them. Take a look at the US FAAMNG grouping: Facebook, Amazon, Apple, Microsoft, Netflix and Google. That group has a combined market cap of \$3.4tn (or 12 per cent of the value of the US equity market). But what do they have in common? Once upon a time, the answer might have been "the internet." But this is too simplistic today. In reality, these firms are a mix of software, hardware, content and internet-enabled retailing and logistics. In terms of the value they deliver to their customers, they are all quite different.

True, they each benefit from the ubiquity of technology and the internet, but in vastly different ways. Apple and Amazon, for example, are still subject to the yoke of real world costs and physical products – if delivery and logistics breaks down, their performance suffers. While Netflix benefits from relatively low marginal customer acquisition costs, it has an increasingly expensive content creation budget. Microsoft and Google are active across a wide number of businesses, though their core businesses largely benefit from deploying their products at zero marginal cost. Facebook and Google accrue significant benefits from networking effects. Facebook (and Google subsidiary YouTube) also benefit from the zero marginal cost nature of the internet. Plus, their content is almost

exclusively user generated. In short, the drivers and business dynamics of these companies are disparate. The supernormal value in these stocks is derived from their overlap within the Venn diagram of general technology (in addition to being very large and having strong stock price returns).

In Asia, there are the “BATs”: Baidu, Alibaba and Tencent. Another overlapping group of stocks is the “HATTS”: Hon Hai, Alibaba, Tencent, TSMC and Samsung Electronics. To ensure the chaos is complete, market argot also combines these two groups by including Baidu to the HATTS. But what of function? These Asian stocks have similarities with a number of the FANG stocks, as well as being competitors and suppliers to the group. The BHATTS represent a search engine, a mobile phone assembler, an ecommerce platform, a chat/gaming platform, a semiconductor fab and an integrated phone/consumer electronics/semiconductor manufacturer respectively. Baidu and Alibaba can, in a simple fashion, be considered the “Chinese” equivalents of Google and Amazon. Hon Hai, TSMC and Samsung are all major suppliers to Apple. Samsung is also Apple’s largest competitor. Overall, the group is more geared to mobile and less exposed to media and advertising. Furthermore, stocks such as Tencent and Alibaba have significant exposure to financial services via WeChat Pay and Ant Financial. Many of these stocks also have large portfolio investments in other companies in the Asian hardware, internet, entertainment and fintech spaces. The companies are self-evidently as different as they are similar.

The acronyms cannot possibly illuminate everything but they help investors make sense of the uncertain and often random nature of markets. The acronyms have no meaning in themselves – until that meaning has been artificially created. The acronyms can even become self-sustaining in a world of thematic funds, leveraged exchange traded funds and complex derivatives. As the acronym takes hold in the financial zeitgeist, assets and mindshare are channelled into this subset of stocks. This, in turn, increases the correlation and crowding of the stocks in focus. As a result the acronyms becomes self-perpetuating, building up risk. In the event of a market reappraisal of these stocks, will investors know why they were grouped together in the first place? Today, analysts roundly expect the good news to continue, with expectations that the FAANMG’s will increase in price by 63 per cent over the next year. The BHATTS are expected to almost double, with consensus predicting an 88 per cent upside. With that sort of market expectation, perhaps the acronyms have already succeeded in persuading investors of their importance.

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