AIQ

ISSUE 002

SPHERES OF INFLUENCE

The new geopolitical order

AVIVA INVESTORS

Disruption and Disorder

In recent months, the established world order has been turned on its head. Two events in particular – the UK's vote to leave the European Union and the election of Donald Trump as US president – confounded political commentators and financial markets; triggering fears of a new era of protectionism.

The collapse of the Soviet Union signalled the end of the Cold War and, supposedly, "the end of history". In our cover story, we look at whether national self-interest in the US, China and Russia will lead to the emergence of new spheres of influence, and the potential economic and market ramifications.

Disruption isn't limited to the political arena. Technology is radically altering the financial services industry, too, including asset management. In this issue, we take a look at how robo advice is shaking up the intermediary market, with claims it could lead to the 'democratisation' of wealth management. For those who dismiss the threat, it is worth reading our story on the FinTech revolution in China, where digital disruption is the norm.

In issue one, Aviva Investors' CEO Euan Munro gave his thoughts on what the asset management industry must do to win back public trust. In this issue, we invited someone with a very different perspective – former FTfm editor Pauline Skypala – to share her thoughts on why active managers will find it difficult to shift perceptions.

Other articles look at the limits to real estate diversification, whether the threat of deflation has truly been eliminated and why demographic shifts will be a major driver of investment performance.

We hope you enjoy the issue

Rob Davies,
Head of PR and Thought Leadership,
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CASHFLOW-DRIVEN INVESTING: A NEW APPROACH

JOHN DEWEY
Head of Investment Strategy, Global Investment Solutions

In the current environment for liability hedging, maturing defined benefit pension schemes should look at alternative strategies, including cashflow-driven investing, writes John Dewey.

While liability-driven investment (LDI) and growth approaches will remain a key part of the toolkit for defined benefit pension schemes, there is a strong case to be made for incorporating cashflow-driven investing (CDI) into their strategies. CDI can deliver the predictable returns of LDI strategies but at higher yields, while diversifying portfolios and drawing on a wide range of return premia.

Traditionally, market returns from assets such as equities, property or diversified multi-asset portfolios have been called on to do the heavy-lifting of generating the long-term returns to overcome deficits. But the challenging outlook for many asset classes raises questions over their ability to continue to single-handedly fulfil this role. Furthermore, experience has demonstrated that a simplistic diversification approach of investing across listed markets can fail to deliver protection when it is most needed: when volatility is high, asset prices are falling and correlations rise.

Even if growth assets might deliver the returns targeted in the long term, mature pension schemes are juggling the challenging combination of rising cashflow needs and persistent underfunding. This has placed greater emphasis on the risk of path dependency: the possibility that several years of poor returns may deplete a scheme's assets to the extent that meeting long-term funding targets is unviable; putting pressure on corporate sponsors.

For cashflow negative schemes, successful investing in growth assets also relies on the order in which returns arise. Good returns followed by bad returns allows a scheme to build its funding level, pay benefits and weather difficult subsequent market conditions. Conversely, poor returns in the near term could put the scheme in a more vulnerable position later on.

Kicking the usual bucket approach

The conventional investment approach sees pension assets split broadly into two categories: growth assets, invested to generate strong returns in a diversified pool, and matching assets, used to hedge a scheme's liabilities in line with movements in interest rates and inflation. But the return outlook for both matching assets and growth assets has been in long-term decline, while deficits remain stubbornly persistent.

Pension schemes should therefore consider a change in investment strategy to exploit assets that may not fit naturally into either growth or matching buckets but will provide reliable income at an attractive premium above bonds and swaps.

- **Income-producing diversified growth:** A multi-asset investment portfolio of listed assets carefully tailored to pay out a regular income is one way of meeting the cashflow demands faced by maturing pension schemes. This can be achieved by investing in a wide range of asset markets, with a robust strategy to deliver regular, reliable cashflows and protect capital. The success of this approach depends on the skill of the investment manager.

- **Customised credit:** A credit portfolio can be constructed to meet the cashflow needs of an investor's liabilities and held to maturity. This provides investors with optimal credit exposure and interest rate, inflation and cashflow exposure tailored to a pension scheme's liability profile.

- **Private assets:** Private assets with clearly defined and transparent cashflow characteristics are particularly relevant in this environment; providing higher yields through illiquidity premia and diversified return premia. They include infrastructure debt, real estate debt, private corporate credit and some types of financing transactions that banks are keen to offload from their balance sheets. The optimal assets have bond-like characteristics, but offer better yields and a more reliable means of meeting cashflow requirements with less risk. Infrastructure is particularly attractive, since it can offer highly regulated and secure returns that can reliably deliver annual income of over seven per cent, without leverage.

	CDI	LDI
Yields	Varying margins above bonds/swaps	Low government bond and swap yields
Mark-to-market liability hedge	No	Yes
Can provide regular reliable cashflows	Yes	Yes
Leverage possible	Possible in some assets but not generally desirable	Yes – swaps and bond repo
Diversification	Yes	No
Return premia	Liquid assets: varied Private assets: varied, illiquidity	Interest rates, inflation
Liquidity of instruments	Liquid assets: high Private assets: low	High

The middle ground

An investment strategy focused on such assets, generally termed CDI, doesn't mean replacing growth assets altogether, particularly because it doesn't provide a perfect match for liabilities when interest rates and inflation change. But it offers an attractive middle ground that can be balanced against traditional approaches, depending on the situation and requirements of each pension scheme.

Pension schemes should clearly understand their time horizon, objectives and cashflow requirements over the coming years to determine the appropriate balance between growth, LDI and CDI. Unlike LDI assets, which offer an effective mark-to-market hedge of a scheme's liabilities, CDI assets are driven by a wide range of factors, including supply and demand for individual private assets. This offers opportunities to provide cashflows, diversify portfolios to make them more resilient and enhance returns.

If a scheme has a medium to long-term time horizon, and a tolerance for less liquid assets, private assets merit exploration. Conversely, if a scheme is well funded and targeting a buy-in or buyout in the short to medium term, it will typically need a robust mark-to-market hedge and the balance should remain towards LDI.

The next natural step

Cashflow negativity is becoming more prevalent in pension schemes. According to Mercer[1], 42 per cent of plans surveyed are currently cashflow negative and, of those that are not, nearly 80 per cent are expected to become so over the next decade.

This dynamic highlights why pension schemes should put cashflow requirements at the heart of their asset and liability management strategy. Once a scheme truly understands how its cashflow commitments will change and has determined what allocation it can make to less liquid private assets, it can test those holdings in multiple scenarios and stresses to fully understand how the portfolio will perform in any conceivable environment.

An evolution to CDI represents a natural step for a large number of maturing pension schemes and should lead to a more effective investment strategy in the challenging years ahead ●

1 'European Asset Allocation Survey 2016', a survey of nearly 1,100 institutional investors across 14 countries, reflecting total assets of around €930 billion.

BEWARE THE COMING STORM

PAULINE SKYPALA
Market Commentator

> *There is little sign the industry sees the FCA's proposed remedies for the problems it identifies as a threat to business as usual*

Any industry complacency around the FCA's Asset Management Review is ill-advised: changes are coming and it is time for managers to deliver, argues Pauline Skypala.

"Traditional active management seems to be under threat as never before in my nearly 40 years' experience", began a recent letter to the editor in the *Financial Times*. Indeed, the industry has been taken to task for its high fees, lack of transparency, underperformance and excessive profits; not least by the Financial Conduct Authority, the UK regulator.

Many investors, meanwhile, are voting with their wallets by switching to low cost index trackers. Does anyone still believe active managers are worth paying for?

The letter writer, Jason MacQueen of Alpha Strategies, suggests active managers seeking to silence their critics should take "the next logical step in their evolution" and offer guaranteed outperformance of an agreed benchmark.

Guarantees are popular with investors but usually expensive to provide. Mr MacQueen's proposition[1] would cost investors nothing, but could prove pricey for a fund manager who fails to beat the benchmark reasonably consistently. For that reason, it seems unlikely to catch on.

The nearest currently available equivalent is the practice of charging just a performance fee, with refunds in the event of underperformance. There are only one or two fund managers in the UK that operate like this – prepared to bet their survival on their investment skills. The rest prefer to stick to the time-honoured practice of selling funds that will reward them with asset-based fees even if those funds fail to achieve their stated aims. Performance fees are an optional extra. The incentives are skewed towards increasing assets under management, which can conflict with the interests of investors in generating returns.

This business model has worked well for the employees and shareholders of active managers: the FCA's interim report on its asset management market study[2] found an average profit margin of 36 per cent – even higher after allowing for salaries and bonuses, which represent a share in profits.

Associated intermediaries and service industries have also benefited from the growth of the fund industry. Investors, on the other hand, have not done quite so well. The FCA said its evidence suggested "actively managed investments do not outperform their benchmark after costs".

The regulator also found little evidence of price competition, particularly for active products, and no clear relationship between price and performance; although it noted that on average the cheapest funds beat the most expensive ones.

The clear implication is that investors are better off paying less and going passive, or using smart beta strategies via exchange-traded funds. There is already a strong move in that direction, and little reason to expect a reversal. If anything, the move to passive is being reinforced by the increasing adoption of such innovations as so-called robo investing.

Many active managers have so far felt little need to change anything in response to their dwindling inflows, beyond adding new products such as diversified growth funds, absolute return funds or target date funds. They have enjoyed growing revenues and high profitability in recent years, in no small part because of the asset price inflation resulting from the efforts of central banks to maintain the stability of financial markets. Even the consolidation wave predicted for years has yet to materialise.

There is little sign the industry sees the FCA's proposed remedies for the problems it identifies as a threat to business as usual. The regulator's main ideas are to strengthen the duty on asset managers to act in the best interests of investors, and the introduction of a single easily comparable charge, plus more and better disclosure. Managers may rest easy on the assumption any such reforms would have as little effect on their business model as the FSA's "treating customers fairly" rules. Previous industry reviews, such as the Myners Report in 2001 and the Kay Review in 2012, similarly brought little real change.

There is also the hope investors will switch back to active managers, or stop leaving them, as central banks wind down their unconventional monetary policies and interest rates start to rise. The efforts of active managers to differentiate themselves have been hampered in recent years by high correlations between asset classes, stock market sectors, and even individual stocks, with prices often moving in lockstep.

As markets are forced to wean themselves off the helping hand provided by central banks, there should be more opportunities for managers to add value by stock picking, or protect investors from losses. Where managers can demonstrate such ability, they can argue their high fees are justified.

Complacency is ill-advised, though. The future investment environment is no more certain than it has been since the financial crisis; perhaps less so given geopolitical events, while the business landscape in the UK is clouded by Brexit. Demographic trends are unfavourable as baby boomers begin drawing on their pension savings, and millennials weighed down by student debt and high housing costs fail to save. Disruption is also a distinct possibility given the attraction of the outsized profits available. The final ingredient that could tip the balance is a regulator that means business.

The FCA has not mentioned price caps, perhaps the industry's main concern, but has shown its hand by declaring an interest in further views on "pricing models that involve a greater element of risk sharing and sharing economies of scale". It is effectively wrestling with that perennial question: where are the customers' yachts? Cutting the cost of investing is the surest way of providing a dinghy at least.

Mr. MacQueen said all his revolutionary proposal requires "is an active manager who actually believes they can generate reasonably consistent outperformance of their benchmark". There are plenty who state such a belief; now they have to live on it too ●

1 'Taking an evolutionary step to save active management', *Financial Times*, January 2017, https://www.ft.com/content/22140ac8-cec2-11e6-864f-20dcb35cede2
2 https://www.fca.org.uk/publication/market-studies/ms15-2-2-interim-report.pdf

DIVERSIFICATION: FRIEND OR FOE?

CHRIS URWIN
Global Research Manager
Real Estate

Logic suggests diversification is necessary to reduce risk within a real estate portfolio. In reality, its benefits are not as clear cut as investors might imagine, argues Chris Urwin.

While the importance of diversification is well known, determining how much is appropriate for a real estate portfolio is not necessarily obvious. Similarly, the idea that concentration is a risk to portfolios is not as straightforward as some investors might assume.

The goal of diversification is to reduce or eliminate 'specific risk' from a portfolio. However, studies of both equity and real estate markets suggest this objective can be largely achieved in concentrated portfolios with relatively few holdings. Analysis also indicates that diversification can bring diminishing returns and rising costs.

Furthermore, there are considerable potential benefits to holding concentrated portfolios of well-understood assets. Increasingly, deviation from benchmarks is viewed as an opportunity for outperformance rather than a risk. Information asymmetry is a key characteristic of the real estate sector, and better-informed investors can exploit this to create value.

Not all risk can be eliminated

Although the idea that diversification should reduce risk is intuitive, it is nonetheless worth looking at the theory behind it to determine what diversification can and cannot achieve. By diversification, we mean the inclusion of additional assets in a portfolio in order to reduce risk, with risk typically measured by the volatility of returns.

The capital asset pricing model (CAPM), which applies to all risky asset classes, makes a key distinction between two sources of volatility: specific risk and market or systemic risk.

Specific risk is unique to an individual asset, such as a particular equity or property, and independent from one asset to another. Specific risk can be diversified by combining assets, each with their own idiosyncratic risks, and effectively eliminated through portfolio management. As such, theory suggests that it shouldn't justify a premium return.

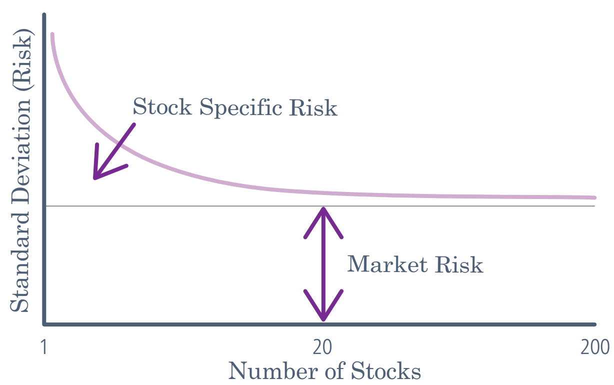
Market or systematic risk, meanwhile, refers to the tendency of individual assets to move together in response to systematic factors that affect all properties to a greater or lesser degree. This is part and parcel of investing in the asset class and is inescapable. The model suggests this type of risk does justify a premium return.

The key insight is that while specific risk can be eliminated through the creation of diversified portfolios, market risk will remain even in well-diversified portfolios. As only market risk justifies a premium return, the key concern for an investor in any risky asset class is to ensure a sufficient number of assets are held, and those assets are sufficiently uncorrelated, to allow specific risk to be effectively eliminated and total portfolio volatility to approach the level of the overall market.

Diversification can be taken too far

The CAPM clarifies what investors can reasonably expect by diversifying their portfolio holdings. But how many holdings are needed in order to achieve the benefits of diversification? Studies of equities suggest the answer is relatively few. They indicate that although the initial benefit of adding more assets to a one-holding portfolio is significant in terms reducing portfolio volatility, the size of reductions tend to tail off quite quickly. In other words, there are diminishing marginal returns to diversification as a way to reduce risk. Most studies show that equity portfolios of about 15-20 assets will eliminate almost all specific risk and the addition of further assets has little impact in this respect[1]. The chart below illustrates this.

For equities, at least, relatively concentrated portfolios can attain most of the benefits of diversification. Nonetheless, the theory suggests that continuing to add assets will have a beneficial impact on portfolio risk, even if the impact is small.



Source: Investopedia

This being the case, why not add as many assets as possible? The answer lies in the potential for excessive diversification. Adding more and more assets to a portfolio leads to increased costs and potentially lower returns. At a certain point, the negative impact of these factors will outweigh any benefits from a reduction in risk. Increased costs are particularly likely in the form of higher transaction and management costs. The threat of reduced returns comes from this source as well as the potential for lower investment standards and the dilution of best ideas. In short, by overdiversifying investors risk acquiring more assets than can be effectively managed.

Concentrated portfolios can achieve the benefits of diversification

With regards to direct investments in real estate, can the major benefits of diversification be achieved in relatively concentrated real estate portfolios, as is the case with equities?

A major study of real estate risk by the Investment Property Forum, which looked at the volatility of returns on over 1,000 properties in the UK from 2002-2013, suggests so[2]. For most properties, it found 'the market' is the major risk factor, with specific risk relatively low and, in general, truly idiosyncratic to the property. Because the specific risks are so different from property to property, this implies diversification can be achieved rapidly. The study found that portfolios of 15-20 assets would, on average, have recorded volatility of returns close to that of the overall market, a number that echoes the findings of the equity studies.

The chart on opposite page shows that diversification brings diminishing marginal returns and most of the benefits can be achieved in relatively concentrated real estate portfolios.

Concentrated portfolios and outperformance

We would also argue there are considerable advantages to concentrated real estate portfolios due to the nature of physical real estate as an asset class. Real estate differs in many ways from the other major asset classes, equities and bonds, with four key differences particularly relevant.

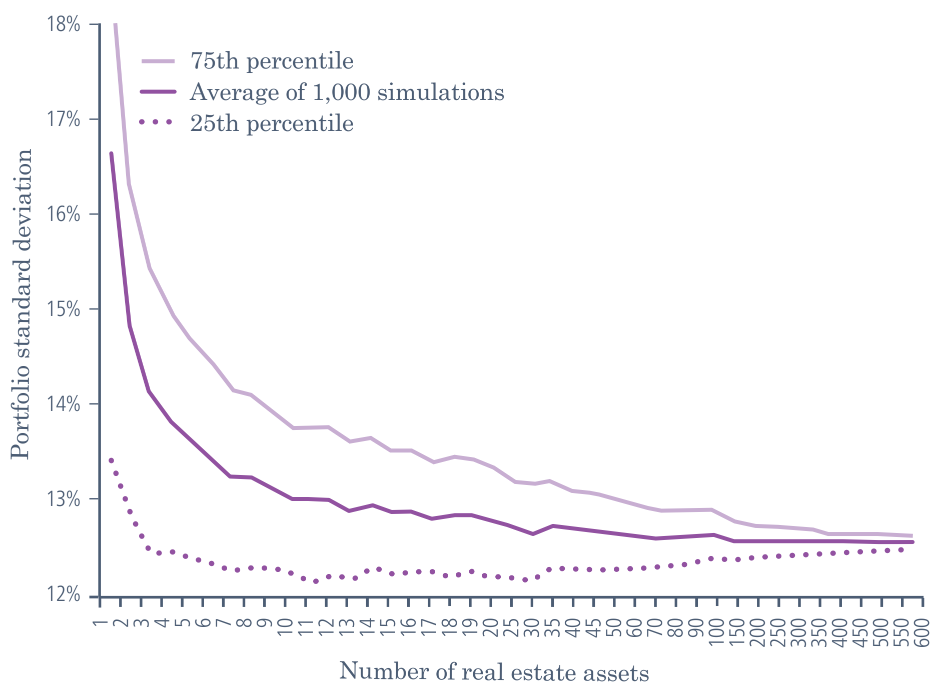
Firstly, while all ordinary shares in a company or bonds in an issue are identical, each property is unique. Properties vary by factors such as location, use, size, age, construction and tenant type. Secondly, each property's location is fixed and local factors, such as infrastructure, can fundamentally affect its value.

Thirdly, in contrast to major equity and bond markets, property prices are not determined by the interaction of numerous sellers and buyers for a homogeneous investment. There is limited information available on transaction prices and the volume of transactions is relatively low. Judgement is required when interpreting the available transaction evidence and what it might imply for the pricing of other properties.

Finally, while the ownership of a share bestows rights, such as voting rights, it does not generally come with obligations. By contrast, ownership of physical real assets comes with significant management obligations, including rent collection, maintenance, rent reviews and lease negotiations.

> *Real estate fund managers whose portfolios look least like the benchmark create most value for their investors*

10-year standard deviations of simulated portfolios, 2004-2013



Source: Investment Property Forum, 2015

While these features of real estate clearly give rise to management costs, they also create an asymmetry of information that is generally not found in other asset classes. Active real estate investors acquire information that is not readily publicly available and can use this to generate significant value.

We suggest this can be best achieved in concentrated portfolios by giving investors in-depth knowledge of their assets, with much of this knowledge unavailable to other parties. Real estate remains a local asset defined inherently by its location, and the more an investor understands local dynamics, the greater the potential to drive performance.

Concentration also allows more potential for asset management. In a relatively concentrated portfolio, resources can be focused where they have most potential to add value. It also provides managers with greater scope to spot and exploit mis-pricing and, crucially, the opportunity to focus on their best ideas.

Such advantages should be kept in mind when constructing real estate portfolios. While diversification is certainly advisable, investors should be wary of adding more assets than they can effectively manage and exploit.

Be wary of paying for passivity

The evidence suggests the potential for outperformance that comes from concentrated portfolios whose managers make well-studied, high-conviction calls. It also suggests such portfolios can be constructed without losing the benefits of diversification inherent in larger portfolios.

Investors are increasingly seeking managers willing and able to make conviction calls. In the wake of the financial crisis, investors are more focused on managers' ability to provide active management. Investors in all asset classes, including real estate, have become increasingly wary of paying higher fees for active management while receiving passive 'index-hugging' or low-conviction products in return.

As a corollary of this, investors are increasingly willing to view a portfolio's deviation from its benchmark as an opportunity for outperformance rather than just a risk. One indication of this is the growing focus on active share, which measures how much an equity portfolio's holdings differ from the benchmark index constituents.

There are three sources of portfolio active share: including stocks that are not in the benchmark; excluding stocks that are in the benchmark; and holding benchmark stocks at different weights to the benchmark.

Many institutional clients and consultants use active share as a tool to determine if an equity strategy justifies active management fees. For example, if a portfolio claims to be actively managed but has a low active share, an investor may decide to shift to a cheap passive index fund instead.

The courage of your convictions

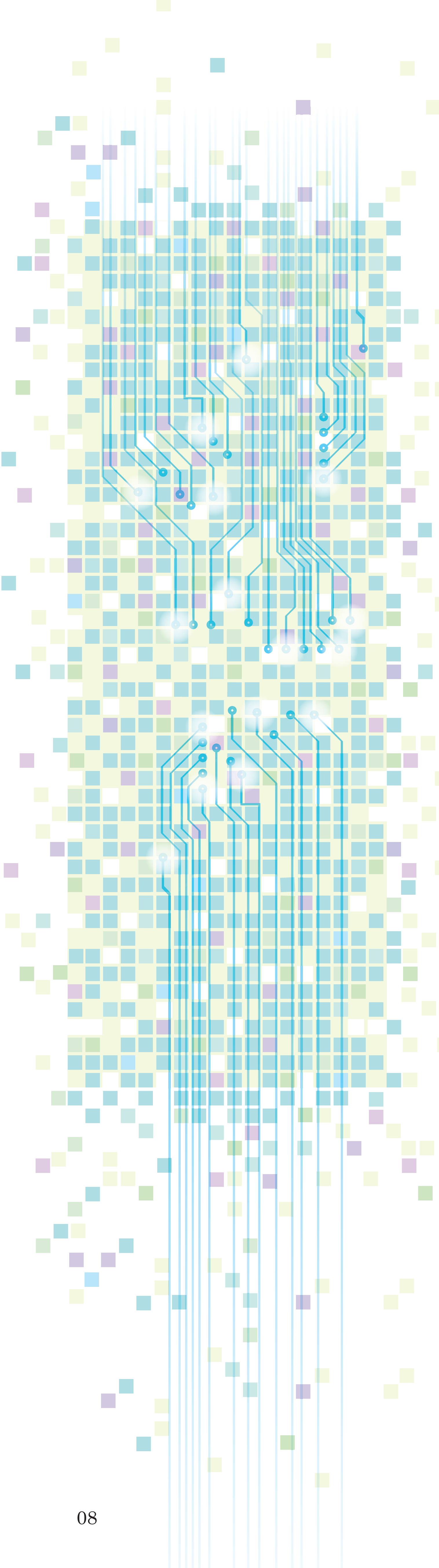
With real estate portfolios and benchmarks made up of collections of unique assets, active share as defined above cannot be calculated for real estate portfolios. Nonetheless, analogous measures can be calculated based on a portfolio's sector or segment calls in order to get an idea of a fund manager's conviction.

In a recent academic study[3], the deviation of active managers' portfolios from the segment breakdown of their benchmark was calculated for over 250 UK real estate funds for 2002 to 2011, a measure that is comparable to active share. The results were telling.

The authors found that the most active commercial real estate portfolios – those with segment weights least like the index – have, on average, significantly outperformed. This performance has not been achieved by taking more risk: more active portfolios were as well-diversified as typical funds, with slightly less total volatility on average. The study also noted that although the more active, better performing funds tended to be smaller, outperformance cannot be explained by fund size alone.

These findings suggest real estate fund managers whose portfolios look least like the benchmark index create most value for their investors. This could be due to managers' ability to identify which segments offer better value, or their ability to build an informational advantage in certain segments, or a combination of both. The smaller number of holdings in these portfolios suggests they are run by managers who are willing to act with conviction, without benchmarks acting as a constraint on their investment decisions

1 'Modern Portfolio Theory and Investment Analysis', Elton & Gruber
2 'Individual Property Risk, Investment Property Forum', July 2015
3 'How Active is Your Real Estate Fund Manager?', Cremers & Lizieri, December 2013



ROBO REVOLUTION?

Proponents of robo-advice claim it could lead to the 'democratisation' of wealth management. Detractors say the technology is unproven and no match for bespoke advice provided by humans. The truth is somewhere in between.

On November 21, 2016, UBS, the world's largest wealth manager, went live with SmartWealth, its robo-advice offering. From February, UK investors with £15,000 or more will be able to sign up online and get access to the same investment expertise as those with the £2 million needed to open a full service account with the Swiss bank. Given the option of five risk profiles via the advice tool, investors will pay all-in fees of one per cent a year for a portfolio of passive funds or 1.7 per cent for active funds, both with the same strategic and tactical asset allocation.

The initiative might have surprised some, raising the possibility that UBS will simply cannibalise its existing client base. Unsurprisingly, UBS has a different perspective. Nick Middleton, co-head of SmartWealth, says opening up to the mass affluent market means UBS can become the "natural home" for people at a lower portfolio size. By the time people have amassed £2 million, they typically already have an adviser and are loath to move, he explains.

UBS is not the only incumbent to respond to the challenge set by FinTech start-ups such as Nutmeg in the UK and Betterment and Wealthfront in the US, which use algorithms to run and rebalance low cost automated portfolios of exchange-traded funds (ETFs) based on risk profiles their customers have selected online. Wealth managers such as Brewin Dolphin and Killik & Co are similarly entering, or about to enter, the robo-investment space[1].

In the US, fund managers Vanguard and Fidelity have joined the fray, although they have direct to consumer offerings already; robo-advice could be seen as a natural extension. BlackRock, meanwhile, is taking the business-to-business route via FutureAdvisor, the independent robo-adviser it bought in 2015, offering white-label services to banks and financial advisers. Invesco has moved in the same direction, having acquired white label platform Jemstep a year ago.

Perhaps pointing to the future for robo-advice, US brokerage giant Charles Schwab is getting set for the launch of its second robo-advice service. The first was fully automated and free to use; the second is a hybrid model, mixing automation with human investment advice, for a fee of 0.28 per cent a year, capped at $9,000 a quarter.

Growing pains

In short, low cost automated risk profiling and portfolio management is slowly going mainstream, with or without the addition of a human advisory element. Consultancy firm EY predicts robo-advice will make a breakthrough in the UK in 2017, with several large providers expected to enter the market[2].

Estimates of potential growth for the industry vary, with forecasts for assets under management by 2020 ranging from around $500 billion to $2.2 trillion[3]. Robo advisers continue to attract venture capital funding, with a sector peak of $341 million invested last year, according to Tracxn, which collects data on start-ups worldwide[4]. Most of this was late stage funding going into established US companies, notably Betterment, which raised $100 million, and Personal Capital ($50 million). But the average size of seed and early stage investments has grown significantly in the past two years as well, Tracxn notes, "a sign that VCs see potential for sizeable exits in this space".

For now, the market remains in its infancy, and most start-up robo-advisers have yet to turn a profit. Speaking at a conference last year, Rohit Krishnan, then European market lead for McKinsey's 'Growth Tech' practice before joining Eight Roads Ventures as vice president, said total AUM for robo-advice platforms amounted to about $20-25 billion and fees to $100 million a year, which was too low for profitability. Krishnan noted the growth of market leaders Betterment and Wealthfront in the US had slowed appreciably, meaning they had failed to justify their valuations.

According to Krishnan, robo-advisers need $10 billion of assets under management to become profitable; Betterment has since reached $6.1 billion while Wealthfront is at $4 billion. They have been caught and surpassed by Vanguard and Charles Schwab, with $40 billion and $10 billion AUM respectively, although much of this has come from existing customers who have moved over to the new services.

In the UK, the Financial Conduct Authority (FCA) is encouraging the growth of robo-advice, having identified the development of large scale automated advice models as part of the solution to providing affordable advice to consumers. The FCA found about two-thirds of financial products are now sold without professional financial advice, up from 40 per cent four years ago, after the reforms of the retail distribution review came into effect. The regulator launched a dedicated unit last year to help firms seeking to develop fully or partly automated advice services[5].

Start-up robo-advisers in the UK face the same issues as those in the US; namely maintaining sufficient growth in client acquisition and AUM to keep investors on board and willing to provide funding. Their target AUM for profitability is lower, though, as the fee level is about three times higher in Europe than the average in the US of 0.15-0.35 per cent. Adam French, founder and managing director of online investment outfit Scalable Capital, believes the range for UK firms is between €500 million and €1 billion.

With AUM of €100 million and less than €1 million of revenue coming in, Scalable Capital is not profitable yet, but French believes the firm's recent expansion into white-labelling and co-branding, in addition to its business-to-consumer proposition, will help it grow. A lot has changed in the past year, he adds, as the investment industry has moved from scepticism to seeing

> *Management by algorithm may ultimately prove superior to the human touch*

opportunity in the expansion of robo-advice. "It is not FinTech versus incumbents, but an area where we all understand there is an opportunity."

Competition or complementary?

FinTech is widely viewed as potentially disruptive to industry incumbents but robo-advice has yet to force major change on the industry. Some see the development as complementary, and entirely welcome if it expands the pie by bringing in new customers.

The disruptive potential lies mainly in the business model, as is true for other industry sectors. Factors at work include a large profit pool and dissatisfied consumers, and a data intensive and scalable platform, according to Andrew Power, a partner in Deloitte's UK Consulting group. Rather than the winners being the FinTech newcomers though – think Google, Facebook, Airbnb or Uber – it is the incumbent firms that adopt the robo approach which are expected to come out on top. "The winners will be those with a brand name and a multi-channel approach," says Power.

Start-ups and those already in the market have pioneered the technology and made people aware of what is possible, says Middleton of UBS. "It is always the case that those first to market find it hard. For the customer, brand and security are front of mind."

However, the fact that incumbents have started to respond to the rise of robo-advice is an acknowledgement that it poses a challenge. Robo platforms are providing the risk profiling, asset allocation and regular rebalancing services that have long been the preserve of wealth managers and IFAs, but at a lower cost and with greater transparency. Its proponents would argue that management by algorithm may ultimately prove superior to the human touch, given the behavioural issues known to affect investment judgement.

Financial advisers do not perceive much, if any, threat to their business as yet, however. Patrick Connolly, head of communications at Chase de Vere, says robo-advice could work for simple financial planning needs, thereby filling the advice gap eventually. But he does not believe it will replace advisers who genuinely add value and offer a personalised service. "Where there is a threat, it is to advisers offering a one-size-fits-all service, if robo comes in and does it more efficiently," he says, adding that Chase de Vere has no immediate plans to offer a robo-advice proposition.

Hargreaves Lansdown is another incumbent with few concerns about robos eating its lunch, and no plans to incorporate a robo offering. Mark Dampier, research director at the firm, says the company investigated an automated offering a while ago, but "decided it wouldn't be compliant".

Dampier is referring to the regulatory fine line that separates 'execution only' business from providing financial advice. UK robo-advisers are often positioned as discretionary fund managers, with the customer's decision to invest in the product presented as their choice rather than resulting from a recommendation. Some commentators question whether this approach truly avoids giving advice.

Some of the incumbents coming to market are avoiding putting this question to the test by incorporating advice into their offerings. UBS, for example, is operating under the limited advice rules with its SmartWealth service.

Keeping up standards

Rodney Prezeau, managing director of Aviva UK Life's consumer platform, acknowledges that robo-advice has the potential to shake-up the financial services market, but adds its providers must be held up to the same standards as any human adviser.

"If a consumer feels they have received advice that has led to a poor outcome – whether it is through automation or from a human – they have a right to make a complaint," he says. "Robo-advice systems must be validated to ensure they deliver advice that complies with regulatory standards and mitigate the risk of flawed advisory models that could result in poor customer outcomes. Given the current framework for advice does not discriminate between robo and human advice models, it is sensible to have independent validation to safeguard customers."

Irrespective of the regulatory concerns, wealth managers and big IFAs will increasingly come under pressure to include robo-advice within their range of services; possibly transferring existing smaller clients over to robo services. Looking at the US, it is clear that while robo-advice among FinTech companies has grown quickly, the robo services offered by traditional groups have grown even quicker.

"It is not all about low cost; rather it is about the efficient delivery of financial planning," says Jeremy Leadsom, head of the UK wholesale business at Aviva Investors. "For advisers, this represents a big opportunity, rather than worrying whether Nutmeg will steal your clients."

Robo is likely to drive further consolidation in the advice market, and will force some wealth managers to sharpen their proposition for wealthier clients to show the added value higher fees obtain, Leadsom adds.

Prezeau believes automated advice is most effective when helping customers with straightforward savings and investment needs – such as choosing an appropriate ISA and underlying funds – rather than managing their retirement finances as a whole.

"Our research suggests it takes around 240 questions to build a detailed enough understanding of a customer's financial position to provide a personal recommendation and few people would make it through that process," says Prezeau. "Any robo-advice service would need to offer the customer the opportunity to pause and take information from another source, to step away from the service and interact with a real person. These interventions should allow the customer time to consider their options more carefully and take up an offer of bespoke advice delivered by a real person."

Nevertheless, the sophistication of robo-advice can only improve. It may not replace face-to-face advice, but as well as giving access to those who cannot afford personalised advice, it will cause disruption by attracting individuals who can afford a full service but decide robo-advice is good enough.

Over time, it is also likely to extend beyond the digitally savvy clients the start-ups have focused on to other investor segments, thanks to the effects of aging demographics. In the next five years, around 75 per cent of assets – estimated at nearly $25 trillion – will be in the hands of those at or nearing retirement, and the DIY tools of robo-advice have particular significance in this context, says Amin Rajan, chief executive of Create Research.

"They offer transparency around the four things that matter most to investors: the risks they are taking, the returns they can expect, the compound erosion of their portfolios due to open and hidden charges, and the scalability of their chosen strategies."

This gives a better basis for building relationships than is currently the case, adds Rajan. It also means investors stand a better chance of "buying what they understand and understanding what they buy". Progress may take time, however, as the incumbent product providers and financial advisers will not act "until there is serious and sustained fee compression", Rajan argues.

If you can't beat them

It is not just financial advisers that face disruption by robo: asset managers also need to adjust to the changing landscape. Active asset management has already been disrupted by the growth of passive management in recent years, particularly the use of ETFs. Robo-advice could be viewed as an extension of that trend, given its strong dependence to date on ETFs as the underlying building blocks for diversified portfolios.

One response to worries about the growing use of passive solutions by distributors adding robo-advice to their offering may be for asset managers to rebuild direct relationships with clients, to gain more control. The difficulty is in avoiding direct competition with distributors they depend on for sales.

There is scope, says Power of Deloitte, to pick up ISA clients via a robo-advice offering, and maybe customers with up to £50,000 to invest, where the competition at present is mainly the independent robo-advisers. Indeed, the future for the independents may largely lie in working with incumbents to provide the technology needed, given the relatively high costs of client acquisition for small firms.

So far, big asset managers have focused on the B-to-B route, using the robo platforms they have acquired to work with distributors rather than going into competition with them. Some, like Schroders, have taken minority stakes in robo-advisers to share in the growth of the sector. Others, such as German insurer Allianz, which took a stake in robo adviser MoneyFarm in September, are looking to harness robo-advice to sell actively managed funds.

Banks in the UK have yet to join the robo-advice race, but it may only be a matter of time. They scrapped their financial advice services after a series of mis-selling scandals and the FCA's ban on commission payments. Last year, Santander and Barclays moved back into selling investments via online platforms, but neither offer automated portfolio management. Robo-advice would

ROBO REVOLUTION?

continued

be a natural extension for banks in due course, argues Power, but the unresolved issue of the regulatory difference between advice and guidance could slow its adoption. There is a "disconnect", he says, between the FCA's desire to support the development of automated advice and some of the specifics of the difference between advice and guidance.

Banks that have already paid out on mis-selling claims may also fear 'systemic risk' – that a programming error means a robo-adviser repeatedly makes the same mistake without it being discovered until customers make complaints. Customers may also make poor decisions if they misunderstand the questions designed to direct them to the appropriate portfolio solution, or provide inaccurate answers. Some commentators have pointed to the lack of due diligence on robo-advice models as a serious flaw.

One approach to avoiding such problems is to adopt a hybrid approach, combining human as well as machine interaction. This may give confidence to both customers and companies, according to consultant EY, although it notes that a human element is only part of the solution. Proper due diligence is also required. Human advisers are not allowed to operate without a system of checks, balances and oversight, so robo-advisers should be similarly monitored[6].

Once such safeguards are in place, however, EY believes "a robo adviser would be expected to have fewer biases and a better audit trail than any human".

It is still early days for mass market automation in financial advice and investment management. Few of the start-up robo-advisers are likely to achieve the scale necessary to survive and prosper, and many will look to be bought. Competition is fierce and there is no guarantee they will stay in business long enough to become profitable. Care is needed to ensure that any mistakes are caught early, as trust is hard to build and easily squandered.

However, if robo-advice lives up to its description as the 'democratisation' of wealth management, bringing tools and techniques long used by banks and wealth managers for high net worth and institutional clients to the mass market, it offers huge potential. Disruptive – yes, but financial services incumbents could prove hard to budge

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2 'Life & pensions industry outlook for 2017', Ernst & Young, December 2016
3 'Robo advice: catching up and getting ahead', KPMG, January 2016. https://home.kpmg.com/content/dam/kpmg/pdf/2016/07/Robo-Advising-Catching-Up-And-Getting-Ahead.pdDB research: when machines manage your assets
4 https://blog.tracxn.com/2016/12/08/robo-advisors-report-december-2016/
5 https://www.fca.org.uk/firms/project-innovate-and-innovation-hub/advice-unit
6 'Managing risk in automated advice', Ernst & Young

INFLATION FINALLY TRUMPS DEFLATION THREAT

The efforts of major central banks to generate inflation are finally starting to pay off in much of the developed world; a trend that will be boosted further by the increased role of fiscal policy in 2017.

The fear of deflation has cast a long shadow over the developed world for the past decade. Finally, however, the narrative seems to be shifting in the opposite direction. With the notable exception of long-suffering Japan, gone are the concerns of falling prices. Suddenly financial markets are convinced inflation is taking root, with Donald Trump's US election victory helping to cement this view.

Government bond yields, after hitting record lows in the summer, have risen sharply as investors begin to price in a normalisation of inflation. The yield on ten-year US Treasuries, for example, jumped from 1.4 per cent in early July to 2.6 per cent in December, although it had since fallen back to around 2.4 per cent in early February.

Investors are right to have factored higher inflation into bond valuations. Indeed, given the strength of the US economy – not to mention President Trump's plans to implement fiscal stimulus – this 're-pricing' of government bonds is likely to have further to run.

With the US economy now growing faster than its trend rate, the annual rate of inflation as measured by the Consumer Prices Index is forecast to rise to 2.3 per cent in each of the next two years, from 1.7 per cent presently. While that might not sound like a dramatic increase, bear in mind that it stood at just 0.8 per cent in July and was actually negative as recently as September 2015.

Inflation is increasing in China too, with manufacturing output prices now rising at the fastest pace in five years[1]. Inflation has also picked up in the euro zone although Japan remains an altogether different story.

Let loose

The gradual return of inflation is largely explained by two factors: the stabilisation and recovery in commodity prices and the actions of the world's major central banks. Over the last year, all of them have kept monetary policy extremely loose. Indeed, policy has been loosened further in most places, including the euro area, UK and Japan. The case for easier policy was not difficult to make. While each of these central banks was dealing with slightly different issues, they were all in need of more inflation.

As for the one major country where policy has actually been tightened – the United States – even here policy has arguably been too loose.

> *The likelihood remains that while inflation will pick up it will not get out of control*

The Federal Reserve, by deciding to pursue a risk-management approach that aimed to cement the economic recovery and push inflation back up to its target – something we expect other central banks to do in the future – has probably not hiked rates enough. As a result, US inflation appears likely to overshoot its two-per-cent target.

At the same time, there is an increased likelihood fiscal policy will be used as a tool to boost investment and growth, further buoying reflationary forces. The International Monetary Fund in its April 2016 *World Economic Outlook*[2] called for a three-pronged approach to securing higher and sustainable growth: structural reforms, monetary accommodation and fiscal support.

Last year, Japan, Canada and China all announced large fiscal stimulus packages. And most significantly of all, Trump has promised a massive expansion. One of the big questions for investors now is whether Trump will be able to deliver the level of fiscal stimulus markets are expecting. While the big cuts in individual and corporate taxes, and increased expenditure on defence, he is proposing are likely to be welcomed by Republican lawmakers, the tax reforms at least will take time to pass through Congress. As for his plan to boost infrastructure spending, that will require a change of attitude from some members of Congress if it is to come into effect. In any case, it will take longer still to deliver.

Nevertheless, we expect his policies to result in a fiscal stimulus of around 0.5 per cent of GDP over the next couple of years. And it could be even bigger, with respected independent analysis of all of Trump's pledges suggesting the annual boost to GDP could be double that.

With the US economy already close to full employment – the unemployment rate is just 4.7 per cent – hourly earnings are now rising at the quickest pace in seven years. A fiscal stimulus of the magnitude being proposed looks certain to boost wage growth, and hence inflation, even more.

However, it is important to remember that while Trump's policies have the potential to 'turbo-charge' reflation, inflation itself remains low by historical standards. At this stage we do not envisage a more destabilising rise in inflation.

Crucially, there is no reason to believe the Fed is in danger of making a major policy error, by leaving interest rates too low and letting inflation get out of control. It is possible the Fed's overly cautious approach to raising rates may persist for a little longer as it waits to see just what the incoming president does. But with at least five of the Fed's 17 policymakers appearing to have raised their forecast for interest rates since September that looks unlikely[3].

To the extent there is a risk of inflation spiking significantly higher than we anticipate, the biggest threat, at least in the short term, would appear to come from a further leap in commodity prices. Stronger economic growth and higher infrastructure spending could conceivably coincide with supply shocks caused either by geopolitical tensions or output cuts from members of the Organisation of Petroleum Exporting Countries.

We saw a sixfold increase in oil prices between 2004 and 2008. While we do not envisage a repeat, that period demonstrated just how dramatic an impact an increase in demand can have on a market where supply is constrained, at least in the short term.

Protectionism

Looking further ahead, rising protectionism could pose a threat. We are more uncertain than usual about the political and policy environment under a Trump presidency. Hopes he may take more pragmatic positions on trade and immigration policy than those he espoused during the campaign may be forlorn. If he were to impose punitive, unilateral, across-the-board tariffs on Chinese and Mexican goods, leading to widespread trade wars, much higher inflation could ensue.

Similarly, if Trump were to follow through on his threat to rapidly deport several million illegal immigrants, the resulting shrinkage in the labour force would be inflationary as well as being negative for growth. In other words, if he were to pursue these policies aggressively there is a risk the US, rather than moving more rapidly towards reflation, could experience 'stagflation'. While such a scenario is unlikely, political developments will require close monitoring.

The main downside risk appears to emanate from China, where there are growing signs of financial excess and where the government could yet be forced to abandon its growth targets, particularly if Trump were to take aggressive action to curb Chinese exports to the United States.

We believe the risks to be broadly balanced. The likelihood remains that while inflation will pick up it will not get out of control. But much will depend on the forthcoming policy decisions taken in Washington.

As for what this means for financial markets, Giles Parkinson, Global Equity Fund Manager at Aviva Investors, says the general assumption is that it will be bad for bonds but better for equities. However, he believes the reality is unlikely to be quite so straightforward.

"People have seen the bond market sell off and shifted into 'cyclical' shares, assuming there is going to be stronger economic growth. But actually, if bonds have really risen because of worries over inflation, you need to think about individual companies' pricing power.

"Take a company with strong brands, such as Unilever. In the UK it seems to have managed to pass on cost increases, stemming from a decline in the pound, to its supermarket customers. But companies with weaker brands, and producers of own-label products, are likely to struggle to do this," he says.

Parkinson also cautions that not all companies will be able to preserve cash flows equally well in an inflationary environment. Firms with large amounts of fixed capital investment will suddenly look like they are making more profit than they actually are. As the cost of replacing that capital will rise in an inflationary environment, there will be a tendency for these companies to under-report their depreciation charge.

He also cautioned that much of the better economic news has now been factored in to share prices. "This time a year ago the consensus was for 'perpetual secular stagnation'. Suddenly the market has started to price in some growth. Excluding commodities, earnings haven't actually risen by that much. But the amount people are prepared to pay for those earnings has gone up, in some cases spectacularly," he says.

Meanwhile, fixed-income fund managers Orla Garvey and James McAlevey see further strong demand for securities that compensate investors for higher US inflation, such as Treasury Inflation Protected Securities (TIPS).

They say that with headline inflation set to pick up over the next six months thanks to higher energy prices, steadily rising wages and the prospect of US tax cuts, the market will be forced to factor in still higher inflation risk premia.

Noting demand for TIPS has to date mainly come from retail investors and central banks, they say that as inflation picks up even further, large institutions such as endowments and pension funds might embark on liability-hedging exercises in greater numbers.

"At a time when the outstanding stock of inflation-protected securities amounts to little more than $1 trillion, supply could prove to be inadequate in the face of greater interest from these large institutions," Garvey says.

Indeed, the combination of increased demand and the need to factor in higher inflation risk premia means there is a possibility the TIPS market begins to overestimate future levels of inflation.

Equally, they say, it is possible the Fed will suddenly get more hawkish, especially if wage growth accelerates much further. In this event, with interest rates rising faster than expected, the market could actually begin to price in weaker inflation over longer time horizons. They have looked to hedge against this risk elsewhere in their portfolios

1 China National Bureau of Statistics
2 http://www.imf.org/external/pubs/ft/weo/2016/01/pdf/text.pdfY
3 https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20161214.pdf

SPHERES OF INFLUENCE: THE RETURN OF HISTORY?

As the US, Russia and China reposition themselves on the world stage, Cold War-style spheres of influence are coming to define the new global order.

In February 1945, with the end of the Second World War in sight, British Prime Minister Winston Churchill, US President Franklin D. Roosevelt and Soviet Premier Joseph Stalin convened in the Livadia Palace in Yalta, a Russian resort town on the Crimean peninsula. Fuelled by Armenian brandy, the three leaders discussed the terms of the peace.

Roosevelt envisaged an agreement on international security, jointly administered by the 'Four Policemen' of America, Britain, the Soviet Union (USSR) and China. The outcome was somewhat different. The Yalta Conference inaugurated the Cold War, in which the great powers ceded each other vast supranational territories where they operated more or less unopposed.

While proxy conflicts erupted in East Asia and Latin America after 1945, this post-war order largely held until the demise of the USSR in 1991. Even before the USSR officially dissolved, the collapse of the Berlin Wall in 1989 came to be regarded as a defining moment in what political scientist Francis Fukuyama called 'the end of history'; the triumph of the US liberal model and an open, market-orientated international system underpinned by American security guarantees.

Fast forward three decades, and history appears to have started up again. The US has a new president in Donald Trump, who espouses a protectionist and isolationist worldview, while Russia and China are growing increasingly assertive under their respective leaders Vladimir Putin and Xi Jinping. The phrase 'spheres of influence' is once again on the lips of foreign policy experts.

"The world is not relentlessly moving towards plural liberal politics and open markets; it is moving in a rather different direction," according to John Sawers, British diplomat and former chief of the Secret Intelligence Service (MI6), speaking at the Aviva Investors 'Investing for Outcomes' conference in

> *The transition to a new global order could be fraught with danger*

London in November 2016. "We are moving from a world which, in the 1990s, was increasingly Western dominated…towards spheres of influence."

In the absence of the unwritten rules that prevailed during détente, the transition to a new global order could be fraught with danger. So where could potential flashpoints arise? And what are the economic and financial implications of these geopolitical shifts?

End of the Pax Americana

The term 'sphere of influence' refers to any geographic area over which a state claims cultural, economic or military pre-eminence, even if it does not technically enjoy sovereignty over the entire territory.

A classic example is the 'Monroe Doctrine' adopted by the US in the nineteenth century, under which President James Monroe promised to oppose European colonial incursions in both American continents, while pledging not to interfere in politics across the Atlantic. More recently, during the Cold War, the metaphoric Iron Curtain cleaved Europe into Western and Soviet spheres of influence.

Following the collapse of the USSR, the global reach of the US and its Western partners, projected via international alliances such as the North Atlantic Treaty Organisation (NATO), appeared almost untrammelled. But the US-led interventions in Afghanistan and Iraq, following the terrorist attacks of September 11, 2001, indicated the limits of Western influence.

Under the Obama presidency, the US acknowledged these limits. Long before Donald Trump promised to 'Make America Great Again' by focusing on domestic issues, Barack Obama had begun to adopt a pragmatic stance on foreign policy and to criticise what he called "free riders"; countries that expect America to solve the world's problems single-handedly[1].

A cautious realism defined Obama's approach. He sanctioned airstrikes in Libya and wide-ranging drone attacks against jihadists, but withdrew American troops from Iraq and Afghanistan. He implemented a strategic pivot to Asia, but did not try to prevent China from building a strong military presence in the South China Sea.

Obama resisted calls to intervene in the Syrian civil war in 2013 when evidence came to light that President Bashar al-Assad's forces were deploying chemical weapons – even though Obama had explicitly described use of such weapons as a red line that must not be crossed[2]. America's hesitation opened the door for Russia to enter the fray to strengthen Assad – one of Putin's key allies in the region – by launching airstrikes against both Isis forces and what the US considers the moderate opposition to Assad's rule (Russia draws no such distinction).

The gradual waning of American power is not just a consequence of realist political philosophy. It is also a matter of resources. In 1950, the US generated almost 30 per cent of global GDP[3]; that figure is now less than 17 per cent[4]. The rest of the world is catching up, most notably China, and other nations now want their share of global influence.

"We are seeing the end of the Pax Americana, the era of American enlightened self-interest that has lasted for 70 years," says Alastair Newton, a political consultant and former senior analyst at Nomura. "We are moving towards a global order defined by regional hegemons. A reversion to nationalist strongmen at the end of a period of US hegemony is to be expected."

Scramble for Europe

Three 'strongmen' in particular are likely to define the course of global politics over the next four years: Trump, Putin and Xi. If the current Big Three staged a new Yalta conference to thrash out the terms of the international order, they would be entering contested territory.

In March 2014, Russian troops annexed the Crimean peninsula following the ousting of Viktor Yanukovych, Ukraine's pro-Russian president. The invasion prompted fresh Western sanctions against Russia. Most international governments still consider Crimea a part of Ukraine. Moscow, meanwhile, has proclaimed the peninsula fully integrated into its borders[5].

Russia's actions in Ukraine demonstrate how a sphere of influence is about more than just military might. As with Georgia – which Russia invaded under then-president Dmitry Medvedev in 2008 – Moscow has long regarded Ukraine as part of its domain because of its longstanding historical, cultural and linguistic connections with the country.

"The historic maps, linguistic maps, ethnic maps that Russians have in their minds do not necessarily correspond to real borders," says Igor Zevelev, a political scientist and former director of the MacArthur Foundation in Russia. "The countries of the former USSR are still connected by various ties. Russia perceives these regions very differently from the way the rest of the world does."

Russia may be tempted to make further incursions into Eastern Europe, perhaps in the Baltic States. During his election campaign, Trump questioned whether the US should risk "World War Three" by honouring NATO's principle of collective defence[6]. Compare the stance adopted by then-Secretary of State Condoleezza Rice during the Georgia crisis of 2008; Rice condemned Russia's attempts to "consign sovereign nations and free peoples to some archaic sphere of influence"[7].

SPHERES OF INFLUENCE

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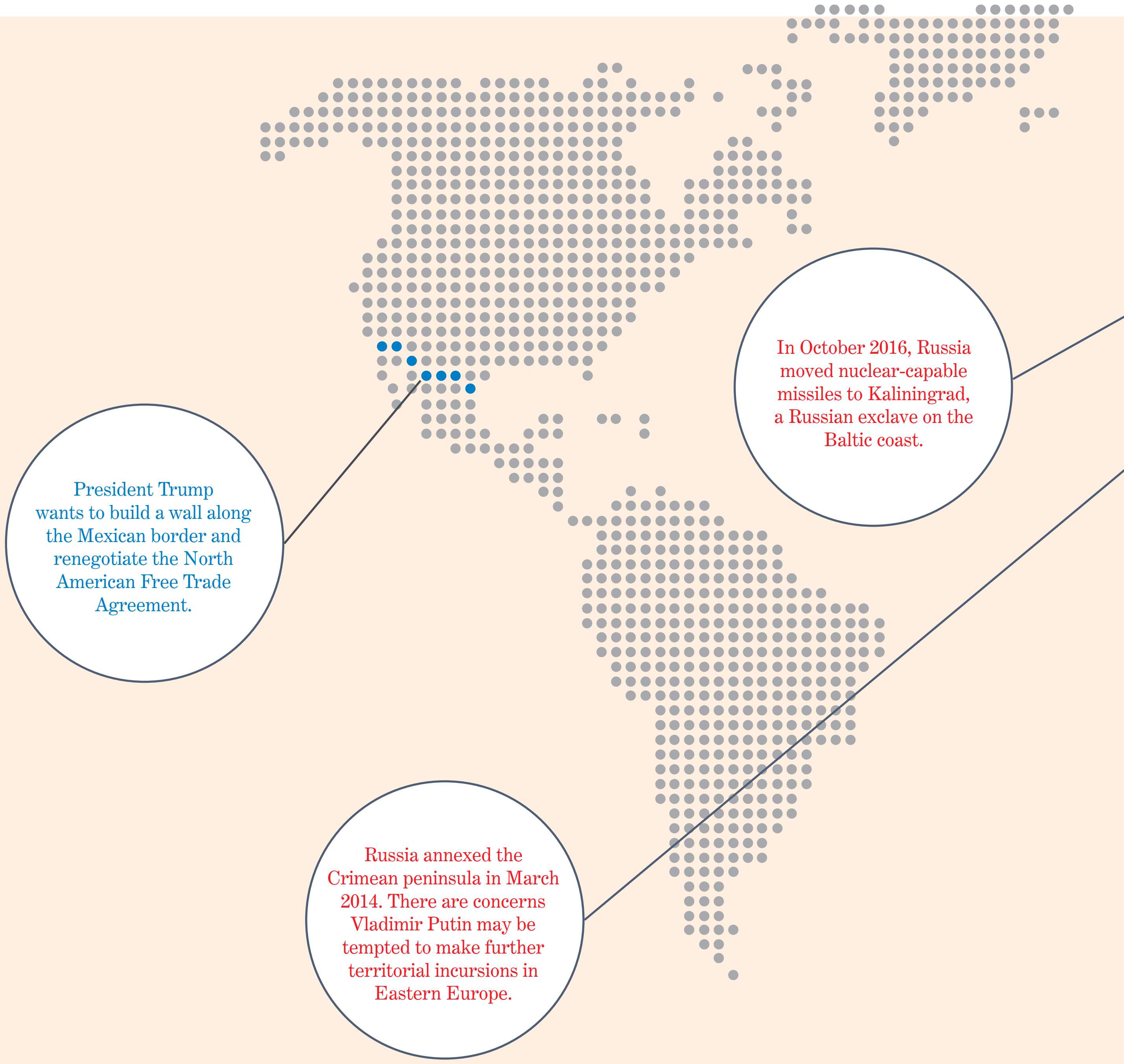


"Russia has a deep resentment of the US and sees a decline of Western strength and unity that it can take advantage of," said Sawers. "At the Valdai Conference [in October 2016], one of the phrases Russians were using on the margins – Putin didn't use it himself – was 'the scramble for Europe', the idea that Europe is beginning to fragment and bits of it will be up for grabs by the great powers as the established new spheres of influence."

The rise of populist politics in Europe, which could lead to a fracturing of the European Union, may create opportunities for a revanchist Russia. Putin is prepared to use tactical nuclear weapons to settle a conflict in Central or Eastern Europe, according to Sawers; in October 2016, Russia moved nuclear-capable Iskander-M missiles to the enclave of Kaliningrad that borders Poland and Lithuania.

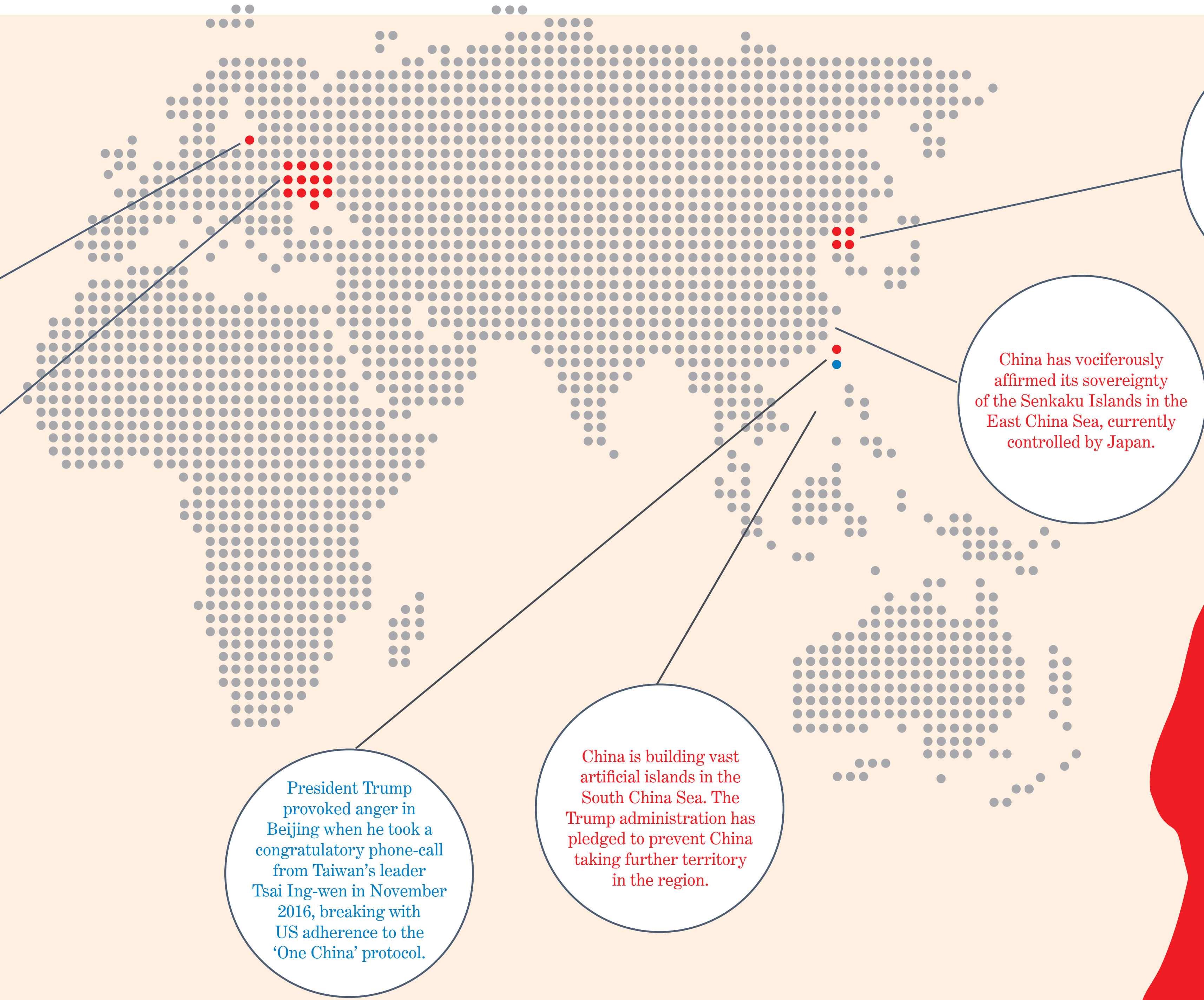
Despite this development, a period of nervy détente is more likely than outright conflict. Analysts expect the Trump administration to drop US opposition to the annexation of Crimea – without formally recognising it as a part of Russia – while continuing to stand by the Baltic States. James Mattis, the new US defence secretary, affirmed Washington's "unshakeable commitment" to NATO in a call with his British counterpart Michael Fallon on January 23, according to a Pentagon statement.

Nevertheless, the possibility of a return to the hair-trigger tensions of the Cold War should not be dismissed lightly, says Zevelev. "I am concerned about possible unintended incidents between Russian and NATO aircraft or ships near the Baltic Sea. Diplomacy will be needed between Russia and the US to avoid the possibility of face-to-face military conflict. There are many parallels with the Cold War era."

Russian weakness, Russian strength

Trump and Putin may be able to defuse this potential standoff. The consensus among the US intelligence services is that Russia intervened in the US presidential election to weaken Trump's rival, Hillary Clinton[8]. In December 2016, Obama expelled 35 Russian nationals from the US and blamed the Russian government directly for its role in hacking the Democratic National Committee's email server during the election campaign.

Whether or not Putin orchestrated the hack, there seems little doubt Trump was the Kremlin's preferred candidate. Where Clinton is hawkish on Russia, Trump has spoken of opportunities to work with Moscow on strategic objectives, such as military action against Isis in Syria and the wider Middle East. Trump's 'transactional' approach, honed during a career in business, may facilitate cooperation on a case-by-case basis.



The appointment of Rex Tillerson, former CEO of ExxonMobil, as Secretary of State may also contribute to more cordial relations with Russia. Tillerson professes "a very close relationship" with Putin, whom he met numerous times while negotiating deals on behalf of ExxonMobil in Russia[9].

"The Rex Tillerson appointment is evidence there could be progress on economic ties between Moscow and Washington," says Zevelev. "I expect the Trump administration to engage Russia and encourage it to open its markets to American companies, especially in the energy sector, in return for a lifting of sanctions."

In 2011, Tillerson negotiated a $500 billion joint venture between ExxonMobil and Russian state-owned oil company Rosneft to drill for oil in the Arctic Ocean, a deal which was nixed after the imposition of sanctions on Russia in 2014. A lifting of sanctions would open up potentially lucrative opportunities for Western firms and give Russian companies access to US hydraulic fracturing technology, enabling them to exploit new energy fields in Siberia.

But Moscow remains wary of Trump – and some of his policies may not be conducive to Russian interests. The US president has promised to support America's native shale gas industry, for example. A surge in US supply could force down global energy prices and eat into Russia's market share, potentially damaging a vital source of revenue for the Russian state.

The Emperor far away

As Trump's predecessor Obama argued, Russia's territorial aggression and its economic weakness are in inverse proportion, and the one feeds the other. "The path that Putin is taking is not going to help [Russia] overcome [its economic] challenges. But in that environment, the temptation to project military force to show greatness is strong, and that's what Putin's inclination is," Obama told *The Atlantic* in 2016.

Unlike Russia, China has a robust economy and prefers to project its influence through commercial means. Where it does deploy its military, as on the vast artificial sandbanks it has created in the azure waters of the South China Sea, it appears more interested in defending its own borders than making territorial incursions. China feels threatened by the build-up of US military forces in the region following Obama's pivot to Asia.

SPHERES OF INFLUENCE

continued

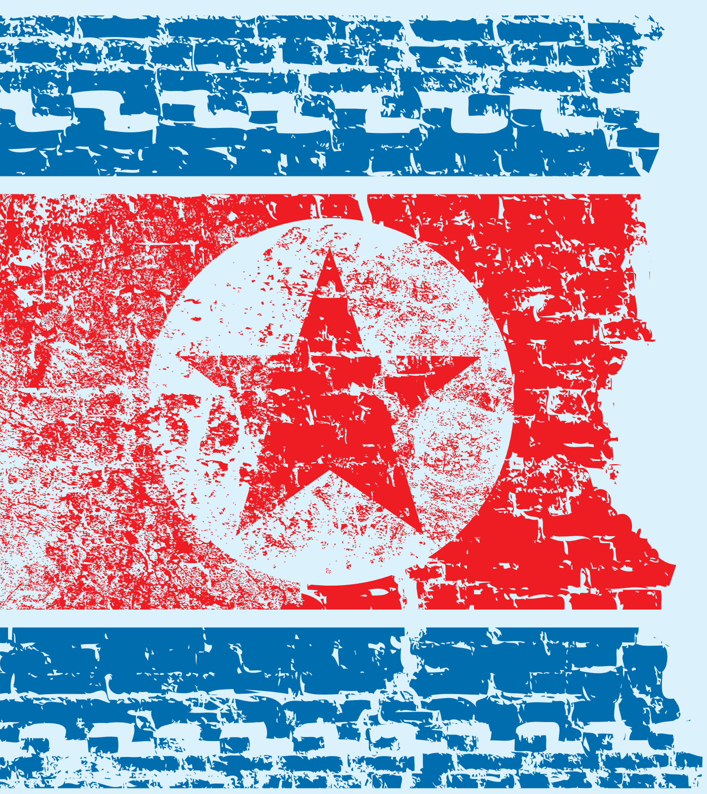
During the post-Mao era, China has mostly followed Deng Xiaoping's dictum on foreign policy: "Hide your capacities, bide your time." By contrast, President Xi tends to flaunt China's capabilities and demand recognition. Under his watch, China has vociferously affirmed its sovereignty of the Senkaku Islands in the East China Sea, currently controlled by Japan. His government also reacted angrily to Trump's phone call with Taiwan's leader Tsai Ing-wen in November 2016, which broke with US adherence to the 'One China' protocol.

However, China is unlikely to wage revanchist wars. Beijing already expends a great deal of money, time and effort enforcing domestic security, not least in Tibet and Xinjiang, where 'the mountains are high and the Emperor far away', to use the Chinese proverb for far-flung and unruly provinces.

Where China does seek to project its influence, it relies on its economic clout. The so-called 'One Belt One Road' infrastructure investment initiative in Central Asia and its equivalent in Southeast Asia, the 'Maritime Silk Road', are good examples of this strategy. China's trade-driven diplomacy has paid dividends, cementing economic ties with Russia and improving its strategic position to the south.

Consider the example of Rodrigo Duterte, president of the Philippines, one of America's most important allies in the region since the signing of a security treaty in 1951. In 2016, Duterte turned decisively away from Washington and towards Beijing. Duterte used a diplomatic visit to China in October to announce his country's "separation" from the US, dropping a complaint lodged by his predecessor, against China's military presence in Filipino waters[10]. Xi and Duterte signed trade deals worth $13.5 billion during the state visit.

HOW DO YOU SOLVE A PROBLEM LIKE NORTH KOREA?



With North Korea's nuclear-armed regime close to developing an intercontinental ballistic missile (ICBM), the Trump administration will need to deal with the issue as a matter of priority. But how do you deal with a leader as secretive and autocratic as Kim Jong-un?

Jenny Town is assistant director of the US-Korea Institute, a research programme at John Hopkins University in Chicago, and managing director of 38 North, a website that documents the latest intelligence on the North Korean regime. In this Q&A she discusses the threat posed by North Korea and says that – with the right approach – Pyongyang can be brought to the negotiating table.

AIQ: ***How is North Korea influencing geopolitics in the Asia-Pacific region?***

Jenny Town: As North Korea continues to build its nuclear capacity, it increases its bargaining power and its ability to influence geopolitics in the region. The US is concerned that the North Koreans are building a missile with intercontinental capability. But as far as our allies in the region are concerned, the red lines have already been crossed. The threat North Korea poses is viable and imminent.

AIQ: ***What are the prospects of a regional arms race?***

JT: This was already happening even before Donald Trump threatened to withdraw American military support from South Korea and Japan. These countries are showing greater willingness to consider building indigenous nuclear capabilities and increasingly questioning US resolve. In 2010, for example, after the sinking of the South Korean ship the *Cheonan*, South Korea wanted a far stronger response than the US was willing to allow[15]. Before 2010, there were few domestic politicians who publicly questioned the US-Korea alliance or called for the South to have its own tactical nuclear weapons. Now there is much more mainstream conversation about those ideas and much more public support for them.

> *China is expanding its authority at just the time when the US is enacting protectionist policies*

The demise of TPP

China is expanding its authority through trade and investment at just the time when the US is enacting protectionist policies. On January 23, President Trump signed an executive order that formally withdrew the US from the Trans-Pacific Partnership (TPP), ostensibly because the unfettered global trade it represents has harmed the livelihoods of ordinary Americans in the rust-belt constituencies whose interests he has promised to defend. Trump has accused China of devaluing its currency to hurt US exporters.

In fact, the Obama administration meticulously designed TPP, a 12-country agreement, to exclude China and maintain US economic leadership in the region. Its demise may work to China's advantage. "Trump must do something on trade with China, as for many of his voters it is the *sine qua non*," says Newton. "But it will be difficult. He could slap tariffs on Chinese goods, as Obama did with Chinese tyres, but that would be self-defeating if prices in Walmart go up by 15 per cent, hitting ordinary Americans in the pocket."

The Obama administration set tariffs on Chinese tyres of 25-30 per cent for three years from 2009, in response to a surge in supply. But the results of this policy were mixed. Shipments from other Asian nations doubled in value and consumer costs rose. According to the Peterson Institute for International Economics, the tariffs protected no more than 1,200 US manufacturing jobs – but resulted in the US economy losing about 3,700 retail jobs due to the impact of higher prices[11].

In the meantime, China has been touting a rival free trade agreement to TPP, the Regional Comprehensive Economic Partnership (RCEP). Many of TPP's intended members, including Australia and Japan, are in talks over RCEP. This marks an intriguing role reversal: China, the ostensibly communist power, is now presenting itself as the guardian of free trade and capitalist enterprise while the US is perceived to be retreating behind its borders.

On January 17, Xi delivered a speech to the World Economic Forum in Davos in which he robustly defended globalisation. "We must redouble efforts to develop global connectivity to enable all countries to achieve inter-connected growth and share prosperity. We must remain committed to developing global free trade and investment…and say no to protectionism," Xi said.

AIQ: ***How close is North Korea to developing an ICBM that could reach targets in the US?***

JT: In his New Year address, Kim Jong-un said North Korea is in the final stages of developing ICBM capability, although he didn't threaten an imminent test. The regime has been working on an ICBM for some time and last year it obtained two large liquid fuel engines, one of them presumably for an ICBM. It has rebuilt its space launch facilities to be able to accommodate larger rockets, and we would presume larger missiles as well. The next stage is flight testing. According to some of the more aggressive estimates, North Korea will have some kind of operational ICBM by 2018.

AIQ: ***Is North Korea capable of cyber attacks?***

JT: North Korea has a very sophisticated cyber force and is willing to use it. There is a lot of conjecture as to how big that force is and where it is stationed – there is talk that North Korea's cyber hackers are stationed along the Chinese border – but there is distinctive coding that shows various different hack attempts have come from the North Koreans.

AIQ: ***Does China have a role to play in reining in the North Korean regime?***

JT: Everyone looks to China, but China doesn't have the influence over North Korea that it used to. China had a very strong relationship with [former leader] Kim Jong-il. Beijing knew how to talk to Kim Jong-il and how he would react to things. Xi Jinping has not had personal contact with Kim Jong-un and communication has broken down. On the day [Chinese envoy] Wu Dawei arrived in Pyongyang last year, North Korea announced they were going to do another satellite launch – when they knew that Wu Dawei was there to talk to them about calming the situation down. That was a huge slap in the face and shows the limitations of Chinese influence on the regime.

AIQ: ***What would be the consequences if the North Korean regime collapses?***

JT: It would be total chaos. A lot of people wish for a regime collapse. They think as soon as Kim Jong-un is gone the country will turn to the West. But that rarely happens at the end of a dictatorship. This a country of 25 million people, of which only three million are of the 'moneyed' class and there have been various purges of the elites. There's nothing to say there won't be various factions fighting for leadership if the regime collapses. There are nuclear weapons; there are biological weapons in provincial stockrooms that could be accessed by people in the provinces.

AIQ: ***How would neighbouring countries respond in that event?***

JT: Given the lack of information available from inside the country, it would be difficult in that situation for other countries to know how to respond. When do things get bad enough to require foreign intervention – and what would be the goal of such intervention? Stability? Unification? Or merely securing the weapons of mass destruction (WMD)? If the US and South Korea go in, how does China react? It's hard to envisage an easy transition.

AIQ: ***What does Pyongyang want?***

JT: North Korea's rhetoric is very much about demanding respect as a sovereign state and an end to the targeting of their leader with sanctions, which Pyongyang sees as disgracing the country. North Korea also wants guarantees on security. But ultimately the regime does want a more peaceful political environment to try to develop its economy.

AIQ: ***Is North Korea willing to negotiate on its nuclear programme?***

JT: A lot of people talk about how North Korea will never give up its nuclear weapons and how it is not interested in negotiations. That is a very dangerous way to approach the problem because it limits the options – and it is not necessarily the truth. We do a lot of 'Track Two' work with North Korean government officials and there is a room for negotiation. The reality is if the international community is really serious about trying to curb the North Korean nuclear weapons programme at some point it has to explore the diplomatic track. Pressure, intimidation, bolstering defences, imposing more sanctions – these tactics are forcing North Korea to move in the opposite direction to what we want ●

SPHERES OF INFLUENCE

continued

> *Geopolitics is a more pressing issue for governments than at any time since the Cold War*

Asian arms race

While China is taking steps to secure its economic leadership in the region, it has not demonstrated it is willing to use its burgeoning military power to guarantee security and preserve the status quo. With Trump threatening to pull US forces from the region unless his allies contribute more to their own security, East Asia could face a power vacuum.

Ironically, Trump's isolationism may not necessarily be welcomed by Xi in this instance, as it would strengthen Japanese Prime Minister Shinzo Abe's argument that Japan's pacifist constitution must be revised and its army retooled. "Up to now, US policy in Asia benefits Beijing in that it keeps Japan disarmed," says Benjamin Charlton, Senior Analyst, East Asia, at consultancy Oxford Analytica.

"US withdrawal [from Japan] would force Tokyo to develop its independent military capabilities, which China would find threatening. This could spark a Sino-Japanese arms race; spurred by the fact Japan would probably still have access to US weapons and equipment. Japan is a lucrative export market Washington would have no reason to cut off," Charlton adds.

The US presence on the Korean peninsula is another matter. China is reportedly suspicious of the 'missile shield' the US is installing in South Korea to defend it against a nuclear strike from the North. In China's view, the US Terminal High Altitude Area Defence (THAAD) system undermines its own nuclear threat, and THAAD's powerful radar capability enables the US to monitor activity in China.

Again, China is using capital to make its views felt. In early 2016, a Chinese foreign ministry official travelled to Seoul to meet some of South Korea's biggest investors in China, including Samsung and Lotte Group, and told them their China business could suffer because of the government's support for THAAD, according to a report in the *Financial Times*[12].

China's economic influence, rather than military force, may be the key to defusing the threat posed by Pyongyang – although Xi is reluctant to countenance further sanctions. "Unlike his predecessor Hu Jintao, Xi Jinping has made no effort to bring North Korea to heel," says Newton. "He sees the North Korean regime as a useful tool in promoting Chinese hegemony in the region. More meaningful sanctions would have to happen mostly through Chinese banks. China will not like that."

Trump has indicated he would negotiate directly with Kim Jong-un to curtail the North Korean nuclear programme, which could bring dividends. But a resumption of the multilateral talks involving the US, China, South Korea, Japan and Russia, which took place from 2003-2009, is perhaps the more vital objective. This is because the main hazard posed by North Korea may not be a nuclear strike but rather the precariousness of its regime. If the nuclear-armed government falls without any international agreement on how to respond, the region's powers might act independently to contain the threat and defend themselves: a risky scenario.

"Instability in North Korea could create a situation in which all surrounding countries act individually to protect their interests," Henry Kissinger told *The Economist* in December 2016. "This might trigger a conflagration with some of the characteristics of 1950, when China entered a war [the Korean War] it had not intended to participate in, and affected thereby the whole structure of Asian foreign policy for 25 years. That danger is extremely real[13]."

Cyber security

With uncertainty surrounding relations between the great powers, coupled with the resurgent threat of nuclear war, geopolitics is a more pressing issue for governments than at any time since the Cold War. But in another sense, the relationship between geography and political power has never mattered so little. The internet has rendered physical distance a minor obstacle for a state that wants to flex its muscles.

Cyber attacks can be staged relatively cheaply, which levels the playing field between nations with unmatched economic or military resources. North Korea's most effective act of aggression in recent times was not a missile launch. In 2014, Pyongyang allegedly sponsored a hack of Sony Pictures' email servers, apparently in retribution for its production of *The Interview*, a knockabout movie comedy that mocks Kim Jong-un. Sony initially withdrew the film from theatrical release in response to the hackers' threats of terror attacks on cinemas. The US doubled down on sanctions against North Korea in response.

Suspected foreign interference in the US election, and hackers' near-destruction of the TV5 television network in France in 2015, are more recent examples of how cyber warfare is playing a newly influential role in global politics[14]. Governments are increasingly deploying armies of 'bots' on social media to promote political messages and influence public debate (see boxed text).

And in the future, cyber-warfare will not be limited to the release of classified information or the dissemination of propaganda. As countries become ever more reliant on automated transport systems and other high-tech infrastructure, cyber-warfare could have severe consequences in the physical world.

"Sometime in the next ten years we should expect a 'cyber 9/11', something that costs a lot of people's lives, which destroys businesses," said Sawers. "And that will lead to the same response on the cyber side as we saw after 9/11 on the counterterrorism side." Sawers believes it will be important for major economies to develop guidelines as to what is a permissible use of cyber force and what is beyond the pale.

With that in mind, one can envisage a new Yalta-style conference to determine the rules. There would be no need for the participants to meet in person; the negotiations could take place in the neutral territory of a virtual conference room. In place of the soldiers that guarded the Big Three in 1945, Trump, Putin and Xi would be protected by squads of technology boffins, leaving them free to negotiate their cyber-spheres of influence. Plus ça change ●

1 See Obama's wide-ranging interview with *The Atlantic* magazine, 'The Obama Doctrine,' April 2016

2 *Ibid*. Obama told *The Atlantic* he prevailed on Putin at a G20 summit in St. Petersburg to have Assad remove the chemical weapons arsenal in lieu of military action.

3 'The world economy: a millennial perspective', OECD, 2001

4 World Bank

5 'Putin eliminates ministry of Crimea, region fully integrated into Russia, Russian leaders say,' *International Business Times*, July 2015

6 'Donald Trump reiterates he will only help NATO countries that pay "fair share,"' *The Guardian*, July 2016

7 Speech to The German Marshall Fund, September 2008

8 'FBI in agreement with CIA that Russia aimed to help Trump win White House,' *Washington Post*, December 2016

9 'How Rex Tillerson changed his tune on Russia and came to court its rulers,' *New York Times*, December 2016

10 'Philippines' Duterte backs 'new order' led by China and Russia,' *Financial Times*, November 2016

11 'US tire tariffs: saving few jobs at high cost,' *PIIE*, April 2012

12 'China turns screws on corporate Korea over missile shield,' *Financial Times*, January 2017

13 'On background: Interview with Henry Kissinger,' *The Economist Radio*, December 2016

14 Hackers based in Russia were reportedly behind the TV5 attack. See 'How France's TV5 was almost destroyed by "Russian hackers,"' *BBC News*, October 2016

15 The *Cheonan* went down near the Korean maritime border on March 26, 2010. An international investigation found it is likely the ship was sunk by a North Korean torpedo. The White House described the sinking as "an act of aggression" by North Korea. '"North Korean torpedo sank South's navy ship" – report,' *BBC News*, May 2010

Image page 12, courtesy The UK National Archives

RISE OF THE BOTS:
POLITICAL PROPAGANDA IN THE AGE OF THE INTERNET

The spread of 'fake news' – and its potential influence on politics – has become a cause célèbre since the US election of November 2016.

For Samuel Woolley, Director of Research at the Computational Propaganda Project at Oxford University, falsified reporting is not so much a new phenomenon as a sign we are returning to the global propaganda wars of yesteryear. "We see this as the re-emergence of a form of propaganda, similar in some ways to the propaganda promoted during the Cold War," he says.

Woolley and his colleagues have conducted research that shows governments across the world are marshalling armies of 'bots' – sophisticated programmes that deliver messages on social media websites – to sway the political debate at home and extend their spheres of influence abroad. He spoke to *AIQ* about 'computational propaganda' and what the future holds for political communication in the age of the cyber-troll.

AIQ: ***What is computational propaganda?***

Samuel Woolley: We study the ways in which social media spheres are manipulated by bots: social bots that look and act like people, but are in fact software coded to influence public opinion. Ten years ago, the general view was that social media would become a political tool that would allow people in countries ruled by oppressive regimes to communicate and organise using channels that are outside the hands of the government. But now we're seeing the political normalisation of social media. Powerful political actors are manipulating sites like Facebook, Twitter, Reddit and Instagram to their own ends.

AIQ: ***How does the technology work?***

SW: Governments, political parties and candidates for office worldwide are using bot technology to do several things. One is to make them look more popular: bots can enable them to drive up the traffic supporting them on social media and amplify their message by retweeting or sharing certain content. The most sophisticated bots operate via machine learning and can produce content and interact with real people in response to real-world events. Another way political actors can use computational propaganda is to game the Facebook or Twitter algorithm to display certain messages more prominently. What we're talking about here is not traditional computer hacking, it's the hacking of public opinion using accounts that look like real people online. This approach makes the most of the anonymity of the internet, as the sites in question don't have any markers to delineate who is real and who is a bot.

AIQ: ***Who is using computational propaganda?***

SW: There is a large Russian state effort to push out pro-Russian content using political bots and it is very much transnational. During the Crimea crisis and the Olympics doping scandal, we saw lots of bots sending out pro-Russian messages. There is an organisation called the Internet Research Agency in St. Petersburg that has worked on multiple campaigns designed to spread pro-Kremlin messages and to contribute to real-time debates. For example, it would deploy bots on the comment sections of *The Guardian* and *New York Times* websites to start arguments and try to change people's opinion. Turkey, Ecuador and Venezuela have run domestic bot campaigns; in Venezuela bot production is known to be carried out in-house as part of the government's communications department.

AIQ: ***Did bots influence the US election?***

SW: We are studying this issue at the moment. Pretty much anyone can create a Twitter bot using the Twitter application processing interface (API) and we know that lone individuals and the 'alt-right' political movement use bots, but we haven't seen a connection to the two main parties during the US election. However, we know that Twitter and Facebook are the main sources of news for many people in the US and the use of bots to promote support for the candidates in the election was widespread. Our research has found that 19 million bot accounts tweeted in support of either Trump or Clinton in the week leading up to Election Day. In Michigan, 30 per cent of people claimed to be undecided voters, but in the end that state voted overwhelmingly for Trump. We wonder whether intensive messaging streams on social media during the election aided by bots might have had something to do with the shift.

AIQ: ***How can the rise of computational propaganda be challenged?***

SW: Governments need to work to catch up. In America we have several arms of government that don't seem to know that bots even exist, and the Federal Elections Commission, the regulator, is one of them. I also think Facebook, Twitter and Reddit should do more to flag bots. Lots of these websites promote themselves as a place of social conversation and they need to start detecting and getting rid of manipulated traffic. And given their business models, it's in their interests to address this issue. Advertisers don't want fake traffic; they want real eyes on the page.

AIQ: ***What does the future hold for computational propaganda?***

SW: There's an arms race between the people building the bots and those working to detect them, and the people building the bots are winning. Machine learning will continue to advance and bots will become ever more sophisticated. The ability to 'megaphone' messages using bots is the future of political communications and it is going to become ever trickier to monitor it ●

ROUGH TRADE

Donald Trump's tough talk on protecting the national interest has sparked fears of a new bout of global trade wars. Investors have the task of unpicking the reality from the rhetoric.

Ford, the second-largest US automaker, on January 2 said it had ditched a plan to build a small-car assembly plant in Mexico and instead opted to expand a site in Michigan. It wasn't long before President-elect Donald Trump was hailing the move.

"Thank you to Ford… This is just the beginning - much more to follow," he told his followers on Twitter.

Predictably, the decision drew an altogether different response in Mexico, where the front page of daily newspaper *El Universal* proclaimed: "Trump leaves Mexico without 3,600 jobs"[1].

Ford's decision came just two months after the president-elect claimed credit for a similar event. Within days of Trump's victory in the presidential race, Carrier, a manufacturer of heating and cooling systems, announced it had decided not to shift more than 1,000 factory jobs to Mexico from Indiana.

It is unclear how much influence Trump actually had in either of these decisions. Carrier said that while it had held "productive" talks with Trump and his running mate, Indiana governor Mike Pence, incentives offered by its home state were "an important consideration".

As for Ford, chief executive Mark Fields said his decision was explained by falling demand for the type of small cars the Mexican plant was slated to build. Although he conceded the president-elect's emphasis on tax changes and cutting regulations should have an overall positive effect on automakers, he had not consulted with the incoming administration. Interestingly, however, his announcement came just hours after Trump had threatened to slap tariffs on cars made in Mexico by Ford's bigger rival General Motors.

Then it became apparent Trump's hostility was not just directed towards US companies. On January 6, he warned Toyota he would impose a "big border tax" on the Japanese automaker if it built a new plant in Mexico. Japanese government officials were quick to remind him of the jobs the country's automakers had created in the United States.

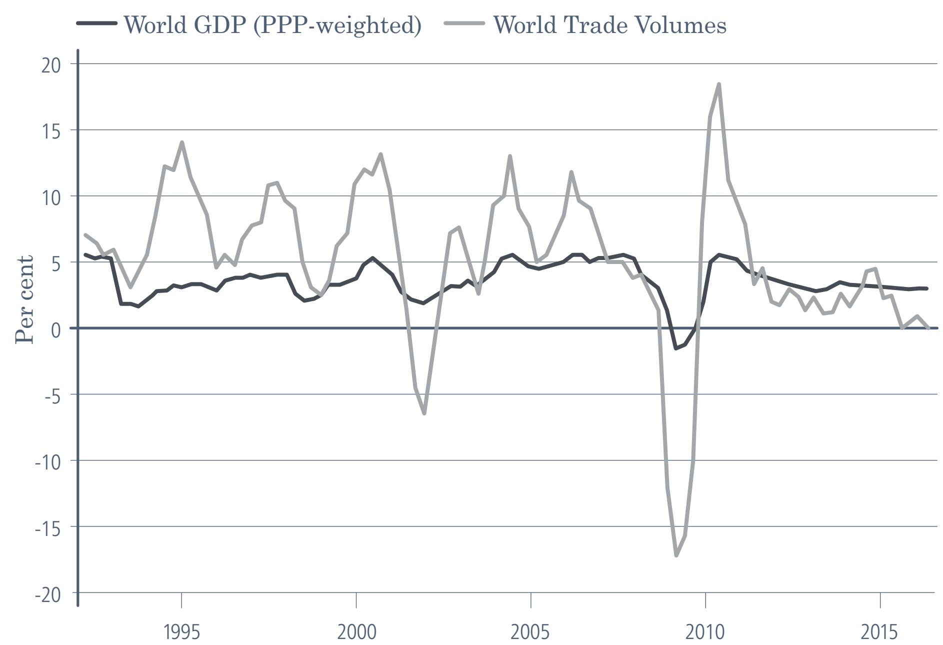
Trump's bellicose rhetoric is at the very least making executives think extremely carefully before shifting jobs overseas. That is likely to be especially true for the producers of consumer goods, given their vulnerability to the bad publicity that might ensue. Furthermore, all of this happened before Trump even moved in to the Oval Office.

Trade wars

The questions for investors now are: following his inauguration how much further will he go in striving to protect American jobs; in particular, will he slap tariffs on other countries' goods and if so how will they respond; and if we are about to embark on a new era of trade wars and protectionism, what are the implications for financial markets?

If there is a point on which most economists agree, it is that trade among nations makes the world better off. Yet international trade can be one of the most contentious of political issues, both domestically and between governments.

World GDP and Trade Growth



Source: Macrobond

> *There is now a clear danger that trade growth will contract further, dragging economic expansion lower in its wake*

The opening up of the world to freer trade after World War II – through the General Agreement on Tariffs and Trade – is widely seen to have boosted standards of living across the world by fostering national specialisation and encouraging greater integration of global supply chains. But this trend had already gone into reverse well before Trump hit the campaign trail.

As can be seen in the chart, trade growth has fallen behind global economic growth since the financial crisis of 2008. That is in stark contrast to the preceding decades, which saw a period of rapid growth in global trade, in part driven by China joining the World Trade Organisation (WTO) in 2001. In the 18 years leading up to the financial crisis, world trade grew at an annualised rate of 6.5 per cent and economic output at 3.8 per cent. In the eight and a half years since, trade growth has averaged just 1.2 per cent and economic growth 2.9 per cent.

In reality, the decline in the growth of trade has to date had little to do with protectionism. Rather, it has been the result of first the financial crisis – which among other things led to a sharp contraction in the availability of credit to facilitate trade flows – and then a sharp drop in the growth of trade between emerging economies. In particular, the rebalancing of the Chinese economy away from manufacturing and investment towards consumption has resulted in a sharp slowing in imports of capital goods and components, often sourced from other parts of Asia[2]. China on January 13 reported that the value of its exports fell 7.7 per cent in US dollar terms in 2016 – the second successive annual decline and the biggest since 2009 – while imports fell 5.5 per cent.

In the national interest

With Trump's election, there is now a clear danger that trade growth will contract further, dragging economic expansion lower in its wake. He has already scheduled meetings with the leaders of Canada and Mexico as he attempts to renegotiate the North American Free Trade Agreement and signed an executive order to withdraw from the Trans-Pacific Partnership, fulfilling a campaign pledge.

Arguably the biggest concern pivots around bilateral relations between the US and China, the world's biggest trading partners. Trump has threatened to label China a "currency manipulator" and to slap tariffs on Chinese goods entering the US.

Xinxin Li, a partner at New York-based economic and political advisory firm Observatory Group, says: "Any punitive tariff on Chinese goods… will certainly trigger Chinese retaliation. The intensity of retaliation depends on the damage to China."

China's state-run newspaper *Global Times* recently warned Trump that if he were to wreck Sino-US trade, a number of US industries will be impaired. In an editorial, the newspaper claimed any new tariffs would trigger immediate "countermeasures" and a "tit-for-tat approach" from Beijing.

"A batch of Boeing orders will be replaced by Airbus. US auto and iPhone sales in China will suffer a setback, and US soybean and maize imports will be halted… Making things difficult for China politically will do him no good," the newspaper wrote[3].

Li says the business operations of US multinationals in China could easily become targets of enhanced anti-trust measures, reduced access to government procurement, and anti-graft and anti-tax evasion investigations. US companies with big market shares in China – in the automobile, IT, pharmaceutical and consumer goods sectors, for example – would be vulnerable.

Perhaps more concerning still, a trade war between the two could quickly sour relations on other fronts. Already tensions between the two superpowers are rising over the status of Taiwan, and a dispute over China's claim to several islands in the South China Sea.

China has long considered Taiwan a breakaway province that belongs to it. The US adopted the 'One-China' policy and stopped recognising Taiwan's government when it renewed diplomatic relations with China in 1979. Trump now says he won't commit to backing the policy.

Having first provoked Beijing with a protocol-breaking telephone call with Taiwanese president Tsai Ing-wen – the first communication between leaders of the two countries in 37 years – Trump reportedly told the *Wall Street Journal* on Jan 12 that "everything is under negotiation, including One China"[4]. China retorted by telling him he has no chance of striking a deal with it.

Beijing was similarly irritated when Rex Tillerson, Trump's pick for secretary of state, suggested the US could adopt a more aggressive strategy towards it in contested waters in the South China Sea.

Li says it is particularly concerning that unlike other potential crises in the recent past, where trade and economic ties have served to stabilise international relations, this time looks set to be radically different.

"Economic and trade conflicts are likely to be at the epi-center in the US-China relationship under Trump," he argues.

Mary Nicola, Asia Economist at Aviva Investors, says any rise in protectionism would spell particularly bad news for Asia's smaller, more open economies.

"There is quite a lot of nervousness. Singapore, for example, is heavily exposed to trade with exports three times the size of GDP. Malaysia, South Korea and Taiwan are other economies that will be watching developments anxiously given their dependence on exports," she says.

Rising nationalism threatens to lead to more protectionism in Europe too, where growing numbers are blaming globalization for the economic hardship they have experienced in recent years. French far-right presidential candidate Marine Le Pen was quick to toast Ford's decision, which she described as a victory for the protectionist policies she champions. Meanwhile, Britain's trade with the European Union – by far the most important destination for its exports – looks certain to shrink, potentially dramatically, following its decision to quit the bloc.

According to Will Ballard, Head of Emerging-Market Equities at Aviva Investors, the likelihood remains that common sense will prevail and the incoming US administration will avoid rushing headlong towards sparking a series of trade wars that will be to the detriment of everybody. After all, the early signs are that it may be able to achieve some of its aims just by issuing threats.

Tax perks

When visiting the Carrier plant shortly after that company's decision was announced, Trump did not mention tariffs. Rather, he said, his main goal was to dissuade US companies from exporting jobs overseas by changing, among other things, US corporate taxation.

Republican lawmakers want to slash the US corporate tax rate to 15 per cent from 35 per cent. More controversially, they are also planning a 'border-adjusted' tax. If enacted, the proposal would allow US companies to exclude receipts from exports in calculating their taxable income. At the same time, they would not be permitted to deduct payments to foreign suppliers or affiliates.

"These tax reforms potentially pose as big a question for a stock market investor as the threat of a euro zone break-up did five years ago," says Giles Parkinson, Global Equity Fund Manager at Aviva Investors.

He thinks there is a good chance the corporate tax regime is reformed, although conceded it is difficult to gauge the extent to which the Republicans' proposals are enacted.

The attractions of the border-tax plan are obvious to a political party that wishes to cut corporate taxation in a fashion that doesn't seriously damage the public finances. Moreover, proponents say the proposed changes would be consistent with Trump's vow to get more Made in America stamps on goods, thereby creating US jobs. Besides, they argue, the idea is not that different to the value-added taxes common in other countries.

Opponents say it will unfairly cut profits for some sectors – particularly the retail and auto industries – and send US prices higher.

ROUGH TRADE

continued

For example, the head of Toyota's North American business, which employs 136,000 people, recently estimated that shifting production to the US from existing Mexican plants to avoid any border tax would push up the cost of a car by a minimum of $1,000. He said the unintended consequence would be less US sales, and cuts in US production and employment.

Parkinson says more troubling still is the risk that this so-called border tax, which could have massive implications for companies in the US and indeed beyond, will be seen as a form of "crypto-tariff".

"Effectively you're saying to retailers, 'don't import all that stuff from China to sell in our shops; buy it from domestic companies,'" he says.

> *Opponents of the border-tax plan say the result could be trade wars*

Opponents of the border-tax plan say the result could be trade wars. Former US Treasury Secretary Lawrence Summers, writing in the *Financial Times*, said the WTO is "very clear" that income taxes cannot discriminate to favour exports. As such, the proposals will be seen by other countries and the WTO "as a protectionist act that violates US treaty obligations".

"While the WTO process would grind on, protectionist acts by other nations would be licensed immediately," he wrote.

Parkinson, who has for some time believed the US would outperform other developed economies, says by itself the cut in the corporate tax rate being proposed – depending on the magnitude – could make the US stock market "the cheapest it has been in four years, even allowing for the recent rally".

He believes a border tax could boost the shares of many US companies significantly further, at least in the immediate aftermath of the proposals being enacted.

"A border-tax policy would be a massive boost for exporters. If you're Brown-Forman, suddenly you're not paying any tax on that case of Jack Daniels you're sending overseas. To take an extreme example, if there were a US manufacturer that sold everything abroad, suddenly its tax rate would go from 35 per cent to zero, which would add 50 per cent to the equity value," he says.

Equally, other companies, most notably major importers such as retailers, would be badly affected. He says Wal-Mart, for example, without taking mitigating action, "is going to go from earning four dollars a share to losing three".

False economy

Ballard, however, is sceptical the US will be able to 'onshore' much production by changing its tax regime.

"It is simply not going to be economical. The average wage in the US is about five times higher than in China: that is before you even consider the cost of land and building a factory. It makes no sense. It's not going to be just Mexican and Chinese producers who will be hit by tariffs. US consumers will too," he says.

Ballard reckons the price of an iPhone, for example, would triple in the event production were brought back to the US. He concedes Trump may impose tariffs on a limited range of products. If he were to do so, the real question would be how any burden would be spread.

"Would it be on the customer, the retailer, the manufacturer or someone further down the supply chain?"

Taking Taiwanese company Hon Hai – which gets about half its sales from assembling Apple iPhones and iPads – as an example, Ballard says that since it only makes "wafer-thin" margins in the first place "it will be hard to squeeze the company without the impact being passed on".

By contrast, Chinese knitwear manufacturer Shenzhou International is much more vulnerable to being squeezed since it makes roughly an 18 per cent margin.

Looking elsewhere, Ballard believes the shares of other companies have sold off excessively following Trump's victory. He cites Mexican company Rassini, the world's biggest producer of suspension components for light commercial vehicles, as an example. Its shares have plunged 20 per cent since the US election in local currencies, and are down by a third in US dollar terms.

"They've got a near monopoly, relatively low margins and are fairly well integrated into the supply chain. On top of that, they've got some manoeuvrability because they do have plants in the US so they can shift production if necessary," says Ballard.

He does concede, however, that rising protectionism is a concern and helps explain his decision to reduce his stake in Shenzhou.

As for the broader economic outlook, while our strategy team's expectation remains for faster growth and inflation, there are now significant risks to this view. Although there are good reasons to believe Trump won't impose punitive tariffs, if he were to do so it could set off a cycle of measures and counter-measures, with extremely damaging consequences for the US and the rest of the world. In the past, trade wars have been to the detriment of everyone and there is no reason why that would be any different should one erupt again

1 http://uk.businessinsider.com/mexico-spooked-by-trumps-leverage-in-keeping-jobs-in-the-us-after-fords-pivot-2017-1
2 'World Economic Outlook', IMF, April 2016, pp. 54-56.
3 http://www.globaltimes.cn/content/1017696.shtml
4 http://www.wsj.com/articles/donald-trump-sets-a-bar-for-russia-and-china-1484360380

FSB TASK FORCE URGES TRANSPARENCY IN THE BATTLE AGAINST CLIMATE RISK

The Financial Stability Board's Task Force on Climate-related Financial Disclosures has published its first set of recommendations for companies and financial institutions. These will help investors quantify climate-related risks, says Steve Waygood.

> *Climate change is potentially the mother and father of all secular shifts*

Environmentalists were dismayed at Donald Trump's victory in the US election. During his campaign, Trump vowed to revive the fossil fuel industry, scrap Barack Obama's environmental protections and cancel the Paris Agreement, which commits governments to hold global temperatures at less than two degrees Celsius above pre-industrial levels.

But as he settles into the White House, President Trump may find it difficult to reverse the momentum behind the transition to a low-carbon economy. Governments, companies and investors are already taking action to limit fossil fuel emissions and mitigate climate-related risks.

The Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD), chaired by former New York City mayor Michael Bloomberg, is a good example. The TCFD launched in December 2015 and is backed by companies with a market capitalisation of $1.5 trillion and financial institutions responsible for assets worth a combined $20 trillion. The task force encourages voluntary, consistent disclosures to help investors, lenders and insurance underwriters manage climate risks and identify opportunities.

Steve Waygood, Chief Responsible Investment Officer at Aviva Investors, is a member of the TCFD. "The emergence of the task force proves the business world is serious about tackling climate change," he says. "This is not some fluffy campaign promoted by a pressure group – it is an initiative backed by some of the world's biggest companies and financial institutions that want to ensure the transition to a low-carbon economy is managed properly."

Lacking clarity on companies' exposures to the risks associated with extreme weather events or climate-related regulatory changes, investors can be left vulnerable to abrupt shifts in asset prices. As Bloomberg put it in a statement co-authored with Bank of England Governor and FSB Chair Mark Carney: "Without the necessary information, market adjustments to climate change will be incomplete, late and potentially destabilising."

In December 2016, the TFCD published its first set of recommendations on disclosure for companies and other financial institutions. The task force suggests companies run scenario analyses that model potential performance under a range of different climate and policy outcomes, and publish the results as part of their mainstream financial filings. Companies and other financial institutions are encouraged to report how they will incorporate climate-related considerations into four key areas of their businesses: governance, strategy, risk management and targets.

The task force will share the results from a public consultation on its recommendations with the FSB in March, before delivering an updated report to the FSB in June.

In this Q&A, Waygood explains the thinking behind the TFCD's recommendations and the importance of transparency in the market's response to climate change.

Why do investors need information on companies' climate-related exposures?

Climate change is potentially the mother and father of all secular shifts this century. According to research from the Economist Intelligence Unit, commissioned by Aviva Investors, a rise in temperatures of six degrees this century would see $43 trillion wiped off the value of financial markets, discounted to present day value. That's 30 per cent of the entire stock of global manageable assets. So it is crucially important for investors to know the companies in which they invest have considered this issue.

Specifically, better disclosure will enable investors to assess the impact of the three main types of climate risk on their portfolios. The first category is the physical risk to investment assets posed by extreme weather events such as floods and droughts. The second is transition risk, which refers to the hazards associated with the transition to a low-carbon economy. The implementation of a global carbon budget, for example, would render the vast majority of fossil fuel reserves 'stranded' or unusable, hitting extractive companies' business models. Third is litigation risk, which is related to the potential effects of compensation claims on carbon extractors and emitters.

Will better disclosure also enable investors to identify opportunities?

Yes. Equipped with more information, asset owners will be able to better engage with the companies they invest in to ensure they are dealing with climate-related risks. But investors will also be able to use this data to put capital to work, identifying new opportunities to profit from the transition to a low-carbon economy across various sectors; from commercial real estate companies that specialise in energy-efficient buildings to automobile firms that are in the vanguard of zero-emissions technology.

FSB
TASK FORCE
continued

> *Better disclosure will incentivise longer-term thinking among investors*

We hope better disclosure will incentivise longer-term thinking among investors and bring to an end what Mark Carney has called the "tragedy of the horizon", a damaging short-termism that fails to take into account risks and opportunities beyond the three-to-five year cycle of most financial-market actors.

The TCFD recommends companies model different climate scenarios. How will this work in practice?

The TCFD believes organisations should use scenario analysis to assess the business, strategic and financial implications of climate-related risks and opportunities – both to better understand those risks and opportunities and to inform stakeholders about how the organisation is positioning itself in relation to them. This is perhaps the single biggest new contribution the task force is making: the suggestion that thousands of companies should produce their own scenarios to give stakeholders a picture of what climate change means for their business.

The TCFD recommends modelling a range of outcomes, starting with a 'two degree scenario' – the risk that global temperatures rise two degrees above the pre-industrial average – and scenarios relevant to their specific circumstances. Automobile companies should model scenarios based on changes to emissions regulations, for example. If these companies are going to make the transition to electric cars, what sort of batteries will they use for energy storage? Most electric-car batteries use lithium, which is a non-renewable resource – so what happens if lithium becomes scarce and uneconomic to extract? These are the sorts of details the disclosures need to include.

How have companies responded to the recommendations?

Companies provided feedback on the recommendations at the World Economic Forum in Davos in January. There was overall support for the task force's emphasis on standardisation and consistency of climate-related disclosures. However, some companies in the oil and gas sector raised concerns over the recommendation that they disclose 'scope three' or indirect emissions, such as those associated with the disposal of the waste they create or their employees' use of transport. Aviva believes the solution to this issue will lie in standardised conversion factors, which we would like to see the International Accounting Standards Board produce.

The TCFD recommendations are voluntary. Is this sufficient?

While we welcome the recommendations, we don't believe voluntary disclosures will get us far enough, fast enough to effectively combat climate change. Research shows it is only when governments mandate disclosure that you get it at the scale required to make it consistent and comparable.

We would like the International Organisation of Securities Commissions to change its listing rules to promote this kind of disclosure. We would also like to see the Organisation for Economic Cooperation and Development update its Principles of Corporate Governance to make clear it is the responsibility of company boards to govern long-term risks, including climate change.

Does the election of Donald Trump threaten to derail global efforts to combat climate change?

The launch of the TCFD could not be better timed, as it shows there is massive momentum behind the transition to a low-carbon economy in the private sector. During Davos, support for the TCFD initiative was clear, Trump's election notwithstanding.

While it's not going to be the easiest political environment in the US for the next four years, I have no doubt Obama and his team have done everything they can to ensure it will be extremely difficult to unwind the Paris Agreement, as Trump has threatened to do. In my view, it is now inevitable we will transition to a zero-carbon economy. The question is whether it happens quick enough to stop runaway climate change, and that's the concern I have about Trump; he could slow things down. This is why initiatives such as the TCFD are so important ●

GOLDEN YEARS

Ageing populations will be among the most formidable economic challenges faced by policymakers this century. For investors, demographic shifts are already generating a mixture of risks and opportunities.

There is something unusual about the luggage handlers at Haneda Airport in Tokyo: they are cyborgs. Wearing state-of-the-art robotic exoskeletons that detect nerve impulses from the brain, Haneda's human employees are able to lift heavy bags without straining their muscles, reducing the risk of injury.

Known as 'HAL' (Hybrid Assistive Limb) suits, the exoskeletons are manufactured by Cyberdyne, a company founded by Yoshiyuki Sankai, a robotics scientist. Sankai hopes his invention will ease the burden on Japan's ageing workforce. Like many companies across the country, Haneda's employees are becoming older and more difficult to replace. By augmenting their fading strength, HAL suits enable these workers to be more productive and – potentially – delay their retirement. Other companies, notably Panasonic and Mitsubishi, are developing rival exoskeleton technology.

The boom in Japan's 'silvertech' industry is indicative of a pressing problem: the country's working-age population is falling precipitously (see figure 1). Some 26 per cent of Japanese people are aged 65 or older, the highest proportion in the world. By 2040 this figure is likely to rise above 36 per cent[1]. The economic consequences are already being felt: escalating public debt, low consumer spending and sluggish growth.

While Japan is an extreme case, it is far from alone in grappling with the issue. Most developed economies – and many emerging ones – are undergoing similar demographic shifts. Policymakers across the globe are facing difficult choices as to how to allocate resources while the fiscal strain of supporting greying populations grows.

Investors, too, have to think carefully about how demographics affect their portfolios. Because ageing populations shape consumer demand patterns and savings rates, this trend has huge implications for investment returns across asset classes; from bonds and equities to real estate. But rising longevity will also bring opportunities, as Japan's booming robotics industry demonstrates.

"Many companies will benefit from increased demand for their services or products," says Helen Driver, Global Equities Fund Manager at Aviva Investors in London. "A great deal of wealth is concentrated in the older demographic and companies that know how to target ageing consumers will be successful. For investors, it will be important to know how to separate the winners from the losers as demographics change."

It's the demography, stupid!

Demography has played a key role in economic theory since Thomas Malthus published his treatise '*An Essay on the Principle of Population*' in the late eighteenth century. Malthus famously proclaimed the number of human beings on the planet would eventually become unsustainable, leading to widespread famine and environmental catastrophe. In fact, while the global population grew exponentially in the twentieth century, we are now facing the opposite problem: a shortage of people to sustain economies on a growth-driven model.

Since the 1950s, economists have been working on a discipline called growth accounting, which seeks to disaggregate GDP growth into its constituent parts. The following formula exposes the key role of demographics in economic expansion:

$$Y = \frac{Y}{H} \times \frac{H}{E} \times \frac{E}{N} \times \frac{N}{PWA} \times PWA$$

The formula looks complicated, but in fact it indicates growth (Y) is the product of the interplay of simple factors: the total number of hours worked in the economy (H), the number of people in employment (E), the total labour force (N) and the working-age population (PWA). The formula finds that, all else being equal, a rise in the working-age population results in stronger growth.

Over the last 50 years, global economic growth was fuelled by a rapid increase in the number of people aged between 16 and 65, a consequence of a post-war baby boom. Employment grew at an annual rate of 1.7 per cent in the world's largest economies, accounting for 48 per cent of GDP growth between 1964 and 2014, according to research from consultancy McKinsey & Company. The other 52 per cent of growth during this period was generated by rising productivity, mostly derived from technological innovations that improved efficiency in agricultural production and other industries.

Since 2000, however, these demographics trends have reversed. Working-age populations are falling, and the elderly becoming more numerous, across the globe. Today, about 12 per cent of the world's population, or 900 million people, are aged 60 or older; by 2050, that figure will be 22 per cent, or 2.1 billion[2]. With the lone exception of Niger, the proportion of elderly people will grow in every country in the world between now and 2050.

Some countries, such as Nigeria, the Philippines and Kenya, still stand to benefit from a so-called 'demographic dividend', in which rising working-age populations and higher labour participation rates combine to deliver strong growth. But most large economies are now facing a demographic deficit: a shortage of labour and a surfeit of elderly 'dependents'. Unless massive improvements in productivity can offset the impact of a decline in the workforce, global GDP growth over the next 50 years is likely to be at least 40 per cent lower than it was during the last half-century[3].

"As the working-age population falls, there will be a reduction in trend growth patterns," says Stewart Robertson, Senior Economist at Aviva Investors in London. "Ageing demographics mean we are living in a completely different world to the one we've had since the Industrial Revolution, which has been based on trend growth. Zero growth could be the new normal."

GOLDEN YEARS

continued

> *Changing population dynamics are already transforming the profitability of investment portfolios*

So what does this mean for investment returns? "Any nominal income stream that is directly linked to the rate of nominal GDP growth will be affected. If you look at the dividend discount model of equity valuation, the return you receive is the dividend yield plus the rate of growth over time. If the rate of growth is linked to nominal GDP, that's going to be lower than in the past," says Robertson.

The consequences of the great demographic shift will have varying implications across asset classes, and investors who can identify potential winners and losers stand to gain a significant advantage. While the full effects may not be felt for some time to come, changing population dynamics are already transforming the profitability of investment portfolios.

Bonds

For investors in government bonds, rising public debt and slowing growth are key concerns. Age-related spending in advanced economies is expected to increase from 16.5 per cent of GDP in 2016 to 25 per cent by the end of the century, according to the International Monetary Fund[6]. Such estimates may even be conservative given the possibility medical advances will lengthen lifespans even further.

While governments have various tools they can use to alleviate the demographic burden – such as boosting immigration, incentivising female participation in the workforce and investing in technology to improve productivity – it is likely that public debt will rise and taxes will go up, putting a further brake on economic growth.

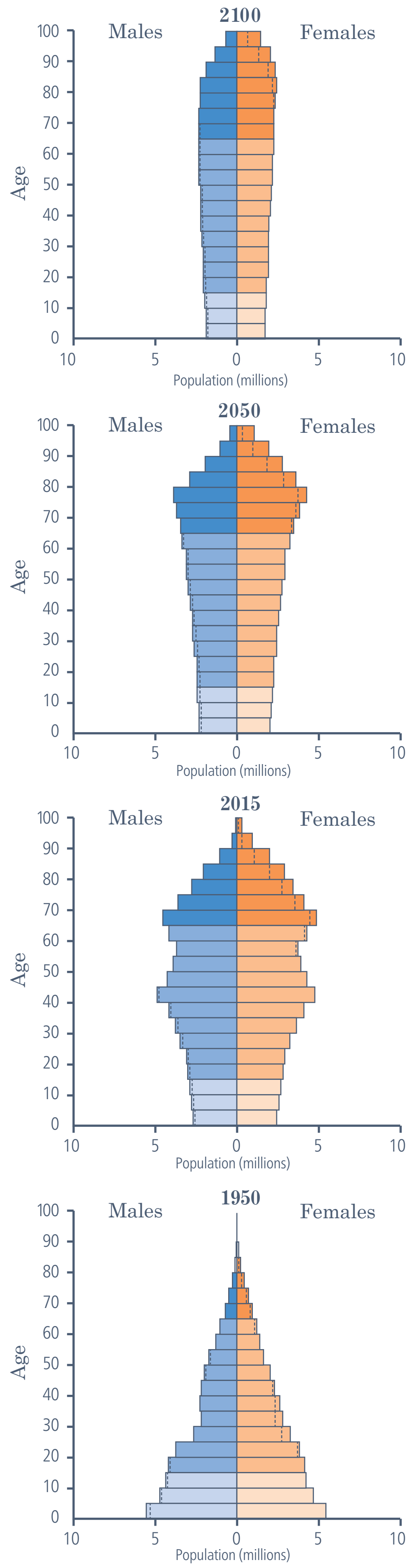
To mitigate the impact on their portfolios, bond investors may increasingly favour those economies in the emerging world that boast healthier demographics. "Demographics are one of the key advantages of investing in emerging-market economies," says Aaron Grehan, Senior Portfolio Manager in Aviva Investors' Emerging Market Debt team. "Demographics are so important in determining the growth potential and financial positions of governments."

Young populations can deliver other benefits, too. In Indonesia, where the median age is under 30, one third of voters in the 2014 presidential election were casting their ballot for the first time. Hungry for reform, this cohort of younger citizens helped elect Joko Widodo, a candidate who has pledged to challenge corruption, liberalise the Indonesian economy and end trade protectionism – good news for investors in the country.

The young, growing populations of sub-Saharan Africa could deliver similar political and economic benefits, although recent developments in the Middle East suggest vast numbers of working-age citizens may be a mixed blessing for economies that cannot accommodate them with jobs.

"Countries such as Saudi Arabia could face problems if they cannot put the younger generation to work. The Arab Spring was driven by large numbers of young people who were faced with a lack of opportunities," says Grehan. "But if everything else is aligned, younger demographics can be a massive driver of economic growth and development."

Figure 1: Japan's Ageing Demographics, 1950-2100



The dotted line indicates the excess male or female population in certain age groups.

Source: United Nations Population Division, 2015.

In the developed world, government bond investors are focused on the rise in age-related spending and the potential impact on state finances. Japan is an interesting test case in this regard. The country's public debt has spiralled to almost 230 per cent of GDP over the last decade, partly because of increased spending on pensions and healthcare. Consumer spending has fallen and the tax take has dropped.

Japan has introduced helpful reforms, including an increase in the retirement age and a progressive pensions system that means wealthier retirees receive less government support (although it still refuses to countenance more immigration). Japan spends 10 per cent of GDP on public pensions, three percentage points higher than the OECD average – but less than France (12 per cent), Germany (11 per cent) and Greece (12 per cent)[7]. Japan is still considered a 'safe haven', suggesting its debts remain serviceable for the time being.

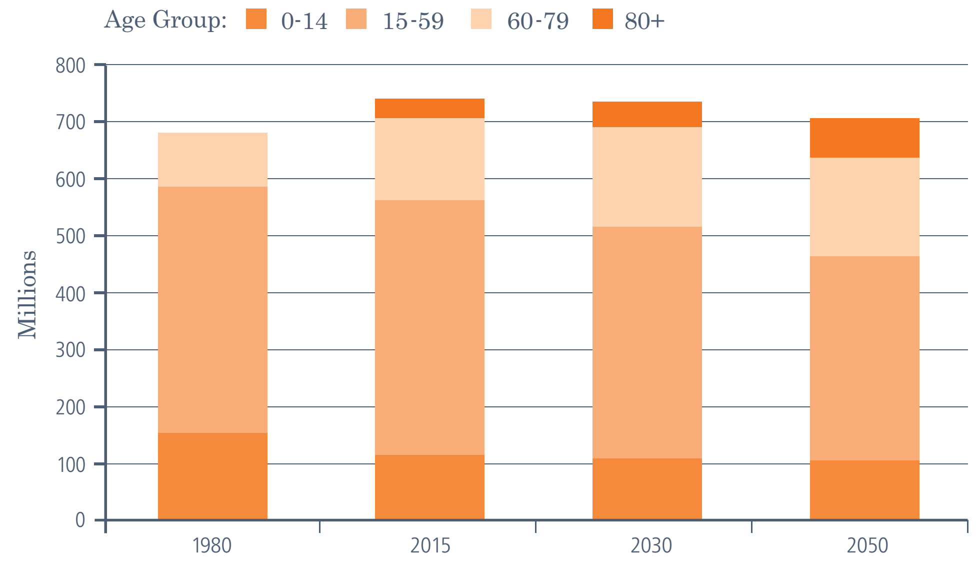
Indeed, ageing demographics may be a more pressing issue for European governments, which have struggled to modernise creaking pensions systems. Even thrifty Germany recently announced plans to spend an extra £4 billion on pensions every year, which may reflect politicians' need to appeal to older voters – among whom turnout is reliably high – ahead of parliamentary elections in 2017[8].

Meanwhile, Europe's more-indebted peripheral economies are suffering a double whammy of rapidly ageing populations and high rates of youth unemployment. Many young Greeks and Portuguese are fleeing abroad in search of work, exacerbating demographic pressures. Higher immigration would help, but it takes a long time to integrate new arrivals into the workforce – and political populists across Europe are stoking resentment against newcomers.

"Countries like Portugal have big problems," says James Vokins, Senior Portfolio Manager, Multi-Strategy Fixed Income at Aviva Investors. "The working-age population is falling fast but the government has few tools at its disposal to limit the economic damage. While Japan has the same problem of ageing demographics, at least the Bank of Japan can adjust monetary policy to offset a decline in capital flows. Portugal doesn't have that luxury."

Between 2010 and 2014, Portugal lost almost two per cent of its population, as the number of deaths exceeded births and emigration rose[9]. And this isn't just a problem for policymakers: Portuguese companies are already sharing the cost of the demographic imbalance. Goucam, a clothing manufacturer based in the city of Viseu, has joined the local government in offering employees a cash incentive to have more children[10]. While this initiative was undertaken

Figure 2: European population 1980-2050



Source: UN Population Division, 2015.

voluntarily, governments will likely force companies to shoulder more of the burden in future. This is a hazard for credit investors.

"As age-related spending rises, the temptation will be to offload some of the fiscal burden onto the corporate sector," says Chris Higham, Head of Credit Multi-Strategy Fixed Income at Aviva Investors. "That's a risk for the European companies we lend to. For now, the European corporate sector can absorb higher costs as balance sheets are healthy. But we're concerned about the effect of higher pension contributions, for example, on the longevity of some businesses."

Some companies are better placed than others. Those with exposure to larger emerging markets such as Brazil or China, for example, will have access to a valuable revenue stream over the coming years. This is not because these countries have no problem with ageing populations – China is ageing almost as quickly as Japan thanks to the lingering effects of the One Child Policy – but because an increasingly affluent group of middle-class consumers will have the wherewithal to pay for nursing homes and medical treatments as they get older.

"We're more comfortable lending money to a large pharmaceutical company such as GlaxoSmithKline in the knowledge that it has a share of the growing Chinese healthcare market," says Vokins. "There's an opportunity for investors to gain access to two combined demographic trends: ageing populations and the growing spending power of emerging-market consumers."

Equities

Equity investors are also eyeing opportunities in global pharmaceutical companies and nursing home operators. While healthcare will require more investment from governments as the average age of the population rises, there is likely to be a greater role for private companies in providing services in the future.

"For equity investors, pharmaceutical stocks will continue to see strong underlying demand from ageing populations, as will companies focused on wider healthcare provision – from private hospitals to makers of titanium hip replacements," says Driver.

According to research from Oxford Economics and Prudential, spending on medicine and drugs will grow by $40 billion annually over the next half-century. By 2070, real spending on nursing homes will be $325 billion greater than today, thanks solely to the effect of ageing demographics (that is, on top of the $300-400 billion of extra spending due to overall economic growth)[11].

Treatments for ailments that have a direct correlation with ageing, such as eye conditions, will be in particular demand. According to research group Evaluatepharma, Eylea, a new drug to treat a form of age-related macular degeneration, will be the world's fifth-biggest selling drug by 2022 with $7.7 billion in annual revenues[12]. The clamour for 'med-tech' will grow and the sector will likely receive incentives from regulators and policymakers: the Japanese government has approved medical use of Cyberdyne's robotic HAL suits on national health insurance, for example.

Retail will also undergo a transformation. Older people tend to spend less on schooling, clothes and eating out, for example, meaning these sectors are likely to see falling demand. According to Oxford Economics, the share of total annual spending on higher education in the US will fall by 13 per cent over the next 50 years, the equivalent of $90 billion per year. Consumer spending on restaurants will fall by $75 billion each year[13].

By contrast, sectors including home improvements and travel will benefit. "Wealthy pensioners spend more on travel," says Driver. "Companies such as Carnival Cruises and Royal Caribbean, whose average customer is aged about 50, will see strong growth and demand. If your target market is set to double in size over the coming decades, you're in a healthy position, even if the take-up rate declines."

Equity investors also need to consider indirect consequences of shifting demographics. Demand for investment and savings products, for example, is likely to grow as more citizens enter middle age and look forward to retirement. More broadly, companies able to automate their operations or adopt new technologies to boost productivity, such as artificial intelligence, are likely to outperform as the available pool of human labour dwindles.

"General Electric, for example, is looking to the Internet of Things to drive client productivity and improve efficiency through greater utilisation of data," says Driver.

Real estate

Real estate investors, too, are drawing on technology to assess the impact of shifting population patterns. Ageing populations will need different types of real estate: office space will become less important and nursing homes will grow in popularity, as will retail outlets that target older consumers. To monitor these trends, investors are using 'big data' to analyse information on catchment areas and occupancy.

DEMOGRAPHICS AND INTEREST RATES

How will ageing populations affect interest rates?

Some analysts believe that as large numbers of retirees begin to draw down their financial holdings, economies will approach the brink of a 'demographic cliff'. As pensions are cashed and savings rates fall, asset prices will decline because there will be insufficient demand among younger cohorts to make up the difference.

However, research shows retirees tend not to sell down their investments in one go and many pensioners will continue to hold significant savings throughout their retirement, partly out of a desire to leave a bequest to their children. The outlook for interest rates is complicated because it is difficult to say with certainty how future generations will behave when they reach late middle age, even if previous generations have tended to save a high proportion of their earnings. In China, for example, people over the age of 55 tend to save more and allocate as much as half their expenditure to essentials such as food, while those in their mid-40s save less and spend more on discretionary items such as clothing[4].

However, most economists agree that ageing demographics are likely to exert downward pressure on long-term interest rates over the coming decades. A paper published in October 2016 by the research division of the Federal Reserve found demographic factors alone accounted for a 1.4 percentage point fall in the natural rate of interest and real GDP growth since 1980. "Looking forward, the model suggests that low interest rates, low output growth, and low investment rates are here to stay, suggesting the U.S. economy has entered a new normal," the authors wrote[5].

GOLDEN YEARS

continued

"Big data enables real estate investors to do much more sophisticated catchment analysis," says Chris Urwin, Global Research Manager, Real Estate at Aviva Investors. "The tenant mix should match the catchment area. Where that's an older demographic, you need to work with landlords to get the right occupiers in place."

This sort of granular analysis reveals demographics shifts can vary broadly across regions in a single country. Aviva Investors research shows that in Germany, total population growth varies from -9.6 per cent in the state of Saxony to a much healthier seven per cent in Hamburg[14]. The research also reveals an east-west divide: forecasts suggest the east of Germany (with the exception of Berlin) will see a greater fall in both the total population and the working-age population, and a steeper rise in the dependency ratio.

This means different strategies will be appropriate at the local level. In areas with a rising population, such as Hamburg, demand for office space and housing is likely to remain robust. In other locations, where the population is getting smaller and older, swathes of office space are likely to fall into disuse – and demand for nursing homes will outstrip appetite for student accommodation.

Investors should also take cultural factors into account. In the US and New Zealand it is more common for senior citizens to move out of their homes and into specialist retirement accommodation than it is in the UK, partly due to savvy marketing that has rebranded retirement villages as an attractive lifestyle choice.

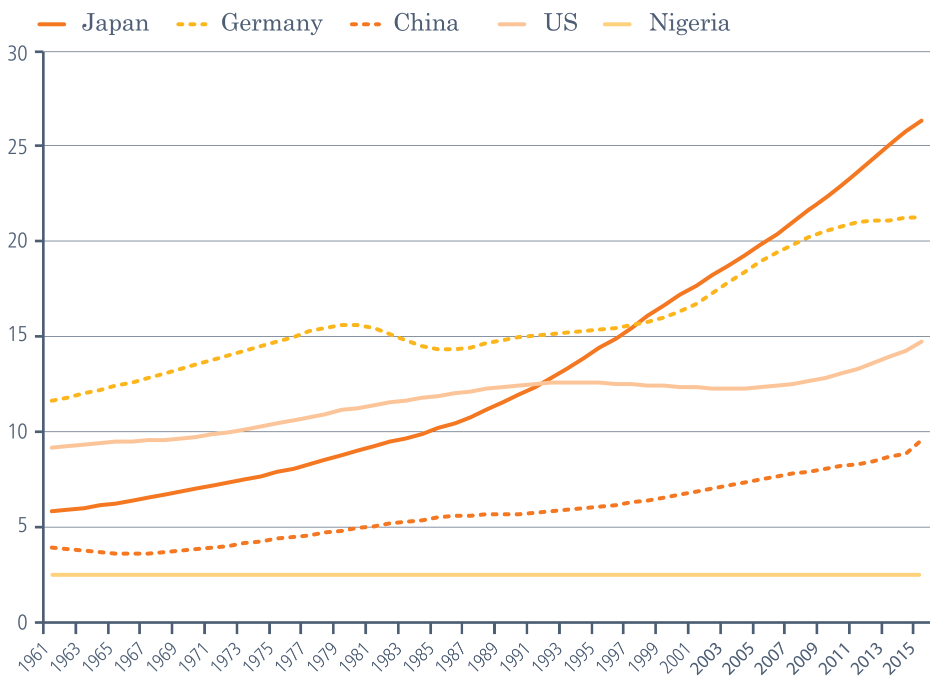
"In New Zealand, when people get to their late 50s they start thinking about which retirement community they will move into. That doesn't really happen in the UK. We don't have a good quality or quantity of senior housing," says Urwin.

Owner-occupied retirement housing in the UK represents just two per cent of Britain's total housing stock, compared with 17 per cent in the US and 13 per cent in Australia and New Zealand. A single company, McCarthy & Stone, claims 70 per cent of the market[15]. This may represent an untapped opportunity; especially given over-60s in England alone boast some £1.2 trillion in unmortgaged housing wealth, mostly concentrated in the southeast of the country[16].

Urwin also recommends targeting some of the more indirect consequences of ageing demographics as an investment theme, such as research into medical treatments for age-related diseases. This makes clusters of laboratory and office space and universities particularly attractive.

"We have strategically committed to investing in office space in Cambridge," he says. "The city is one of the best established clusters on a global scale for biotech and life sciences, and the tenant mix is likely to be 'sticky' as a result of the long-term nature of these research projects."

Figure 3: Percentage of population aged 65 or older



Source: World Bank, 2015.

Silver linings

For an idea of what the future holds, real estate investors can look to Japan, where operators that have been able to respond adroitly and tailor their assets to a different catchment base have proved resilient in the face of demographic change.

In Funabashi, the multi-format retailer AEON has converted a shopping centre for use by senior citizens. The property now boasts slower escalators, large signage, on-site medical clinics and rest zones. The success of the conversion, which drew thousands of customers on its reopening in 2012, indicates how active asset management can mitigate demographic risk.

More broadly, Japan's example contains lessons for the rest of the world, both good and bad. Japan has suffered the damaging economic effects of growing longevity, partly because of its refusal to countenance more immigration. But it has also adapted shrewdly by boosting productivity through technological innovation. And there are signs that Western economies are following this example: EU regulators have approved medical use of Cyberdyne's HAL suits to aid elderly mobility[17]. Perhaps the cyborg future is already here.

"Japan remains a very wealthy country with a good quality of life," says Robertson. "GDP per capita in Japan has grown just as quickly as anywhere else, even as the working-age population has declined. Its example shows that perhaps economies can adapt to a world of low secular growth through advances in technology, even if there are likely to be some wrenching adjustments while they do so"

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CHINESE FINTECH: FROM LAGGARD TO LEADER

Chinese technology companies are integrating messaging, e-commerce and financial services so successfully they have become the envy of their counterparts in the West. But China's FinTech revolution may be difficult to replicate elsewhere.

In China it is traditional to exchange *hongbao*, or red envelopes full of cash gifts, during the Spring Festival celebrations. In 2014, WeChat, a smartphone app run by Shenzhen-based technology giant Tencent Holdings[1], offered a modern spin on the tradition, launching a platform that enables users to send and receive cash gifts digitally. The idea has been a big success: WeChat recorded more than 32 billion virtual *hongbao* transactions during the six-day Spring Festival holiday in 2016.

WeChat has become a feature of everyday life in China. What started as a simple messaging service now operates more like a comprehensive operating system. Users can communicate with friends and family through calls and video-chats, book taxis and overseas holidays, make restaurant reservations, play games, pay bills and purchase items at physical shops – all without ever leaving the app.

Tencent's seamless integration of financial elements into its platform, along with similar innovations by other technology companies such as Alibaba and Baidu, has transformed China into the global leader in 'FinTech', or financial technology. And these firms have started to move beyond digital payments into insurance, wealth management and peer-to-peer lending; taking advantage of their ability to collect data on potential customers to offer them new products and services. Banks are struggling to catch up.

"It's difficult to overstate the impact these platforms are having on the traditional banking sector in China, and we're just at the start," says Zennon Kapron, Director at Kapronasia, a Shanghai-based consultancy. "Tech companies' access to customer data gives them a big advantage over banks, which are facing cultural and technological challenges."

Flight of the BATs

By many metrics, China leads the world in FinTech. More than 500 million Chinese citizens use some form of Internet finance[2]. During the first half of 2016, FinTech companies in the Asia-Pacific region raised $10 billion in financing – far higher than the US ($4.6 billion) and Europe ($1.9 billion) over the same period – with the vast majority of this amount emanating from China[3].

In 1994, Bill Gates said "banking is necessary, banks are not". China has proved him right: non-banks now command about 35 per cent of the FinTech market[4]. Three companies are leading the way, known collectively as the 'BATs': Baidu, Alibaba Group and Tencent. These firms have different specialisms – Baidu runs an internet search engine; Alibaba started as an e-commerce company; Tencent makes most of its money from computer games – but all are rapidly expanding their reach.

The BATS, along with a plethora of smaller online firms, have benefited from several related trends, including a loose regulatory environment and a boom in Chinese internet usage among the country's newly-affluent population, mostly via mobile phones. Smartphone penetration stands at 72 per cent, a higher proportion than in most developed countries, and there is strong demand for mobile-based financial solutions[5].

The BATs have also benefited from the so-called Great Firewall of China, a wide-ranging government-sponsored restriction of overseas web content. This has limited foreign competition for the BATs. Nevertheless, these companies have pioneered FinTech solutions that are far more sophisticated than those available in the West.

"The rise of FinTech in China was a case of right place, right time, right people, right technology," says Jason Bohnet, Senior Securities Analyst at Aviva Investors in Chicago. "The growth of the Chinese middle-class coincided with an explosion in smartphone use across the country. The BATs developed platforms that millions of people used every day – and saw an opportunity to monetise them."

It all started with digital payments. In 2004, Alibaba created Alipay, which enabled users of TMall and Taobao – Alibaba sales platforms, similar to Amazon and eBay – to pay for purchases online. This marked a shift away from the company's previous cash-on-delivery approach, which was vulnerable to fraud. Under Alipay, payments are held in escrow accounts and released on delivery once customers are satisfied with their purchase, a system that has helped foster trust in Alibaba.

Tencent's launch of WeChat Payment in 2013 marked a further step forward by bringing digital payments into the mainstream, enabling online-to-offline purchases and convenient money transfers. Together, these innovations gave China's technology companies a foothold in FinTech.

Digital disruption

The spread of digital payments caused two big problems for Chinese banks. Firstly, they lost a substantial source of revenue. Because apps have made mobile payments so easy, many Chinese citizens have 'leapfrogged' traditional payment cards altogether, moving straight from cash to digital wallets on their smartphones. According to Kapronasia research, China's traditional banks consequently lost out on 150 billion yuan ($23 billion) in potential transaction fees in 2015. That figure is expected to rise to RMB400 billion ($61 billion) in 2020.

Secondly – and perhaps more importantly – banks have begun to lose the battle for information on their customers. Although most Alipay and WeChat users will, at some point, transfer money between their digital wallets and their bank accounts, banks have no visibility on how this money is spent while it moves about on the online platforms. By contrast, the technology companies can develop new products based on their in-depth knowledge of user preferences and payment histories.

"It's a 'flywheel' process," says Bohnet. "The more convenient the BATs' platforms are, the less likely the consumer is to leave them. And the more often these platforms are used, the more convenient they become, because they adapt to consumers' preferences. The BATs can use this information to offer targeted financial services, cutting out the banks."

Alibaba is at the forefront of this trend, using the data it collects to develop a suite of financial services offerings. For example, Ant Financial Services Group, an Alibaba affiliate, is developing a credit rating system called Sesame Credit, using Alipay data. Chinese dating websites are already incorporating its algorithm to promote clients with good credit scores[6]. More importantly for Ant Financial, Sesame Credit will facilitate efficient loan issuance by its credit units.

The BATs are also offering investment services to their users, sometimes teaming up with established asset management firms to do so. In June 2013, Alibaba launched Yu'e Bao ('savings balance treasure'), a money-market fund that invests in China's interbank market, alongside Shanghai-based Tianhong Asset Management. With money that would otherwise have been sitting idly in their Alipay digital wallets, users can invest in the fund, which delivers higher returns than those available on bank deposits. (Yu'e Bao has typically offered annualised returns of between three and six percent.)

CHINESE FINTECH

continued

> *Regulatory support – sometimes tacit, sometimes overt – has been key to the success of Chinese FinTech*

In October 2014, Baidu teamed up with the China Securities Index Company to launch the Baidu Baifa 100 Index Fund, which uses 'Big Data' derived from the Baidu search engine to select equities listed on the Shanghai CSI100, the main Shanghai stock exchange. And Tencent has partnered with Tianhong's rival, China Asset Management, to offer Caifubao, a money-market fund in which WeChat users can invest with the click of a button.

These initiatives have not just created cut-throat competition among China's asset managers and technology firms – they have led to a democratisation of wealth management in China. "Previously, you had to invest between RMB50,000 and RMB100,000 to access investment products in China. But now users of Alipay and WeChat can invest with as little as one RMB," says Kapron.

Regulatory crackdown

Regulatory support – sometimes tacit, sometimes overt – has been key to the success of Chinese FinTech. The government has taken a hands-off approach, partly because it recognises online finance as a solution to some of China's most intractable economic problems.

Digital payments technology allows merchants in far-flung corners of China to operate using only a smartphone with a quick response (QR) code reader, without needing to order physical point-of-sale terminals from banks, encouraging the spread of commercial activity.

Online lending has also helped small businesses flourish where previously they tended to wither in the shadows of China's massive state-owned enterprises. Traditionally banks in China have preferred to lend to large government-owned firms, leaving small- and medium-sized enterprises (SME) starved of capital. The rise of peer-to-peer lending (P2P) and micro-focused online banks, such as Tencent's WeBank and Ant Financial's MyBank, has filled this gap.

"With the traditional banking sector tilted towards industrials and other state-dominated sectors, the Chinese government saw FinTech as a way to help the economy shift to a more consumer-driven growth model," says Bohnet.

Tapping consumer capital has proved to be a lucrative business for China's P2P lenders. In December 2015, Yirendai, the consumer arm of P2P specialist CreditEase, was the first FinTech firm to go public abroad, listing on the New York Stock Exchange with a valuation of $585 million. China's biggest P2P lending platform, Lufax, is reportedly planning an initial public offering in Hong Kong that could value the firm at upwards of $18.5 billion[7].

While loose regulation has delivered success stories, it has also opened the door to firms with lax risk management standards – and led to some high-profile scandals. In 2016, police arrested employees at Anhui-based Ezubao, one of China's highest-profile P2P sites, which was allegedly running a $7.6 billion Ponzi scheme[8].

In August 2016, the banking regulator brought in a raft of measures to tame the P2P market, including a cap on lending and a ban on the securitisation of assets. And this regulatory crackdown could have wider implications for Chinese FinTech, giving banks an opening to strike back against the insurgents.

The Industrial and Commercial Bank of China (ICBC), for example, has launched an 'e-ICBC' internet strategy that aims to match the convenience of non-bank FinTech operators by offering mobile access, combined with a wider range of investment products than typically offered on the BATs platforms. ICBC has even gone so far as to create an e-commerce portal to increase traffic to its website, and now employs an army of 10,000 dedicated FinTech engineers[9].

For the most part, however, China's traditional banks have moved sluggishly in response to the quicksilver technology firms. In many cases, their only option is to form strategic partnerships with their rivals. China CITIC Bank has signed a memorandum of understanding with Baidu to build an alliance based on co-branded credit cards, joint use of big data and a new online bank, while Bank of China has signed a similar agreement with Tencent[10].

Ultimately, tighter regulation is likely to favour the BATs by increasing their first-mover advantage, says Bohnet. "The government has tightened the rules over P2P lending, which may hurt some of the smaller technology companies in the sector. It's likely to widen the moat between the BATs and the rest of the market. The big three have reached such a massive scale they are more or less untouchable."

Journey to the West

So what are the prospects for a Chinese-style FinTech revolution in the West? There is no doubt that Western technology companies are envious of the success of the BATs' platform-based models. Facebook is emulating WeChat by adapting its messenger app into a vehicle for online commerce and payments, while Apple Pay shares some features with Alipay.

"There's an admiration among tech giants such as Facebook, Google and Amazon for the pace of innovation in China, and in particular the way the BATs been able to scale up their operations quickly to provide services to tens of millions of customers," says Bohnet.

But for all its success, there are reasons to believe the Chinese model, under which non-bank organisations have grabbed significant market share from traditional financial institutions, may be difficult to replicate in the US and Europe. The Chinese FinTech industry is dependent on a unique nexus of factors such as soft regulation, rapid economic growth and distinctive cultural norms.

The incumbent banks are also more advanced in the online transition than their Chinese counterparts, having invested heavily in blockchain, artificial intelligence and other cutting-edge technologies in recent years. Bank of America, for example, recently unveiled an AI 'chatbot' called Erica, designed to help customers manage their bank accounts[11]. This is just the sort of frictionless online finance solution that is largely the preserve of non-bank players in China.

In retrospect, China's somnolent banking sector was ripe for disruption from insurgent technology companies. "The banking system in China has been slow to innovate and service the consumer market, and that has opened up opportunities for tech disrupters," says Bohnet. "And the technology companies also benefited from an open regulatory environment. Their peers in the US and UK face much tougher rules over financial offerings."

Cultural factors might also prevent Western firms from enjoying Chinese-style success as financial players. A survey from the *Harvard Business Review* recently found Chinese consumers place less value on their personal data than those in Europe[12]. Indeed, the most commonly-used word for 'privacy' in China, *yinsi*, only entered the dictionary in the mid-1990s[13]. This may make it more difficult for Western technology companies to persuade users to sign up to comprehensive 'ecosystems' that incorporate communications, commerce and investments on the WeChat model.

Similarly, Chinese firms may not be able to smoothly expand their e-commerce and finance operations to new territories abroad, where data protection is more of an issue, despite Alibaba CEO Jack Ma's ambitions to make his company a major player in the West. All of which means that, while China's FinTech boom is impressive, the conditions that enabled it may be as distinctively Chinese as *hongbao*

1 Ed's note: In January 2017, Aviva plc, Aviva Investors' parent company, reached an agreement with Tencent and Hillhouse Capital to establish a digital insurance company in Hong Kong. http://www.aviva.com/media/news/item/aviva-hillhouse-and-tencent-agree-to-develop-an-insurance-company-in-hong-kong-17725/
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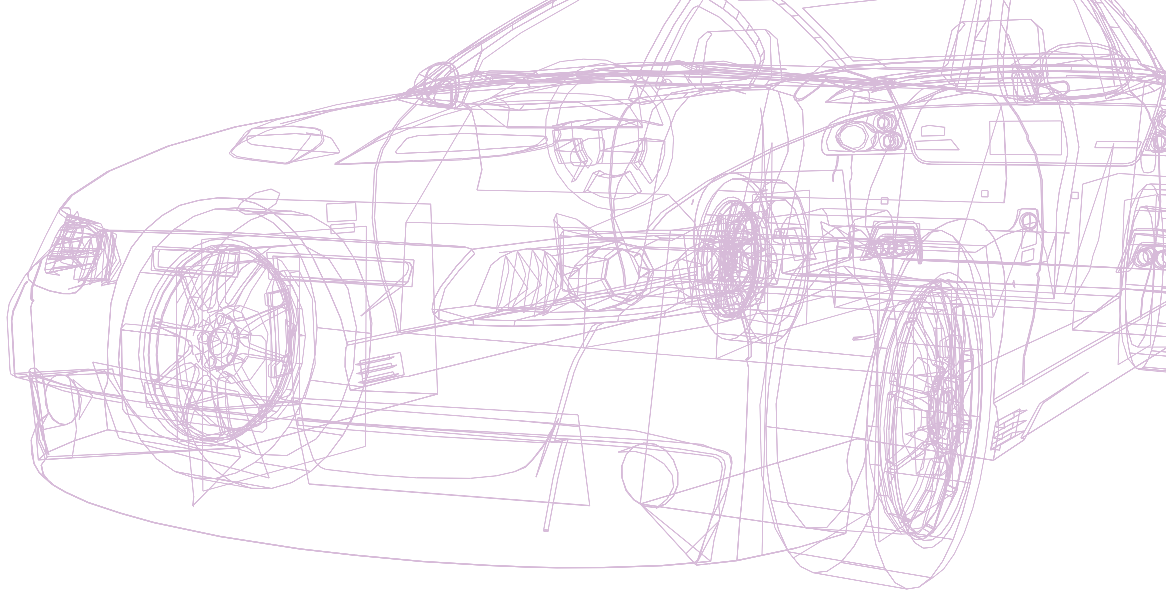


CARMAKER CHAMELEONS

New technologies are set to transform the autos industry and the transport sector, and in the process become a key long-term investment theme.

Commuting from the suburbs to the City of London in winter can be a dreary affair. You walk through damp, cold and dimly-lit streets; wait on a bleak platform, before crowding onto a train full of glum-looking souls. Passengers stand for the journey, cursing the cost of the season ticket. When the train arrives at Waterloo, commuters shuffle down the stairs into the Underground; only to be tortured by adverts saying a tropical beach lies just a few hours away.

The advent of new, disruptive technologies could soon liberate millions from this daily misery. Alessandro Rovelli, Senior Credit Analyst at Aviva Investors, believes it is conceivable to imagine a world where self-driving electric vehicles (EVs), packed with entertainment options, take commuters directly to their place of work. Passengers could work, watch a film or simply sleep during the ride.

The journey should theoretically be safer, as new technologies have consigned most car crashes to the past; environmentally-friendly; and potentially cheap enough to leave passengers with enough money to pay for that tropical holiday. Moreover, the vehicle will meet their passengers outside the office in the evening, whatever time they decide to go home.

Sound far-fetched? Not according to Rovelli, who says the technologies to deliver this vision are already in place and encompass three strands that will transform the auto industry and our lives in the coming years. They are: EVs; shared mobility; and autonomous driving.

An electrifying future

Tesla Motors of the US is driving the electrification revolution. "The company has created electric-only driven cars, replacing the internal combustion engine, which until now has been the only practical means of propelling a vehicle," he says. Tesla is the first successful auto setup in the US since Chrysler in 1925 and already has a market capitalisation of just under half of Volkswagen, the world's largest automaker [1].

The first electric cars were introduced more than 100 years ago, according to the US Energy Department. However, it is only recently they have become practical for general use. Tesla's chief executive Elon Musk believes 200 miles is the "minimum threshold" for broad public adoption of electric cars. While early EVs had a maximum range of around 50 miles, Tesla's Model S can drive for 300 miles before it needs recharging.

Tesla's strategy involves focusing on top-end cars first, before moving into the mainstream market. In the UK, the price of a showroom Model S in early January 2017 ranged from £74,000 to nearly £100,000[2]. However, production of the Tesla Model 3, which will sell at a price of around US$35,000, is set to begin in mid-2017. Tesla will announce local pricing this year[3]. Demand is strong, with 400,000 people putting down a US$1,000 deposit to reserve a Model 3 vehicle[4]. By comparison, VW sold 533,000 Golfs in Europe in 2015 – the continent's most popular car[5].

Rovelli believes the price drop will "significantly boost sales, particularly in urban areas with strong refuelling infrastructure". He adds that potential sales both in the UK and worldwide are huge. In Norway, as an example, EVs already account for around a quarter of passenger vehicles[6]. Significant tax breaks on the cars and major investment in charging infrastructure are driving the Norwegian revolution.

Government regulation will prove critical in promoting the transition to EVs. Norway and the Netherlands plan to phase out all fossil-fuel cars by 2025, while a draft EU directive, expected to come into effect by 2019, will require an EV recharging point to be incorporated in every new or refurbished house built in Europe[7].

US charging ahead

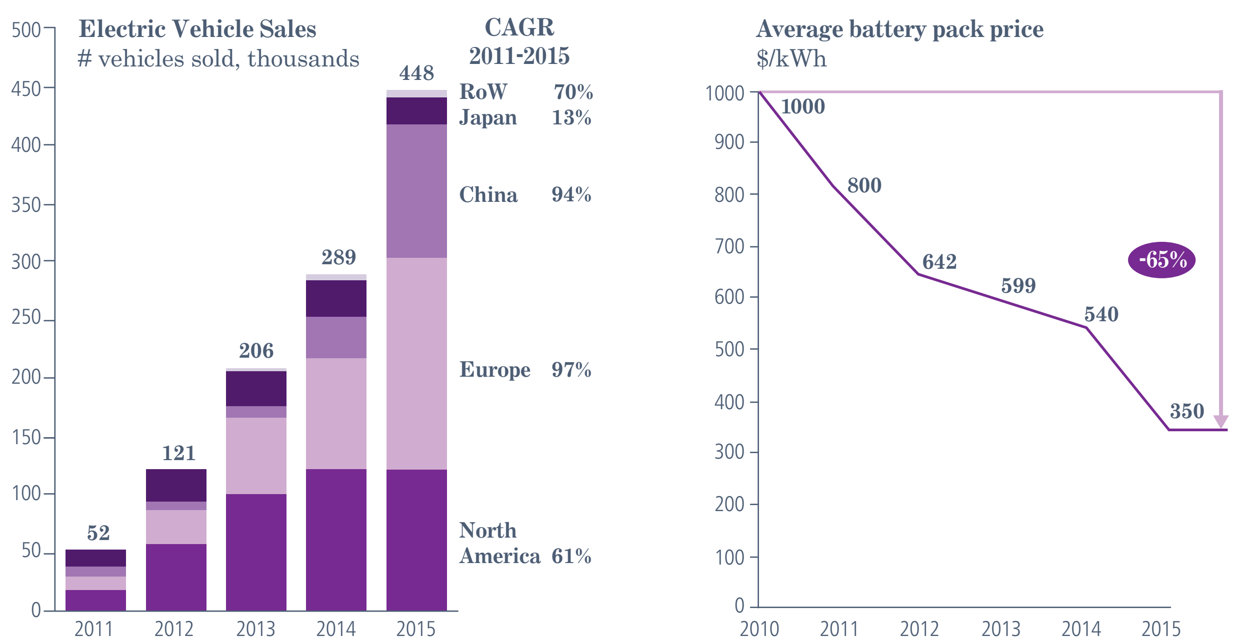
Europe certainly needs to act to boost investment in technology. "Most of the best innovations in the automotive sector over the last 10-15 years or so have emanated from Germany, as well as Japan, but the centre of gravity is now shifting to the US," says Rovelli.

Firms such as Tesla and Uber, based in Silicon Valley, are driving that change. Meanwhile, Apple has over a thousand engineers working on its auto ambitions, known as Project Titan, while Google has invested heavily in self-driving technology since 2009.

General Motors and Ford are also undergoing a transformation. The two US auto giants produced dull, conventional cars 10 years ago and both required US government bailouts during the global financial crisis. Today, they have embraced the new technologies. GM launched the first truly mass-market all-electric vehicle, the Chevrolet Bolt EV, at the end of 2016. It costs less than US$40,000 and has a range of 238 miles on a single charge[8]. Meanwhile, Ford is investing in self-driving cars with plans to produce fully autonomous vehicles for ride-sharing services by 2021.

The likes of Ford and GM have no option but to adapt. Rovelli believes some major automakers may struggle to survive unless they make rapid progress in EVs in the next year or so. "They won't go out of business immediately, but as demand for EVs increases the likes of Fiat Chrysler, Groupe PSA, which includes the Peugeot and Citroen marques, and some of the smaller Japanese producers could well disappear over the next 10 years or so," he explains.

Figure 1: Electric vehicle sales and battery costs



Note: Plug-in hybrid electric vehicles and battery-electrics; light vehicles only. Excluding low-speed vehicles and hybrid electric vehicles without a plug. Battery prices are an average of battery electric vehicles and plug-in hybrid electric vehicle battery packs.
Source: Exhibit from "An integrated perspective on the future of mobility", October 2016, McKinsey & Company, www.mckinsey.com.

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CARMAKER CHAMELEONS

continued

Germany has most at stake. The country's automobile industry, which accounts for around 20 per cent of German industrial revenues, produced over 15 million vehicles in 2015 – equivalent to more than 19 percent of total global production[9]. BMW already has an electric car, while Audi is launching one in 2018.

The German government, one of the leaders of the global shift from nuclear to renewable energy, is likely to adopt an equally aggressive approach in promoting EVs. In October 2016, the Bundesrat, which represents German states at the federal level, passed a resolution calling for a ban on combustion engine cars by 2030. The resolution received cross-party support.

However, governments face a quandary in promoting EVs. They gain significant revenues from fuel taxes, as well as speeding charges, road tax, and parking charges, but politicians don't want to lose the green vote. "The authorities will have to think hard about how they replace revenues lost as part of the drive to EVs," says Rovelli.

Oil-producing countries face the biggest challenge although the situation varies. "Norway is already such a rich country that it is not afraid of losing the income from the drive from petrol to electric cars. They are looking to a future, alternative economic model and are around 10 years ahead of most other countries. By contrast, Brazil, another major oil producer, faces significant economic challenges, including a very large budget deficit, and will be more reluctant to push for complete electrification," explains Rovelli.

Shared mobility

Shared mobility is a far more familiar story than EVs thanks to Uber's apparently infinite capacity to generate headlines, both good and bad. The rise of ride-hailing services from the likes of Uber and competitors such as Lyft, have already had a devastating impact on the US taxi industry. For the first time in the third quarter of 2016, for example, more business travellers in North America chose ride-hailing services than traditional taxis and rental cars, according to expense report software company Certify[10].

But these ride-hailing services also pose an increasing threat to car ownership, according to Rovelli, who argues the need for car ownership is diminishing. "This is as valid for a single person as a family. Uberisation will take place gradually in large cities, and will not wholly be a substitute for car ownership. The problem for carmakers is that privately-owned cars are parked for 90 per cent of the time, while Uber cars are driven 90 per cent of their lives. This inevitably will result in lower sales of cars," says Rovelli.

A study by the University of Michigan's Transportation Research Institute (UMTRI) appears to support this view. It found that autonomous vehicles may reduce the number of vehicles a family needs, but may lead to an increase in total miles driven. The study was based on sharing of completely self-driving vehicles that employ a "return-to-home" mode, acting as a form of shared family or household vehicle. This would mean that driverless vehicles could operate without any passengers at all. In the most extreme scenario, self-driving vehicles could cut average ownership rates of vehicles by 43 percent—from an average of 2.1 vehicles to 1.2 vehicles per household, according to the UMTRI study[11].

Automakers are seeking to mitigate the threat by expanding into shared mobility. GM, for example, has bought a share in Lyft, while Volkswagen has acquired an Uber-like service called Get, an Israeli start-up. "We are likely to see increasing M&A activity as carmakers seek to develop their offering of shared mobility to influence these large volume buyers of cars," argues Rovelli.

The future commute?

Not owning a car could bring big savings to individuals. The average cost of owning a car in Europe is about €6,000 a year, according to Robin Chase, co-founder of car-sharing business Zipcar Chase[12].

Autonomous driving

There are four levels of autonomous driving, according to the US Department of Transport, namely:

No-Automation (Level 0): The driver is in complete and sole control of the primary vehicle controls – brake, steering, throttle, and motive power – at all times.

Function-specific Automation (Level 1): Automation at this level involves one or more specific control functions. Examples include electronic stability control or pre-charged brakes, where the vehicle automatically assists with braking to enable the driver to regain control of the vehicle or stop faster than possible by acting alone.

Combined Function Automation (Level 2): This level involves automation of at least two primary control functions designed to work in unison to relieve the driver of control of those functions.

Limited Self-Driving Automation (Level 3): Vehicles at this level of automation enable the driver to cede full control of all safety-critical functions under certain traffic or environmental conditions, and to rely heavily on the vehicle to monitor for changes in those conditions requiring transition back to driver control. The driver is expected to be available for occasional control, but with sufficiently comfortable transition time.

Full Self-Driving Automation (Level 4): The vehicle is designed to perform all safety-critical driving functions and monitor roadway conditions for an entire trip. Such a design anticipates that the driver will provide destination or navigation input, but is not expected to be available for control at any time during the trip. This includes both occupied and unoccupied vehicles.

Rovelli believes the industry is currently at level two and anticipates major automakers such as VW, General Motors, Ford, BMW, as well as Tesla, will launch cars that can self drive "most of the time" in the coming years. He adds "We are just waiting for the regulatory environment to catch up with technological developments. For example, who is responsible when a self-driving car collides with a manually-operated vehicle?"

There are numerous advantages to self-driving cars. Apart from liberating drivers, safety is a key advantage. "Autonomous-driving cars don't get angry or drink and drive; nor are they distracted by mobiles," says Rovelli. Indeed, Pascal Demurger, director-general of French insurer MAIF, estimates that driverless cars will reduce accidents by around 90 per cent[13]. There were around 1.25 million road traffic deaths worldwide in 2013,

> *Self-driving cars are going to revolutionise the industry in the next 10 years as long as safety concerns can be overcome*

according to the World Health Organisation[14]. By contrast, armed conflicts resulted in 167,000 fatalities in 2015, according to the International Institute for Strategic Studies[15].

Other advantages include giving new found mobility to the old, the disabled and teenagers. It is difficult, however, to predict the impact on congestion. Some argue it will decline as driverless cars could result in a large fall in vehicle numbers while transporting the same number of people. Cars won't spend time searching for parking spots or getting lost. However, there is an argument congestion will increase as people switch from public transport at peak hours. Fatigue or being occupied by another task won't prevent you from sending your car to pick up shopping.

Moreover, it could be argued that people will make more use of self-driving EVs, given their relative cheapness. The Energy Saving Trust, an independent organisation, says that a full charge of an EV will cost around £2 to £3 and will give a typical range of 100 miles. Driving 100 miles in a petrol or diesel car will cost around £9 to £13 in fuel, or around four times the cost of the electric car. The Trust adds that as there are fewer mechanical components in an EV compared to a conventional vehicle, servicing and maintenance costs will be lower[16].

Autonomy and shared mobility are interconnected with Uber operating self-driving cars in a trial programme in Pittsburgh, beginning in September 2016. However, the current self-driving Ubers always include a driver to address technical failures and unexpected situations. "Rather than owning a car, people may use an Uber-like service. Or they may decide to rent out their car so offsetting the cost of ownership," explains Rovelli.

However, Matthieu Rolin, US Equities Portfolio Manager at Aviva Investors, believes security issues pose a major threat to the successful launch of fully self-driving cars. He cites an incident in September 2016, when a team of Chinese security researchers took control of a Tesla Model S from a distance of 12 miles. Fortunately, it was an `ethical hack' and the researchers reported their findings to Tesla, which issued a software update to address the problem. However, Rolin believes the incident highlights the vulnerability of self-driving cars.

Investment implications

Rovelli recommends that investors adopt a cautious attitude to automakers given the uncertainty surrounding the implications of these trends. He believes investing in auto parts suppliers rather than final assemblers could be the best approach. "Automakers already face the burden of new environmental regulations and are investing heavily in EVs, self driving and shared mobility. That will hit profit margins," says Rovelli.

Giles Parkinson, Global Equities Fund Manager at Aviva Investors, regards the car industry in general with scepticism. "Cars are not a good place to invest, as is evident from the low returns on capital." However, he likes Amphenol, which supplies advanced interconnect systems for automotive safety devices and on-board electronics in cars. "Around a fifth of its business derives from the auto sector and the move towards EVs should boost sales." Conversely, Parkinson is wary of companies supplying the diesel/petrol auto industry,"given that EVs are clearly the future of the industry".

Parkinson believes companies such as LKQ could be beneficiaries of the increasing complexity of cars. LKQ stands for Like Kind Quality and is the US legal term for the components of a vehicle that can be replaced by recycled parts, rather than those supplied by the original equipment manufacturer, when a car is involved in a collision. It is much cheaper to use the recycled parts. Although advances in technology, such as self-parking and the use of reversing sensors, means cars are less likely to collide, it is increasingly expensive to repair cars when they do. "For now, these two offsetting trends are in balance, but if we reach a stage where cars hardly ever crash that would spell bad news for LKQ," says Parkinson.

Like Parkinson, Ed Kevis, European Equities Portfolio Manager at Aviva Investors, generally avoids the auto industry. "The sector is highly cyclical and the data suggests it has probably reached its peak in various parts of the world, including the US, and is characterised by generally outdated business models and highly variable margins," says Kevis. He also concerned about the "exceptionally high" debt levels related to auto financing in the US.

Moreover, European automakers are investing heavily to ensure their cars meet tight new CO_2 emission targets, whilst also facing the disruptive challenge of self-driving autos, EVs and shared mobility. "Ultimately you could reach the stage where people no longer own cars, but just hail self-driving Ubers. On the other hand, there are many examples of industries where the regulators strive to protect the incumbents," adds Kevis.

Kevis agrees with Rovelli that some carmakers may disappear in the coming years. "In some ways, Groupe PSA and Renault are better placed than BMW or Mercedes to meet emissions targets because the former build smaller cars with smaller engines than the latter. However, Groupe PSA, for example, operates on very thin margins and the increasing requirement to invest heavily in new technologies could result in operating losses. Ultimately it may not be able to generate enough cashflow to remain in business."

Rather than carmakers disappearing, it is more likely we will see increasing M&A activity if that is allowed by the regulator. "Given that car markers are of national importance, would Berlin allow a French firm to take control of a German automaker?" asks Kevis.

He, too, prefers auto parts suppliers such as Continental of Germany over carmakers. "Continental is a high quality business and a beneficiary of the drive towards ever more complex cars," he says. "Historically, Continental's profit margins have been much more stable than that of the automakers and it has delivered higher returns."

Kevis believes that while European carmakers, such as Renault, are investing heavily in EVs, Silicon Valley has skipped over that stage and focused on self-driving cars because that is the `game changer` for the industry. "We already have EVs and hybrids, but self-driving cars are going to revolutionise the industry in the next 10 years as long as they can overcome the safety concerns."

Computers on wheels

Rolin is focussing on companies such as Nvidia Corporation, which supplies computer chips to auto companies. Cars have been transformed in the past decade in terms of their technological content and now contain features such as reversing sensors and cameras, as well as self-parking capabilities. "Where once automakers competed on the quality of their engines and seats, now it is on the basis of their electronic componentry," says Rolin. The more sophisticated the car, the higher the price it commands and the greater the profit margin for the automaker.

The stock prices of automakers are cheap for good reasons, adds Rolin, citing GM, which trades on just five times next year's earnings. "Automakers are investing billions to keep pace with technological developments in EVs and self-driving cars, yet we still don't know what the car industry will look like in five to 10 years time; whether the technology will prove successful or who the winners and losers will be." Moreover, Rolin points out that Tesla, a new entrant to the auto sector, "builds incredibly impressive cars, which suggests that the long experience of the established automakers is essentially worthless".

Rolin argues the entry of technology giants such as Google and Apple provides a further challenge. "Whereas the added value in a car once accrued solely to the likes of Ford or GM, in the future it is likely to be shared with Google and Apple. The problem is nobody knows what the breakdown of the value added will look like a decade hence," he says ●

1 *Thomson Reuters*, January 2017
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3 https://www.tesla.com/en_GB/model3
4 http://www.usatoday.com/story/tech/news/2016/10/18/buy-tesla-model-3-today-and-wait-until-2018/92363992/
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8 http://www.chevrolet.com/bolt-ev-electric-vehicle.html
9 https://www.gtai.de/GTAI/Content/EN/Invest/_SharedDocs/Downloads/GTAI/Industry-overviews/industry-overview-automotive-industry-en.pdf?v=10
10 https://www.certify.com/PR-2016-10-20-Ride-Hailing-Accounts-for-Majority-of-Ground-Transportation-Expenses-Nationwide--In-Latest-Certify-SpendSmart-Report-for-Q3-2016
11 http://www.umtri.umich.edu/what-were-doing/news/driverless-vehicles-fewer-cars-more-miles
12 https://www.ft.com/content/042a04f0-958c-11e6-a80e-bcd69f323a8b
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14 http://www.who.int/gho/road_safety/mortality/en/
15 https://www.iiss.org/en/about%20us/press%20room/press%20releases/press%20releases/archive/2016-3b31/may-2fc6/acs-2016-press-release-b853
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SIENA SAGA: THE ACID TEST FOR EUROPE'S BAIL-IN REGIME

After the state rescue of Monte dei Paschi, the bail-in regime for European banks has failed an early test, says Oliver Judd

The state bail-out of Italy's most troubled and oldest bank, Monte dei Paschi di Siena, raises serious questions about the viability of European regulations designed to avoid taxpayers being on the hook for bank failures. If Monte dei Paschi, by no means a systemically-important bank, is not allowed to go through the new resolution process, what government would be prepared to step aside when a genuinely 'too-big to fail' institution is threatened?

Italy's third largest lender is the biggest trial yet of the European Union's bank resolution rules introduced in 2015. Monte dei Paschi may be an extreme case of the precarious state of the Italian banking system, weighed down by €360 billion of non-performing loans. That said, with populist sentiment on the rise across the developed world and several European elections due in 2017, potentially including a snap Italian election, politics will play a key role in resolving the bank's capital deficiency and setting a precedent for other euro-zone bank bail-ins.

In this Q&A, senior credit research analyst Oliver Judd contemplates the end-game for the Italian lender and the risks to other banks across the euro zone.

What are the broader implications of the Monte dei Paschi rescue?

European bank resolution rules didn't work the way they were supposed to. Instead, a €20 billion state fund has been agreed, along with an extension to June 2017 of the €150 billion liquidity facility from the European authorities.

The political will for a private sector bail-in is clearly not there from the Italian authorities, though it is from the European Central Bank (ECB). The Italian authorities are trying to carve out pensioners, or the bulk of retail bondholders. They'll be made safe or be converted into senior debt, which is de facto safe.

It is easy to assume the fall-out could support the Five Star Movement in Italy, but there is a bigger issue at stake in terms of the bank resolution rules. The ECB should be in charge and able to enforce the rules. The fact it has been unable to take charge demonstrates where the real power lies.

Does this situation highlight the difficulty in harmonising policy across the EU?

I don't see how you can push the EU project any further with the banking systems out of sync. Eight or nine years after the global financial crisis, we are still having discussions around it because systems haven't been fixed. There is nothing tangible to suggest we will not continue to muddle through. You are meant to have one law for all banks: that has clearly not happened, not least from the perception of political interference whether from Brussels or Frankfurt. So, we now have another period of continuing uncertainty regarding Monte dei Paschi, with the chance of another Italian general election further muddying the waters.

Is the resolution regime affecting how investors price debt?

It was foolish to hope the new regime would provide investors with certainty after many years of post-crisis bail-ins and bail-outs under several resolution mechanisms. Perhaps there was a degree of naivety a pan-European resolution framework would achieve what it was designed to do. If the ECB cannot exert the biggest clout in resolution situations like Monte dei Paschi, we have problems for future bail-ins of European banks and the workability of the regime.

From a European banking perspective, the fundamental strength of the sector is evident. But, as investors, we don't want to be invested in entities that end up being captured by the resolution framework. The work we do is to avoid this. So, you are looking at issues like Monte dei Paschi to determine the downside risk for the investment case across European banks.

How big is the systemic risk?

Systemic risk seems limited. The bank has to release a new business plan and that would then start the next level of questions and approvals. It is unclear when the capital would be injected. However, the €150 billion liquidity facility and de facto government guaranteed funding mean the bank should be able to continue operating until the resolution arrangements are agreed.

> *"It was foolish to hope the new regime would provide investors with certainty"*

Monte dei Paschi is the problem child. There are, however, functioning banks and banking systems in Europe that can provide decent returns, despite the recent increase in volatility. For long-term investors, there remain appealing opportunities available among European banks; especially in 'peripheral' Europe where the better-run institutions offer good value relative to the risks.

What now for the European resolution regime?

I expect Monte dei Pashi will be resolved eventually. That will have been the first proper test case of the resolution regime. Lessons will be learned. In some ways, the ECB could do with a small bank in the bloc to go bust and be resolved successfully, before the full resolution of Monte dei Paschi, to show the regime does work.

The regulators can then go back and suggest there need to be different rules for domestic systemically important organisations. From a regulatory perspective, banks dubbed global systemically important have been given tougher capital requirements. So we are likely to see some backtracking from the European authorities on what can be expected from the resolution regime. That said, they could stress they remain determined to sort out banks but maybe not by the letter of the law as originally written. The EU is all about compromise and it seems no different in this case

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