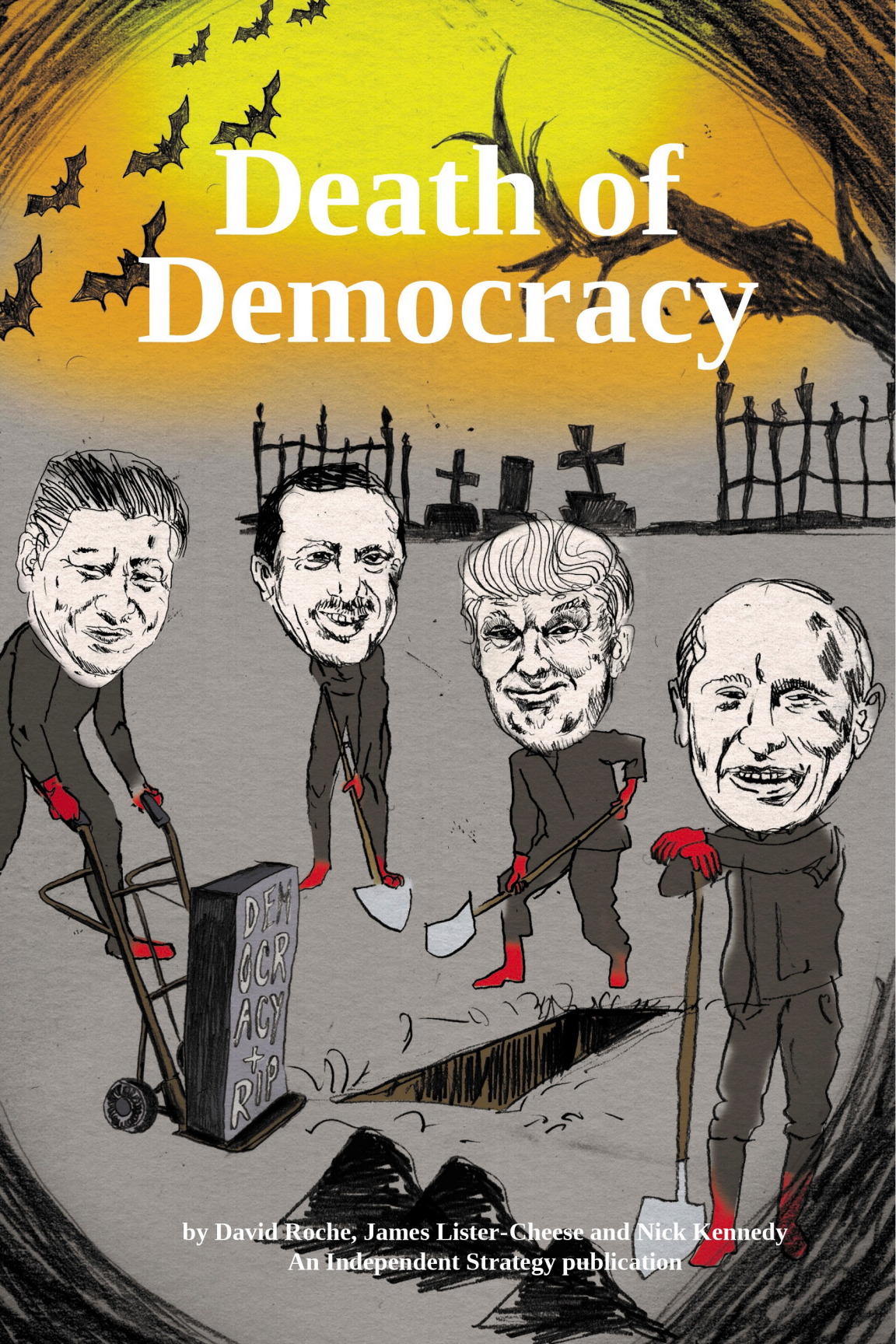
Death of Democracy



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Death of Democracy

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Introduction

Is democracy in the 21st century dying? Will it become a rare beast in an autocratic world full of old people, robots and AI? There are certainly signs that this will happen. In the major developed economies, the mainstream forces for democracy: middle-ground political parties; rising productivity and relative equality of income and wealth; and a social contract between government and people, have been seriously eroded. Populist parties of right and left, standing for an end to the post-war social consensus, have gained hugely. The supposed benefits of internationalism and globalisation have increasingly given way to nationalism, protectionism and anti-immigrant rhetoric. Rising inequality of incomes and wealth and deteriorating demographics have broken social consensus. In the emerging economies, many autocratic regimes have surfaced and the ability of the leading democracies of the world to sustain geopolitical stability has dissipated. What was once a relatively stable geopolitical landscape (even given the 'cold war') has been replaced by the 'war against terror' and a multi-polar world of rival and competing economic and political powers.

In this short book, through a series of essays, we argue that there is more than the rise of populism afoot. New politico-economic models are being formed that could replace the old democratic model.

The authoritarian command economy of the Soviet Union failed, but now there is an even more potent rival to the traditional democratic model: a techno-autocracy where the market economy flourishes (under some state direction), but social and political freedoms are restricted. China is the prime example of this. China now threatens to rival the old democracies of North America, Europe and Japan, not only economically, but also as a future political model. There are still many tin-pot dictatorships (often elected!) who haven't a clue how to deliver economic well-being to the masses. Examples are the Philippines' Duterte and Turkey's Erdogan. But techno-autocracies like China are far removed from the tin-pot dictatorship model and are both economically savvy and socially oppressive.

Even Russia, which threatens the old geopolitical order as much as China, provides a reasonably successful alternative social model for its citizenry, which continues to vote for it in droves. Russia has seen its poverty rate halve to below 14% in less than a decade, on par with the US. Population decline has been reversed. Its automobile ownership is now equal with Poland and

Hungary. And individual connectivity to the internet is around 75%, level with the EU and ahead of the US.

The ability of techno-autocracies to challenge wealthy democracies is not just based on the autocracies' economic success. It is also a function of how democracies are weakened by populism penetrating and then operating within the institutions of state, causing them to malfunction and further undermining confidence in civic society. It is a far more lethal and insidious form of attack than a revolution!

How and why is this happening? In this book, we consider several developments. The first is the attack on globalisation, free trade and internationalism by populism and nationalism, as most strikingly trumpeted by the US President, as the leader of the 'free world'. In Europe, many governments in the east stand for no further integration and aim to block the free movement of labour, while in the west scepticism with the great post-war European project has multiplied. At least three EU members, Hungary, Poland, and the Czech Republic are attacking the rule of law and civic society in ways that makes nonsense of their right to be in the EU, which in turn is powerless to kick them out. And the UK is taking the seminal step of breaking with the European Union after over 50 years of membership.

Driving this attack on democracy and internationalism are three factors: demography; disinflation; and disruptive technologies. The world is getting older, particularly in the old democracies. This will reduce long-term productivity growth globally, with more dependants to feed and be suckered by fewer active adults.

Global population growth is happening in areas of the world that have scant hope of providing their burgeoning populations with decent living standards. This threatens increasing numbers of failed states and massive movements of labour across the globe from those areas with fast growing populations (Africa) to those with falling populations (Europe), and all the attendant tensions and conflict that could involve.

Also, contrary to the conventional wisdom, lower economic growth and demand suggest permanently lower inflation rates. That makes unattainable the perpetual inflation targets set by central banks and monetary authorities around the world with easy money policies merely fuelling rising global debt and consequent financial instability.

And third, there are the new disruptive technologies of AI, robots, big data and blockchain. These technologies are no longer the preserve of the old

democracies. On the contrary, China's techno-autocracy is leading the race to apply them to take its economy quickly to the levels of the old developed democracies, while using the new technologies to control its population. Other autocracies may not be far behind.

The challenge to democracy in a multi-polar world is now potent. It is contested from within and without. If it fails, it is more likely to be replaced by governments that cannot deliver on their promises but resort to incoherent, fragmented and divisive polices that appeal to their undereducated electorate, than by absolute dictatorship. The economic, and therefore the investment, damage would be even greater than from a dictatorship or autocracy that had a clue about what it was doing.

CHAPTER 1

Death of democracy… and the rise of the techno-autocracy

Democracy is under attack. This calls into question the global leadership of the world's most significant rich economies which are all democratic. From within they are under siege from populism. Externally, their status is being undermined by alternative social systems which are delivering improved economic well-being, but at the expense of increased surveillance and more oppression.

This is new. Dictatorship has always stood in the opposite corner of the ring to democracy. Over the past two centuries, dictatorships never came close to rivalling the economic dividends of the ballot box. Now, in relatively few, but highly significant cases, dictatorships have developed integrated political, social and economic models that can do so.

China doubles real living standards every 13 years. It now takes the US and Europe 50 years and Japan even longer (Figure 1). Russia has seen its poverty rate halve to below 14% in less than a decade and population decline has been reversed. Its automobile ownership is now on par with Poland and Hungary. And individual connectivity to the internet is around 75%, level with the EU and ahead of the US. All of which makes the rich democracies, struggling with the aftermath of crisis, look bad.

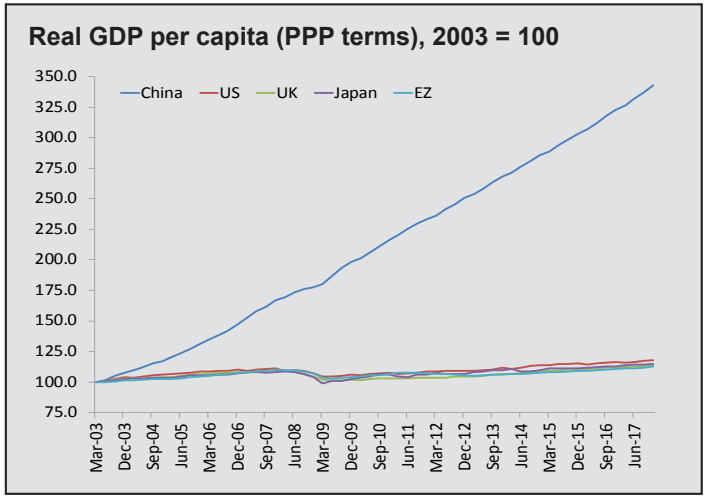

Figure 1. *Source: Datastream*

And it's no better if we look at how this economic strength feeds into the capacity of both Russia and China to assert themselves geopolitically and diminish the power of rich countries — especially the US and Europe. It's here the similarities between the alternative systems of Russia and China ends. The Russians may be happy with their development model. But no-one else envies it. The Chinese model is, in contrast, exportable (in whole or part) and will be. For that reason, we will focus on the Chinese alternative system.

Democracy evolved messily, inefficiently and imperfectly. But due to this it is highly shock absorbent. It cushions dissent and social discontent well. The downside to this is that it is slow and inefficient at addressing the causes of such shocks. There may be internal breaking points out there (such as populism in collision with the EU machine). But they are far into the mists of time. For the moment, democracy's performance is unenviable for citizens in many alternative systems.

The alternatives are dictatorial, effectively single party or strong-man-rule, socially repressive but economically savvy. Most important of all, they are created by design and not by evolution. That may make them brittle. Humans are bad at planning for everything — particularly exogenous shocks created by their own failures (e.g. climate change).

It is fair to describe successful alternative systems, like China, as techno-autocracies because technology empowers these regimes in two vital ways. It provides the means to achieve high economic growth. And it enhances the ability of the state to control society. The two are opposite sides of the same coin.

There was a time when the western liberal mantra and our humbler belief was that rising living standards create the demand for civic society and rule of law. And that civic society is a basic building block for an economy to achieve rich country status.

So the two trends were self-reinforcing: as societies got richer they became more civic. Becoming more civic empowered the creativity that allowed them to become rich.

Right now, all major rich countries are democracies and enjoy the rule of law. But this increasingly appears to be less of a rule that governs the future than a historical accident that typified the past. China is conceivably the laboratory test that will prove or disprove this.

THE CHINA MODEL

China's blueprint is almost the antithesis of the western concept of economic development. China's model creates a green meadow of considerable economic, technological and scientific freedoms, surrounded not by hedges but by towering grey prison walls. That's where you go for stepping out of line politically. The greater the economic freedom, the more restricted social freedoms become. But as long as economic freedom delivers wealth the people will sign-off on social oppression and support the political system.

The political architecture to make this social contract work is being modernised and consolidated at a stunning rate. Take the latest National People's Congress (NPC) which ….

1. approved President Xi's personalised and unlimited rule;

2. did away with the separation of Party and State (put in place by Deng Xiao Ping to prevent the recurrence of Mao's personalised dictatorship);

3. cut the number of ministries (by eight) to increase efficiency;

4. upgraded and consolidated the committees in charge of running the economy and set up reporting lines that run straight to the top (effectively to Liu He, as Xi's right-hand man in charge of the economy);

5. reinforced the anti–corruption drive, giving it vastly increased resources and reorganised it in terms of law, justice and investigatory bodies and their leadership;

6. consolidated regulatory bodies for finance (banking, insurance and markets).

The political architecture is only as solid as its ability to deliver the goods. If things go well, all is well. But if things go wrong economically, the cracks will spread quickly.

Western democracies with all their lasagna-like political and bureaucratic layers have an ability to absorb shocks and cushion discontent, without ever really tackling the causes of either. But autarkies and dictatorships are much more fragile, which is why they are more sensitive to social discontent than rich countries' elected leaders. And interestingly, the new techno-autarkies, thanks to their sophisticated technical abilities, are better equipped at sussing out social discontent and not only suppressing it, but addressing its causes efficiently.

The Chinese economic model has little to do with that of yesteryear.

No longer is the landscape to be dominated by state-owned heavy industry, hoovering up badly-allocated credit and pouring out goods in excess of domestic demand that have to be exported at vile prices to beget the dollars to oil the creaking wheels of malinvestment.

This may be Trump's nightmare vision of China. But Don Quixote too had notions about windmills. It is a view as out of date as that of rebuilding smoke-stack America. Unlike the US political leadership, China's knows when a development model is past its use-by-date. And knows to change it rapidly, or the Party may not survive the economic damage inherent in persisting with it.

So, what is that economic model for the future? Disruptive technologies are to be both the economic drivers and means of social control.

China is spending more on R&D than any other country in the world except the US (Figure 2). Its academic papers on key areas of research and technology are now quantitatively ahead of the US, Europe and Japan (Figure 3, page 13), even if they are still lacking qualitatively. This progress is being bankrolled by massive state support that dwarfs government-funded research in the US and elsewhere. The change has already transformed global research and information flow (Figure 4, page 13).

The environment for these "new economy" sectors is relatively free with few constraints in medical research (genome or stem-cell technology) and little or no data protection laws. In contrast to personal data, the protection of intellectual property enjoys increasingly effective legal cover. This is

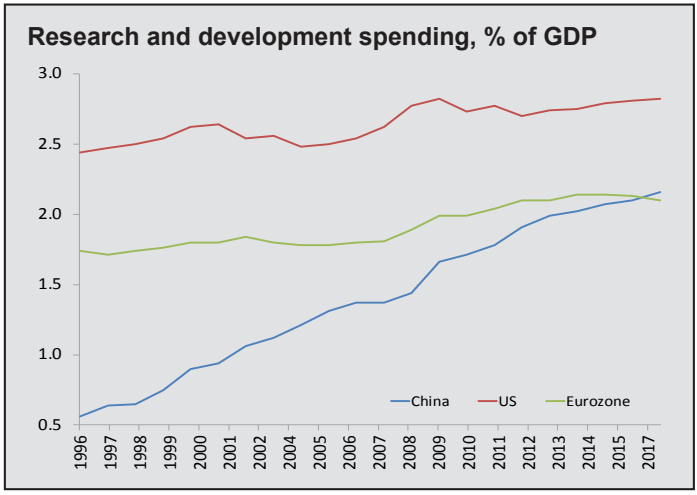

Figure 2. *Source: World Bank WDI, Independent Strategy*

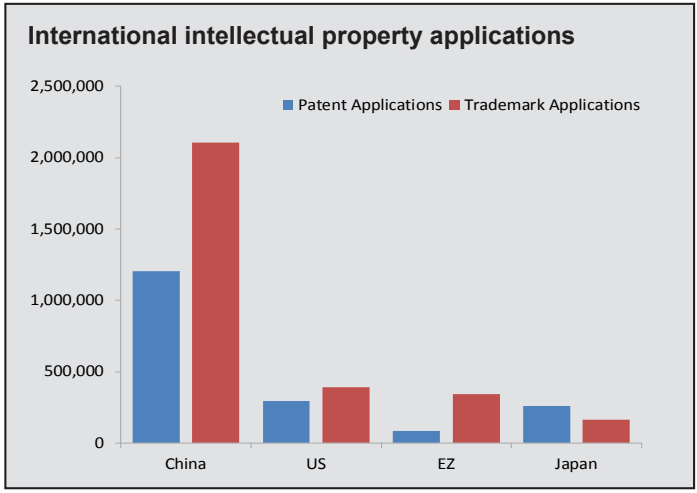

Figure 3. *Source: World Bank WDI, Independent Strategy*

significant. For example, you can get more uninhibited access to citizens' big data in China than anywhere else. You can then use it to create a new process or application, which you can then legally protect effectively.

Focus, funding and brain power make it highly likely the Chinese will succeed in becoming globally dominant in a wide range of 'new economy' sectors, as Xi targeted with in his "Made in China 2025" plan. This is designed to push China up the value chain, giving it the lead in a number of nascent technologies (e.g. AI, quantum computing, clean energy). The edict also calls for a push into industrial automation while reducing Chinese dependency on imported components, aiming for a domestic content of 70% in manufactured products.

What could cause all this felicity to flop is China's over-leverage (Figure 5, page 14) and malinvestment problem. But that is unlikely — partly because

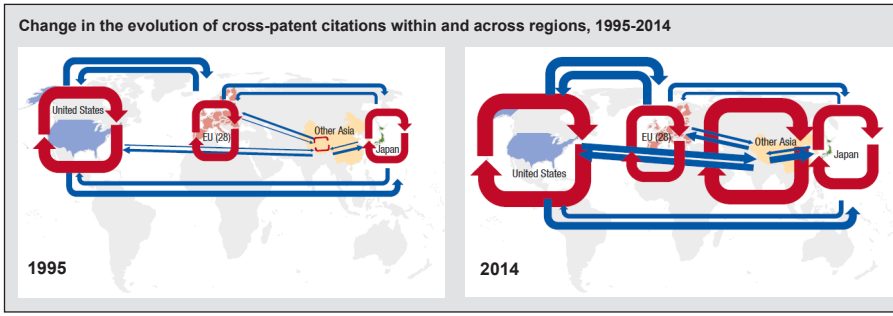

Figure 4. *Source: IMF*

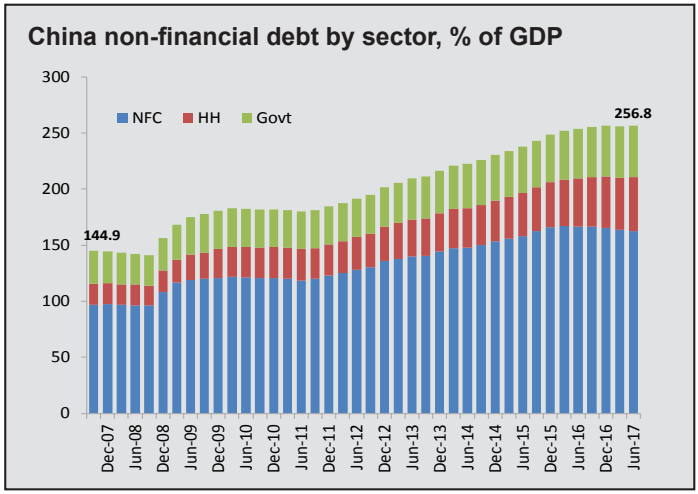

Figure 5. *Source: BIS, Independent Strategy*

the money is owed to themselves as borrower and lender are all state controlled. But there is another reason for thinking a crisis can be avoided, which is wrapped up in the drive towards new technologies.

The "new economy" sectors need less capital to grow. Rising consumption lowers the savings rate. The result is less and better-allocated savings. This also means China's net savings (saving minus investment) are likely to fall, thus reducing the current account surplus.

Becoming capital-lite will help address China's malinvestment and excessive leverage problems. China will be using less debt per unit of (relatively rapid) GDP growth. In other words, the efficiency of capital investment will be rising. So, leverage gradually declines. The efficiency of capital allocation will rise too as SOE borrowers are replaced with profitable 'new economy' privately-owned corporates.

There are four ways in which the new technology paradigm reinforces the Chinese state.

First, as long as technological progress drives economic productivity and delivers growth that continues to raise real living standards to China's citizens, as it is doing at the moment, social tolerance for a politically oppressive regime can be sustained.

Second, the corporations at the heart of China's technology revolution — in particular those engaged in internet and mobile services, social media, online

consumption and payment systems — provide access to their data to the state, as the law stipulates. So, the same corporations that provide consumer satisfaction also feed mass surveillance intelligence to the authorities.

The state is also advanced in using this data and that from its own sophisticated intelligence network, for social profiling with the aim of matching an individual's access to resources (like social pay-outs, housing, education and travel permits) with how well the individual meets the Party's criteria. A rather amusing example is the Beijing sperm bank that carries notices on its website that only donors with excellent conformity to Communist Party ideals need apply.

Third, the technological revolution in China is highly nationalistic and is closed to the world in significant parts. For example, VPNs are illegal in an attempt to stymie access to the global internet. So, for individuals, the offshoring of communications is hard and hazardous. Put it this way: the aim of the technological revolution is to make China a world leader. China's research in fields like AI, robotics and medical research will compete globally. But access for its citizens to unfettered extra-China communication will remain strictly controlled.

Fourth, the technological revolution reinforces China's ability to project power geopolitically. At its simplest, sustained growth in the economy means China can continue to finance big increases in military spending (Figure 6) and grand projects like One Belt One Road (OBOR)[1], which will tie client states (via debt) to the Chinese economic machine.

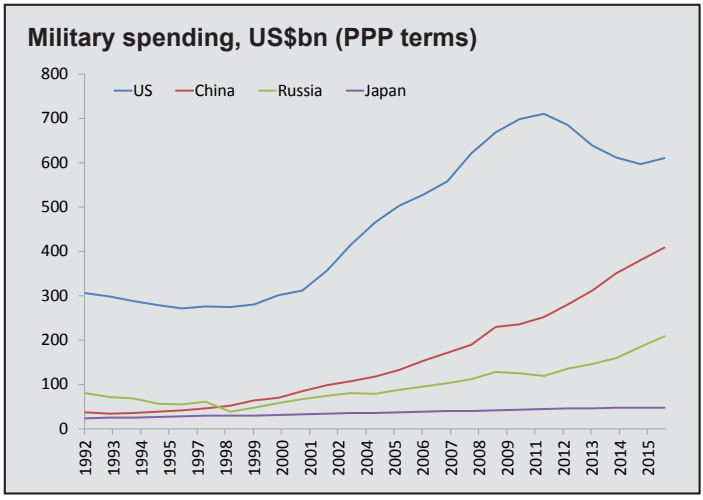

Figure 6. *Source: BIS, Independent Strategy*

Much of China's current R&D boom is directly linked to weaponry and communications. For example, drone deliveries are already a consumer reality in China today. But they are also a key military technology (both offensive and defensive).

Mega projects, such as domination of AI and robotics globally, are essentially being funded and driven by an institutional framework in which the state and private sector are partners. And it is matched by the root and branch reform of the military.

WESTERN DEMOCRACY — A BANKRUPT MODEL?

The liberal democratic model compares badly with China's for the average person on the street.

Nearly a decade ago our book, *Democrisis*[2], predicted bad things for democracy based on these observations:

- Fragmentation of the political system after the fall of the Berlin wall, which heralded the end of ideological politics, would deprive much of the political structure of its purpose.

- Trivialisation of political discourse by new technologies. The soundbite replaced debate and ideas, something social media has accelerated. Elections would become marketing campaigns, catering to delivering unfulfilled promises to groups of swing voters with narrow focus and interests.

- Perversion of the political process by money, politics, lobbying and the power of giant global corporations.

- Excessive deregulation of financial markets. This led to the democratisation of credit, but excessive borrowing. It fuelled asset bubbles globally. Both helped to gloss over falling wages in rich countries, due in part to globalisation. But both set up the financial crisis. This will have even longer-lasting political repercussions than the economic legacy from the global financial crisis (GFC).

All of this happened and it was made worse by the rise of populism fuelled by inequality, the collapse of social services and lack of education.

Take the European Union today:

Traditional elitist leadership and parties in many countries, but most markedly in Germany, Italy and the Netherlands, now garner less than 50% of the vote. Populists make up the difference.

The UK is already a working example of both a populist takeover, not by a party but by an idea, and the most significant retreat from globalisation so far, as the EU is by far the UK's biggest market and the biggest free-trade zone in the world.

To keep the populists at bay in many EU states, coalitions have been formed. But it is not evident that these coalitions have a vision or are capable of the decisiveness that are needed to address the root causes of the rise of populism. Only rejuvenation of the popularity of the EU as a widely supported ideal, will work. Economic expansion and more jobs will not work alone, although it gives the politicians a window to achieve reform.

The hope is that the Macron-Merkel axis delivers EU reform. The list of mooted changes includes the creation of an EMF (an EU version of the IMF) to enhance and potentially replace the European Stability Mechanism (ESM); completion of the banking union; establishment of a more democratically accountable European Parliament; and the partial mutualisation of sovereign debt. All of these would be positive steps. But at best it is a 50:50 bet that they will enthuse the masses, even if they help deliver stability and growth.

If the EU's traditional political parties fail in this, then populism will continue to spread and strengthen, threatening the EU itself.

This process will take many years to evolve. During this time, the EU may provide a counterweight to China and the US in terms of its liberal values, but hardly as a political-economic entity that makes China's look bad.

What the EU will do, along with its trading partners, is to continue to further globalisation and open markets. The EU's recent trade agreements with Canada and Japan point the way here. Of itself, that is sufficient to ensure that globalisation will continue with or without the US.

President Trump is doing a good job at .... Making China Great Again! And, in the process, weakening the US, both geopolitically and economically.

As America withdraws from international treaties and agreements and retreats into economic isolationism, China will make a claim to fill the void — unjustifiably so in many cases (e.g. China's trade openness) — but effectively, in terms of global perception.

The economic case for failed populism in the US is striking.

The policy mix to recreate industrial America and put President Trump's voters back in jobs is fiscal spending and protectionism, together with some social deregulation (mainly at the expense of the environment and social justice).

The absurdity of increasing the fiscal deficit, while seeking to reduce the trade deficit through protectionism is contained in the simple economic equation and accounting identity:

$$\mathbf{NS = S + GS = I + NX}$$

This says that national savings (NS) is made up of private sector savings (S) and public-sector savings (GS). If public sector savings fall due to fiscal deficit spending, then either private sector savings have to compensate, or investment (I) has to drop (meaning lower growth or recession), if the current account deficit (NX) is to even stay the same. Put it another way;in a full employment economy at the peak of its economic cycle, the US government spending more money will suck in more imports, increasing both the fiscal and current account deficits.

Rising twin deficits (Figure 7) can only be funded if China (and other current account surplus countries) that are willing (in economic jargon '*ex-ante*') to invest more of their external surpluses in US Treasuries. That is an unlikely if there is a US-China trade war.

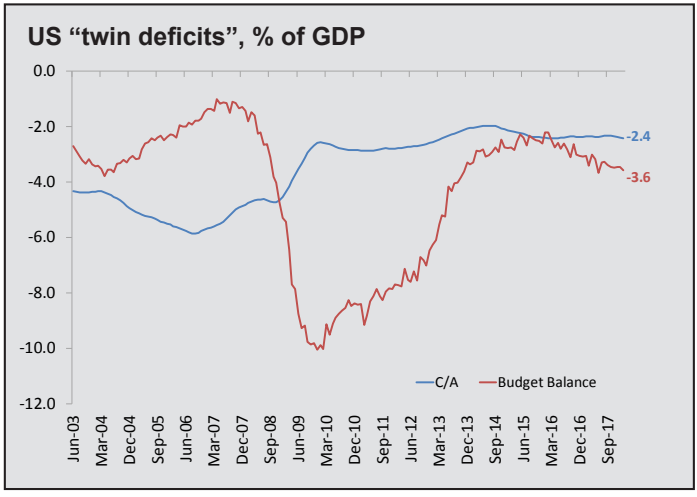

Figure 7. *Source: Financial Management Service, BEA*

The deficits will be funded eventually because dollars leaked abroad by the US current account deficit and held overseas have to be held and invested by someone. But not at today's price. So the US will have to pay more, either in terms of higher interest rates or in a weaker US dollar (falling to a level where investors can count on exchange rate gains plus higher interest payments going forward).

The second absurdity of US policy is protectionism itself. Trade protectionism substitutes high-cost less-efficiently produced goods for low-cost goods. This holds even if the goods are "dumped" at below-cost prices, which effectively represent a subsidy by the exporter to the buyer.

The real driver of job losses in the US is technology, not trade. In nearly every manufacturing sector, it takes less people to produce a given level of output than ten years ago. That is called productivity and it drives economic growth and progress from low- to high value-added activities, ensuring that workers earn more. It is by far the major reason why the US produces approximately the same amount of steel products today as ten years ago, but with 40% less people. Protectionism is an attack on technological progress. That won't stop technology advancing. It just means the cost will be paid in terms of productivity, growth and living standards in the US.

The impact on China of US trade tariffs is small in economic terms, but politically big and thus certain to produce retaliation. The effect of US tariffs on China is economically small because of a lack of substitute products (e.g. 85% of US mobile phone sales are produced in China by US corporations) and low elasticity of demand (US people will still buy iPhones). This means US consumers, not Chinese producers, will ultimately pay the cost.

US attempts to impede the flow of ideas and technology will only succeed in isolating the US. It would mean that the US is effectively cutting itself off from the global flow of ideas that underpins research and development of new technologies. And it ignores history: evolving states always benefit from the innovations of others, which they enhance. The US took the ideas of the industrial revolution from Europe and then surpassed Europe. Moreover, China does not need US technology anymore. Those days are long gone.

AN UNSAFE WORLD

The world will have to look for new alliances and balances of power as US influence declines and is increasingly mistrusted. That is highly destabilising as there really is no replacement for the US on the global stage. But a stabilising factor will be a continued commitment to globalisation outside the US, as one means of achieving stable relations between states.

As the US retreats into isolationism, China steps up: economically and geopolitically. Economically, China is increasingly self-sustaining. Technologically, China is way beyond the point of depending on the US.

Europe is unlikely to provide an attractive economic and political alternative model compared to China for third countries for many years. This reinforces the ability of China to export its way of doing things. This is key in achieving the geopolitical and economic goals of the OBOR project, which already absorbs more of China's exports than the US.

China's rising power economically and geopolitically and the decline of US power raises issues about security in Asia, Europe and the Middle East. Rearmament in Asia is a feasible response to China's increasing assertiveness, as well as to a nuclear North Korea that the US ultimately fails to disarm. This will be expensive (3-6% of GDP) for Asian economies, Japan in particular, that have been able to shelter under the US defence umbrella for decades. But it would also raise the probability of Japan, South Korea and Taiwan becoming nuclear powers in their own right.

In Europe, trust in the US commitment to NATO will continue to wane, meaning the EU will sooner or later have to ensure its own containment of Russia.

In the Middle East, President Trump's aim to withdraw from Syria opens the door for Iran to increase its influence and open a supply route to its Hezbollah allies in Lebanon. To contain Iran, Israel and Saudi Arabia would be empowered to act as US surrogates, with arms to match!

The only constant in such a multi-polar world is instability.

CHAPTER 2

Globalisation: the cracking sound?

Globalisation has been under assault. Populist movements in developed economies have sought to blame trade for their own domestic ills. The loss of blue collar jobs has provided a captive audience for such a narrative. It has delivered anti-globalists to the White House and helped facilitate Brexit. But globalisation's demise is being prematurely declared despite these shifts. Indeed, much of the slowdown in global trade can be attributed to the financial crisis and its aftermath. Now with the recovery, trade activity is on a fairly powerful upswing.

Meanwhile, new trade agreements are being forged. Trump might have dumped the Trans-Pacific Partnership (TPP), but the treaty should be implemented by the remainder of the group. Europe is also signing major deals. China meanwhile is leveraging its economic might to launch the One Belt One Road (OBOR) project that will ultimately reach right to the doorstep of Europe. Globalisation will persist because of the benefits it brings, both in the form of lower inflation and ultimately through higher levels of productivity and growth. It also serves geopolitical aims like furthering European and Japanese 'soft power' as bulwarks against populist isolationism and China's aim of filling the US's shoes on the global stage. The only thing the populists pursuing more inward-looking ideologies will discover is that they've been left further behind economically, technologically and geopolitically.

Wherever you look, it seems that someone has trouble with trade. While globalisation hefted global living standards by boosting incomes, raising productivity and slashing the price of goods, the perception that 'someone has benefited more than you' reinterpreted the issue (certainly in many developed markets) from one of gain to one of pain. Populists have sought to exploit this fundamental misunderstanding, blaming globalisation for job losses and income stagnation. And voters have responded, ushering in Brexit and Donald Trump.

The boom in global trade pre-crisis was driven by two distinct events. The first was the end of the cold war, which brought shackled consumers stuck behind the 'iron curtain' into the global market place. The second wave was driven by China's accession to the WTO, the culmination of the economic reforms started by Deng Xiaoping which then gained traction under Jiang Zemin (Figure 1, page 22). This surge pushed global trade as a share of GDP up from around 35% to a peak of 60% before the financial crisis hit.

WHAT HAS DRIVEN THE TRADE SLOWDOWN?

Since then there has been a notable slowdown in trade growth. Part of this is structural. For example, Chinese exports have been shrinking as a share of its GDP not because of a decline in external demand but because of the continuing outperformance of the Chinese economy. In dollar terms, exports have doubled over the past decade, but as a share of GDP they've nearly halved (Figure 2). Basically, the one-off gains of integrating into the global economy can't be repeated into perpetuity.

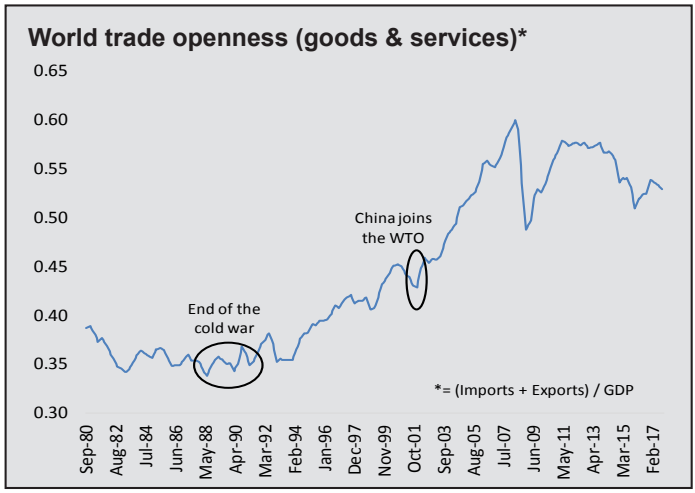

Figure 1. *Source: CPB, Independent Strategy*

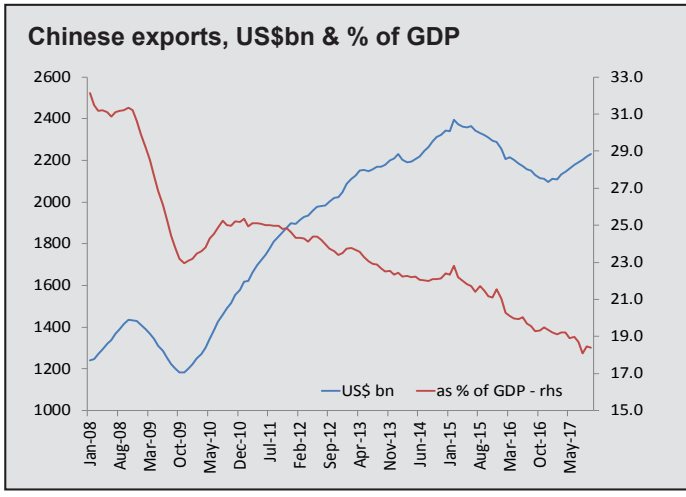

Figure 2. *Source: Datastream*

But growth in trade volumes has also slowed. There is something a little 'chicken and egg' about this as the shock of the crises mechanically dampened trade. This was most acute during the global financial crisis itself, but the slowdown in global growth thereafter was also a significant factor in trade's sluggish expansion. That period captures the Eurozone debt crisis and the emerging market recession which hit commodity producers in 2015 as well as the slowdown in China during 2015-16.

Although a bout of extreme protectionism was avoided in the aftermath of the crisis (the G20 pledging "not repeat the mistakes of the past"), there is clear evidence that countries opted for subtler tweaks to try to protect their citizens from global competition in the face of weaker demand. Some of the measures had merit, for example, steps to counter the dumping of goods spat out from China's industrial binge (specifically from the subsidised state-owned enterprise (SOE) sector) aimed to create a level playing field in an otherwise distorted market. But the rise of protectionism was broader than a simple reaction to that.

A study from the Peterson Institute shows how barriers crept up. Between 2008 and 2013 Peterson clocked the imposition of 117 local content requirement measures, estimating this affected $928bn of trade in goods and services. WTO data corroborates the scale of the problem. Between 2008 and the middle of 2016, the G20 economies had introduced 1,196 restrictive measures.

Multilateral efforts also faltered. The WTO's Doha round of trade talks — which started in 2001 and collapsed in 2008 — is still unresolved. Other trade agreements have also run into obstacles post-crisis. The American withdrawal from the TPP is the most high-profile case of a multilateral agreement stumbling. Trump is also posturing to recalibrate the US's trading relationship with China, which is pitched as "deeply unfair". And the administration is meddling counter-productively with the NAFTA agreement. While some sort of re-negotiated pact might not materially impact existing North American supply chains, uncertainty creates execution risk for future investment projects and the efficiencies these would generate, acting as a break on trade-deepening and the associated gains in productivity.

Meanwhile, the most visible example of this de-globalisation wave — Brexit — ticks closer to execution. The project's backers cite opportunities available for the UK to forge its own trade agreements, oblivious to the contradiction that to pursue such deals the UK will have to restrict its access to its closest neighbour, which also happens to be the largest free trade bloc in the world. Indeed, the EU still soaks up around half of UK goods exports while the EU provides an even greater proportion of UK imports (Figure 3, page 24). But the idea that there is a world beyond the world you exist in seems to be an

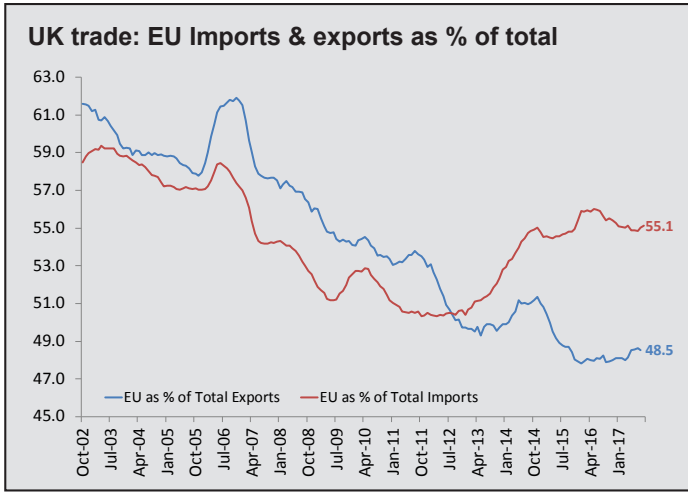

Figure 3. *Source: ONS, Independent Strategy*

appealing one for certain British romantics. The Bank of England is more realistic, acknowledging that this is likely to lead to lower productivity, lower growth and higher prices, which has clear implications for monetary policy.

AMERICA FIRST, AND LAST

Does all this mark the death knell of globalisation? Any insular shift in US trade policy traditionally meant it could. And the election of Trump has certainly brought about such a change. His 'America first' rhetoric has feasted on blue-collar real wage stagnation and the offshoring of jobs to lower cost centres. This view overlooks the reality that much of this adjustment in heavier manufacturing industry was an unavoidable consequence of technological change and is irreversible. Any business reshoring now would have a vastly different impact (there'd be fewer jobs, but they'd be of a higher quality). The traditional blue-collar worker would be stranded either way. This insular critique also glosses over the many benefits globalisation delivered to these very consumers, including lower prices and greater variety.

President Trump's 'deal maker' vision of replacing multilateral agreements like the TPP with unilateral treaties that prioritise American interests (leverage) has been sold as an antidote to these changes. It is sometimes difficult to disentangle rhetoric from reality, but the signal it sends is clearly harmful for US investment and potential growth.

While the US remains the world's largest economy in nominal dollar terms, its importance in global trade has been diminishing since the start of the millennium. Indeed, US exports at the turn of the century were around 12% of

the world total compared to 9% today whereas China has grown from about 3.5% to over 13% (Figure 4). This mirrors the general pattern seen between advanced and emerging economy trade activity.

THE BIGGER PICTURE

While the US might appear to be turning inward, the rest of the world moves on. There are a number of significant projects that will counterbalance these corners of 'anti-globalisation' sentiment. The EU remains committed to the globalised economy. A free trade agreement with Canada is in the final stages of ratification and the EU aims to conclude talks on a deal with Japan shortly (the end of year deadline looking rather optimistic). Discussions between the EU and the US might have died a death, but there could be scope to revive plans with future administrations.

Meanwhile, China is pursuing its own strategy to expand trade ties, most notably with its OBOR project. That is designed geographically around the old Silk Road but has been repurposed to serve the needs of Chinese development[3] Critics point out that this is merely a way to redirect Chinese excess capacity while expanding its geopolitical influence across traditionally more neglected parts of Asia. And that many of the planned investments are likely to be decided by political considerations rather than economic. All of which is probably correct. But that doesn't detract from the growth such a programme will still generate (both in terms of reshaping value chains and creating the foundations for future demand growth) and underlines the lesson China learnt from its own development

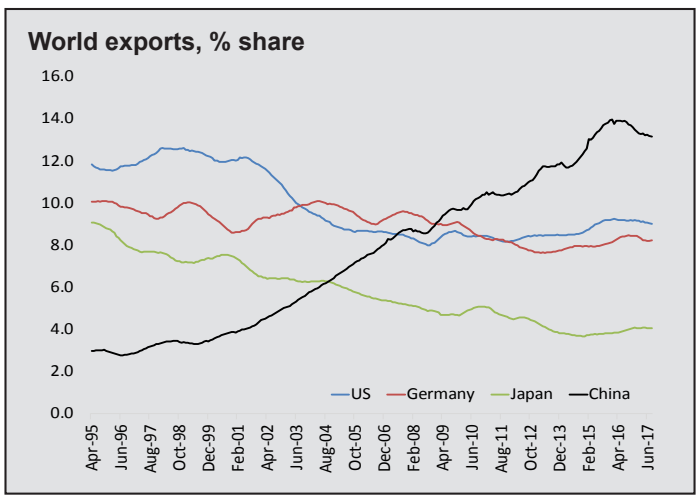

Figure 4. *Source: IMF DOTS, Independent Strategy*

— free trade lifts all boats.

The TPP also looks set to live on despite the US's withdrawal, having been revamped into the CPTPP (Comprehensive and Progressive Agreement for Trans-Pacific Partnership) with ratification likely in early 2018 between the remaining members (Inset 1) after which it would head to national parliaments to approve. Even China has expressed an interest in signing up, somewhat ironically given that the TPP was initially created to try and counter the threat of Chinese dominance in the region.

The data also suggest the trade revanchists remain on the wrong side. Indeed, trade volumes are on the up again. Growth rates are now only around 1% pt below pre-crisis levels (Figure 5, page 27). The structure is also positive, being driven by the factory economies of Eastern Europe and Asia rather than the commodity producing states in the Middle East and Latin America. This reflects the upswing we've seen in global economic growth, emanating specifically from the broadening eurozone recovery and rebound in Asia ex-China.

This is being complemented by stronger investment spending — something that has been distinctly lacking for nearly a decade. Investment still falls short of where it would desirably be, momentum though is what counts and that is finally moving in the right direction. The only visible cloud is probably how

CCTPP, or just TPP lite?

The withdrawal of the US reduces the instant boost to global trade the project might have triggered, but it still brings down non-tariff and tariff barriers among nearly a dozen Pacific nations, specifically Japan, Canada, Australia, New Zealand, Mexico, Malaysia, Vietnam, Peru, Chile, Brunei and Singapore. The TPP paperwork also allows other members of either APAC or any trading bloc a country is a member of to apply. Colombia, Philippines, Thailand, South Korea, Taiwan and Indonesia have all expressed a desire to sign up.

While the economic impact of US withdrawal will be significant, the 'lite' version could still lift real growth rates by 0.1-0.3% pts per annum over the next decade and the treaty would retain the incentives for further reforms, as tariff and non-tariff barriers come down. Enactment might also be speeded up. The initial agreement required six member states, representing 85% of GDP of the TPP nations, to ratify in order to come into force. The CCTPP seems likely to drop the GDP element of this clause.

Inset 1. *Source: Independent Strategy*

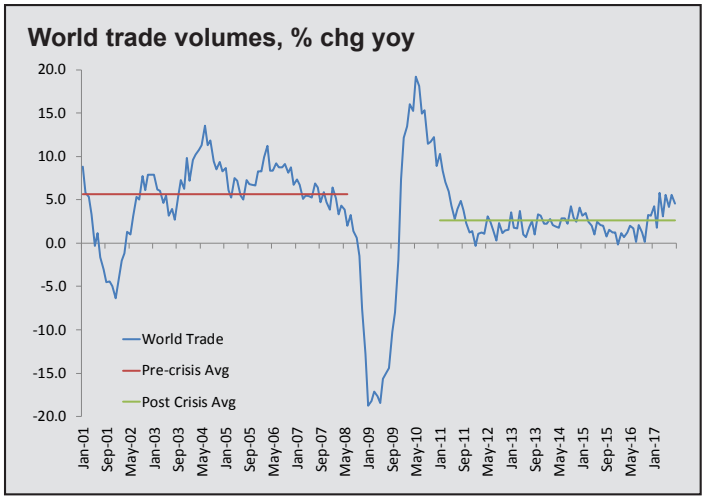

Figure 5. *Source: CBP, Independent Strategy*

the US fares given it is 'late cycle', having soaked up the vast majority of its domestic spare capacity. But that is unlikely to dent world demand near term and could in fact provide an additional catalyst once the Republican tax reform package goes through. A large chunk of the estimated ~$1trn increase in the US deficit will end up being financed from the recycling of flows from an even larger US trade deficit.

Of course, the improvement in trade may just be cyclical, disguising a negative longer-term secular shift. But the fact remains, if de-globalisation was taking hold, it would take a decade or more to reveal itself. It would require a wholesale unbundling of highly complex cross-border supply chains that have developed over decades. Even if barriers appeared, reshaping the deployment of capital from country A, B and C back to country D would be an extremely prolonged process. It would also require a permanent change in the collective mindset of investors, who need to be convinced that any change in attitudes towards globalisation is permanent and to their advantage. These are all inputs that lie apart from the normal drivers of the economic cycle.

Technological innovation could also provide a boost to trade. Containerisation might have dramatically reduced the cost of shipping goods from one side of the planet to the other, but it is still bureaucratically complex — requiring a lengthy list of documents from quality certification to letters of credit. These are needed to protect against counterfeit goods, smuggling and fraud. Digitisation of documents using blockchain technology (could be transformative, unifying all the documentation for a transaction into a distributed digital ledger verifiable by all relevant parties. No one in the chain could modify

or amend details for the shipment without the corroboration of the network. That could dramatically improve efficiency and productivity, greasing the wheels of global trade.

Digitisation is a further disruptor. Services trade has continued to expand, even as goods growth dropped (Figure 6). This reflects the ongoing shift towards intangibles — both the consumption of and investment in. The information revolution now means many of these are infinitely scalable. No one is deprived of a piece of software, media or other digital service by another purchasing a digital copy. Although services exports account for only a quarter of goods trade, momentum is firmly on its side. Digitisation is already stripping back barriers and recent innovations, for example smartphones alongside increasing mobile internet penetration and blockchain, will further enhance this trajectory.

Trade suffered an almighty hangover after the financial crisis, the collapse in global demand hit volumes and the recovery was stretched out by ensuing crises in Europe and emerging markets. While protectionism was vilified by policy makers there was still an increase in less direct barriers to trade. The sum of these parts was an effective stagnation in global trade growth and investment for much of the past decade. This narrative has been compounded more recently by a populist political wave that has ridden the post-crisis stagnation in living standards.

Populists seek to apportion blame and the trade boom driven by globalisation has been top of the list. Trump's America has been conditioned to believe trade is bad and the country now looks inward. Brexit was a further expression

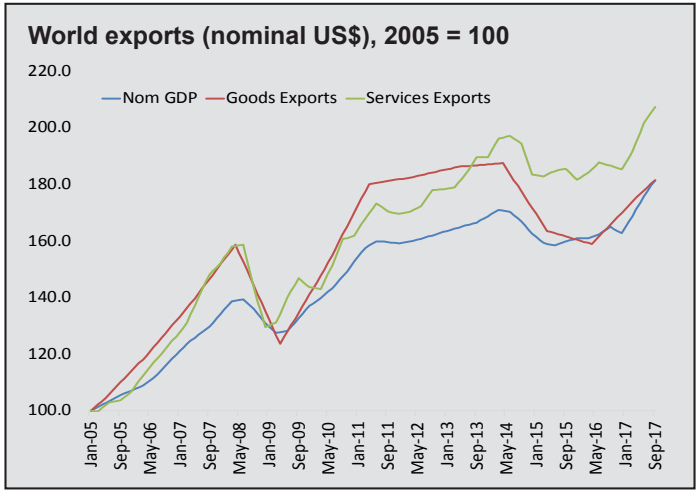

Figure 6. *Source: Oxford Economics, Independent Strategy*

of electoral disappointment with rising inequality of wealth and opportunity and will inflict a permanent hit on UK economic potential. If these attitudes took hold more broadly it would lower productivity and potential growth as well as raise inflation. It would also make convergence between emerging and developed economies more difficult, except in the cases of countries like China where sheer size ensures economies of scale.

But globalisation is not yet dead and certainly not at a point of unwinding even if the US (directly) and the UK (via its own twisted logic) are pushing against this trend. Some trade deals might have faltered, but others are moving ahead and grand plans, such as China's OBOR project should drive a further round of trade growth in Asia over the next decade or so. Although many western leaning states in the region view China warily, intra and extra-Asia trade is now growing strongly.

The Eurozone recovery is also supporting the recovery in global trade volumes. And with global growth likely to pick up further in 2018, trade will continue to quicken. That is positive for the investment outlook and for productivity and living standards, most notably for the middle-income countries of Asia and the higher-income German feeder economies of Eastern Europe. It also fits with the lower-for-longer inflation narrative and further complicates the job of central bankers still trying to reconcile the world in traditional monetary terms.

If we are wrong and globalisation is dying, the post mortem will be a long, drawn-out process. It will be logistically complex and, beyond that, require a shift in mind-set to facilitate it. Such adjustments only ever happen gradually. The quantifiable impact is well beyond any normal investment horizon.

CHAPTER 3

A big deal

Demography is perhaps the single most important investment theme over the next half century. Many of its implications will begin to bite much sooner. Three trends are happening simultaneously:

First, global population is expected to expand by nearly 40% through 2065. But there's going to be a dramatic regional tilt. While non-Japan Asia accounted for over 60% of net population expansion in the last half century, almost 90% of the growth will happen in the AIME bloc (Africa/Indian sub-continent/Middle East) in the next 50 years. This might offer exciting investment opportunities if new supply chains emerge. But it could just as easily lead to chaos. Europe remains at the forefront of migration risk.

Second, population growth is slowing globally as fertility rates drop. By the end of the century, births per woman in all regions will be below the natural "replacement rate". Meanwhile, with life expectancy on the rise, there will be a sharp deterioration in dependency ratios. In developed markets (DMs) this will mean heavily-indebted governments scrabbling to earmark funds for existing welfare commitments. In many emerging countries (EMs), it's even worse — governments are wholly unprepared to carve out the resources to fund their populations' pension and healthcare needs.

Third, and most important for investors, working-age populations will be shrinking outright in Japan, much of Europe and, most dramatically, in China. This is likely to keep economic growth and financial asset returns low by historical standards. Labour scarcity could easily drive up inflation unless technology can be harnessed to satisfy demand with fewer workers. But fewer workers would cause the tax take to drop just as public sector liabilities for healthcare and pensions soar. Super-profitable corporations may be forced to fill the financing gap, while home owners will increasingly be required to fund their own dotage.

Once in a while, there are developments so important that they define the investment era. That moment was in the 1950s when the cult of the equity took hold; Japan's economic miracle and Germany's *Wirtschaftswunder* of the 1960s; the collapse of the gold exchange standard in the early 1970s;

Paul Volcker's hard-nosed attack on double-digit 1980s inflation; the fall of the Berlin Wall; globalisation; the internet revolution. You might even include central bank money printing in the post-financial crisis era — culminating in negative interest rates and sky-high asset valuations — in the same breath.

Most of these epoch-defining events are obvious only with the benefit of hindsight. Occasionally, however, we get to see one well in advance. And no matter how slow-burn it might be, its force is irresistible. Demography is one such theme. It's so gradual that many investors struggle to get excited about it. But that doesn't mean it isn't of central importance to future asset returns. Here we try to bring out the kernel developments and consider their implications.

The challenges can be summed up, in the first instance, by a single chart (Figure 1). We are entering a new paradigm in which the combined working age populations of the richest nations, coupled with that of the world's most populous, are about to start shrinking. Instead of adding 15-25 million new workers every year, as they had reliably done for half century or more, we're going to have to adjust to an era in which the number of workers from the countries that dominate global demand and supply chains is actually declining.

Simultaneously, we are going to see a rapid greying of these countries' populations. The dependency ratio, defined as the size of the over-65 population relative to the pool of economically active, is going to rocket

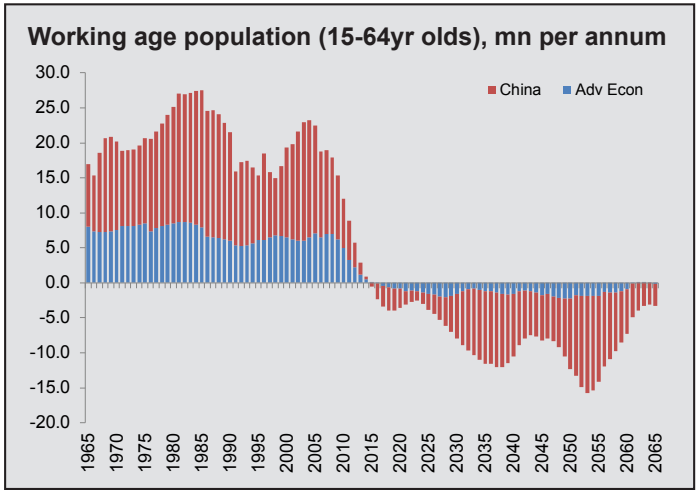

Figure 1. *Source: UN, Independent Strategy*

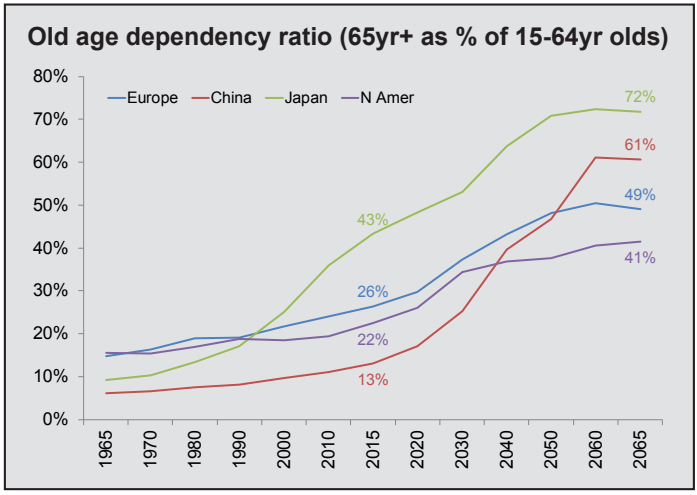

Figure 2. *Source: UN, Independent Strategy*

(Figure 2). Within 30 years, most regions are going to have an age-profile like Japan's today. And Japan will be off the charts, with three workers responsible for funding the dotage of two senior citizens — as well as their own living expenses!

Of course, this isn't the whole story. The advanced economies and China together only account for 40% of today's global working population. By 2065, the UN Population Division's base case scenario predicts that their combined share will have dropped to less than a quarter (Figure 3).

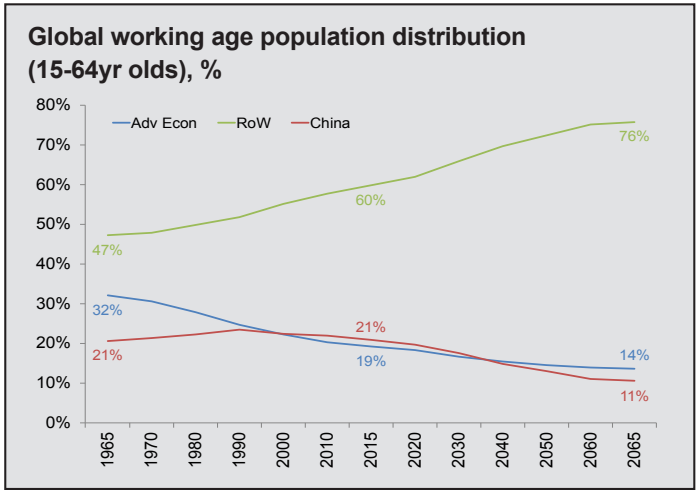

Figure 3. *Source: UN, Independent Strategy*

TOO HOT

Overall, however, the world's population will still be growing rapidly. According to the UN, within 50 years, there are likely to be three billion more inhabitants on the planet. Adjusting their assumptions for different fertility and mortality scenarios, gives a wider range of "extreme" outcomes for population increase — from a low-ball estimate of +1.3bn, to an eye-popping +5.9bn. But under any scenario the numbers are vast.

Of course, this is not a new phenomenon. The global population has more than doubled from 3.3bn in 1965, to 7.3bn now. That represents an average annual growth rate of 1.6% p.a., with the fastest expansion being in developing economies (Figure 4).

"So what's the big deal?" one might ask. We coped with 4bn new mouths to feed in the last half century, so surely we can cope with another 3bn over the next 50 years? Well maybe, maybe not. Hidden beneath these headline numbers are some dramatic shifts with consequences of potentially biblical proportions.

While people are living longer in almost all countries due to giant medical advances[4], fertility rates are dropping faster (Figure 5, page 35). Indeed, by the end of this century, all regions are expected to fall below the "replacement rate" of 2.1-3.4 children per woman (depending on regional infant mortality rates). So the phenomenon of a growing global population is actually finite.

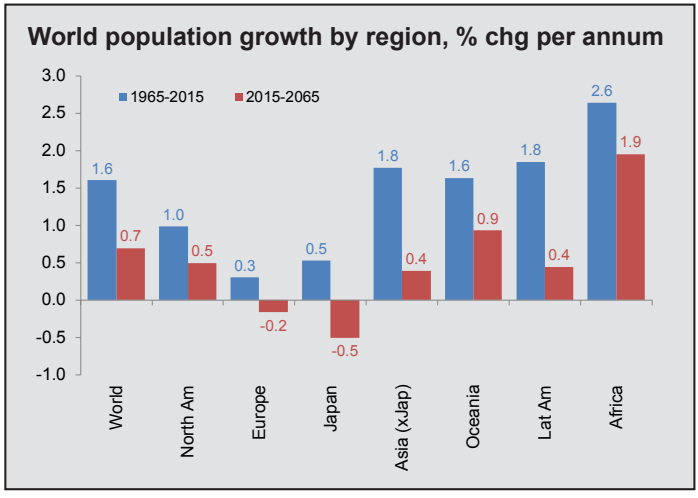

Figure 4. *Source: UN, Independent Strategy*

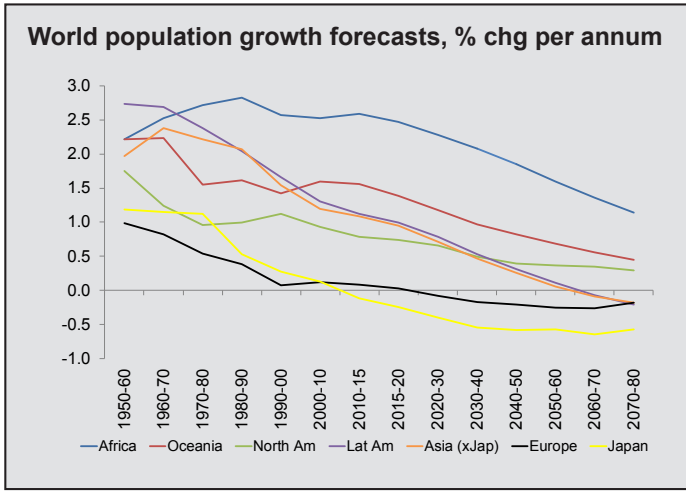

Figure 5. *Source: UN, Independent Strategy*

From today's 7.3bn starting point, under the UN's base case, global population growth is expected to slow sharply, declining from an historical 1.6% p.a. since 1965 to just 0.7% annually through 2065. All regions are affected, with particularly eye-catching slowdowns in northern Asia, Latin America and Europe. Indeed, Europe and Japan will see their populations shrink steadily, by almost 60m and 30m respectively over the next half century, while China's will fall by an astonishing 140m.

At the other end of the spectrum, while Africa's population growth will also slow, it will remain at least 1% point p.a. faster than any other region. This will have significant implications for the distribution of global population, with Africa's share almost doubling from 16% now to 30% in 2065 (Figure 6, page 36).

The last half century was undoubtedly about the rise of Asia, which accounted for 62% of the global population increase. Over the next 50 years, almost two-thirds of it will be in Africa, where the population is expected to grow at 1.9% p.a. This will drive the continent's headcount up from 1.2bn today to 3.1bn in 2065. At least ten African countries will see their populations expand by more than 50m each.

Indeed, when we rank countries by absolute population increase, there appears a vast, contiguous region of the world where almost all population growth is going to be concentrated. We call it the "AIME" bloc. It includes Africa, the Indian sub-continent (including Pakistan and Bangladesh) and a group of four countries in the Middle East (Iran, Iraq, Saudi Arabia and Yemen).

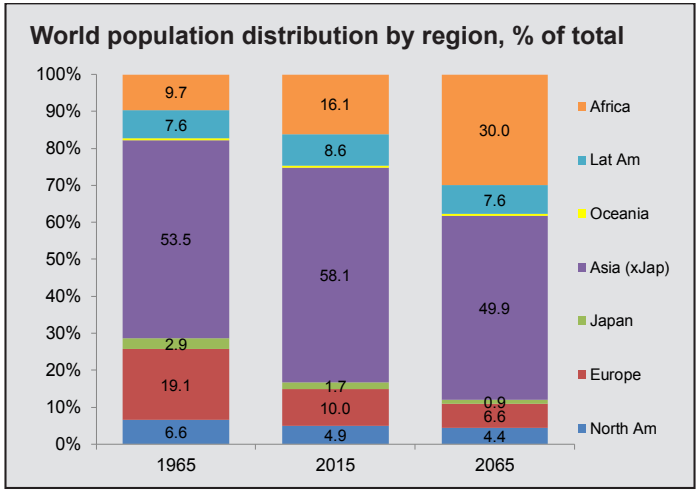

Figure 6. *Source: UN, Independent Strategy*

Together they'll account for 2.7bn, or almost 90%, of the 3.0bn global population increase anticipated by the UN through 2065 (Figure 7). And over half of this is due to just six countries — India, Pakistan, Nigeria, Tanzania, Ethiopia and DR of Congo. The AIME bloc goes from representing 41% of the global population today, to 55% in 2065. Were population growth to slow more rapidly than in the UN's base case, all net population growth in the world would, in effect, be African.

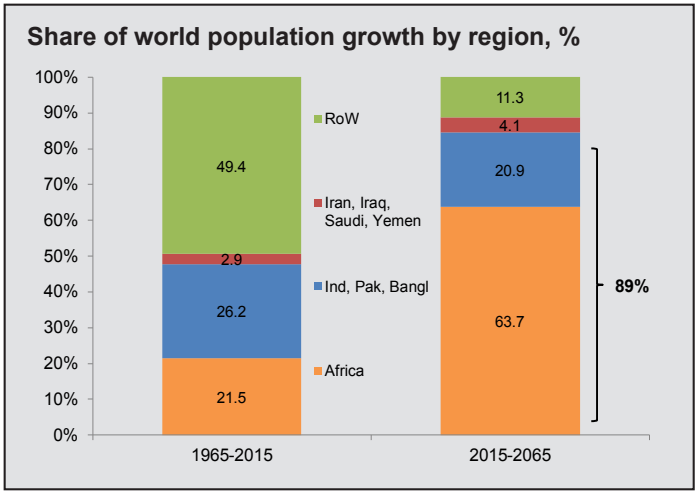

Figure 7. *Source: UN, Independent Strategy*

Demand for food and housing will be the main challenge. The countries in question need to buck historical trends and develop themselves rapidly with sensible governments implementing structural reforms. If they can, growth could make these the investment hotspots of the future. But there are serious dangers to stability if they can't, such that people aren't adequately fed or housed.

According to the UNHCR, there are already 65m displaced persons today, representing almost 1% of the world's population[5]. Given the concentration of population growth outlined above, it seems highly likely that the flow of displaced persons is going to increase. 2.7bn more people in the AIME region implies half a million new refugees every year if just 1% find themselves displaced. On that basis, the idea that Europe has solved its refugee crisis is delusional.

TOO COLD

If population expansion in the AIME bloc of countries is too hot, that in much of Europe, Japan and China is too cold (Figures 8 and 9, page 38). Declining fertility rates and lengthening lifespans mean that by 2050, a third of the population will be over 65. The inevitable consequence? There will be too many old people and not enough workers to generate the tax revenue to pay for seniors' pension and healthcare needs.

Even the richest countries are ill-prepared. A 2015 study by the National Institute on Retirement Security showed that 45% of all US households — 40

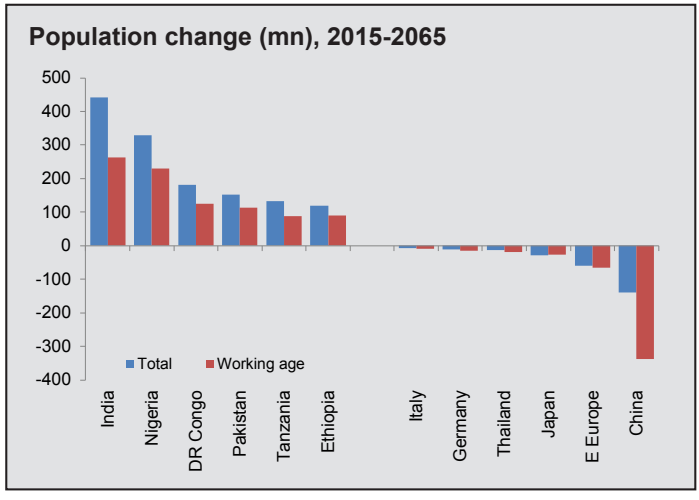

Figure 8. *Source: UN, Independent Strategy*

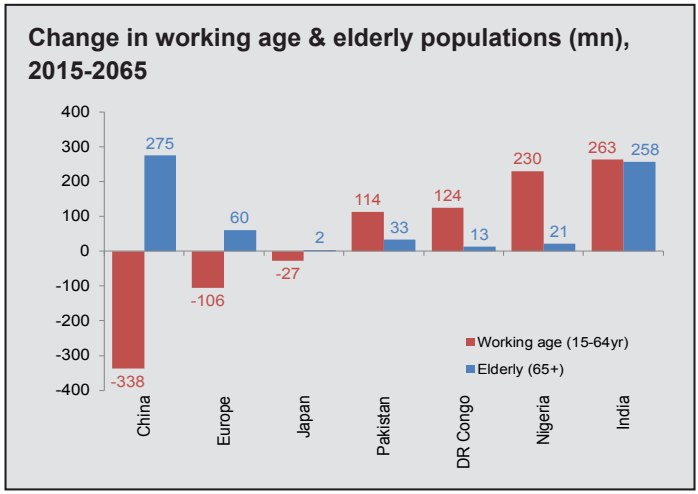

Figure 9. *Source: UN, Independent Strategy*

million of them — had no retirement savings at all. Two-thirds had assets equivalent to less than one year's expenditure. The recommended level of savings was at least 8x final salary in order to fund 85% of pre-retirement expenditure levels through dotage. Yet less than 5% of households met that threshold (even counting entire household net worth, only a third of households get there).

The burden will inevitably fall on the state. How heavy might this burden be? The social contract for the elderly principally covers two kinds of entitlement: pensions and healthcare. The cost to the public purse of these two items, across a range of advanced economies, is currently in the order of 14-23% of GDP. By 2050, however, due to demographic shifts, this will increase by a further 5-10% pts of GDP. This incremental burden will account for a much larger slice of government revenue — in the case of the US, almost 30% of it! (Figure 10 & 11, page 39).

Unless taxes go up or entitlements go down, this will inevitably cannibalise all other areas of discretionary public sector expenditure. And if you thought the situation was better in emerging economies, you'd be wrong. As populations age, there will be a dramatic increase in public pension and healthcare spending. South Korea, Brazil and Russia are probably the worst off in this respect, with an incremental burden of 10-16% pts of GDP. That's equivalent to a marginal 30-50% claim on government revenue.

Squaring this circle can only be done by increasing tax rates, raising the retirement age and reducing entitlements. But higher taxes will dampen growth

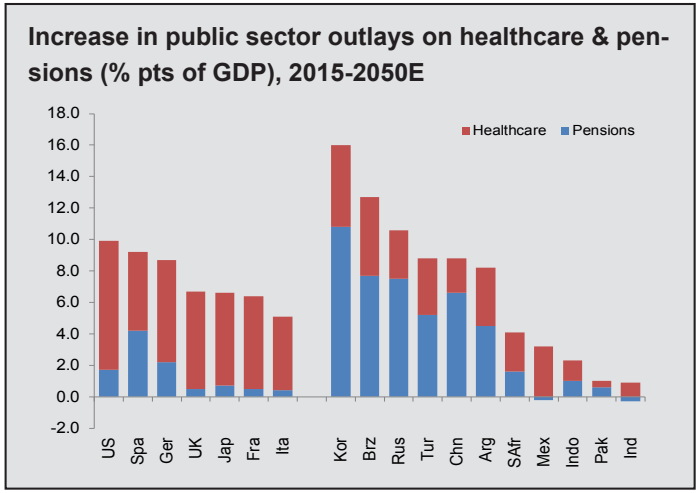

Figure 10. *Source: PEW, Independent Strategy*

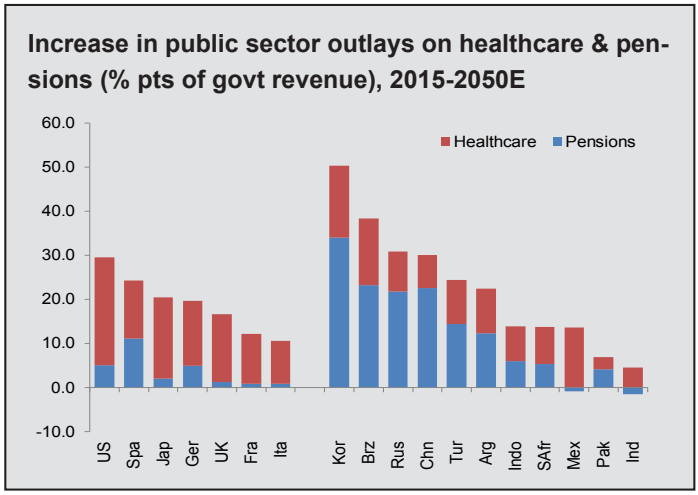

Figure 11. *Source: PEW, Independent Strategy*

while curtailed entitlements will lead to rising inequality and civil unrest. There is no easy way around it.

A POST-GROWTH WORLD?

There are two other consequences of aging populations. First, they represent a drag on productivity (Figure 12, page 40), with the increased costs of caring for society drawing workers away from more productive sectors. There is ample evidence from countries like the US, Japan and Australia

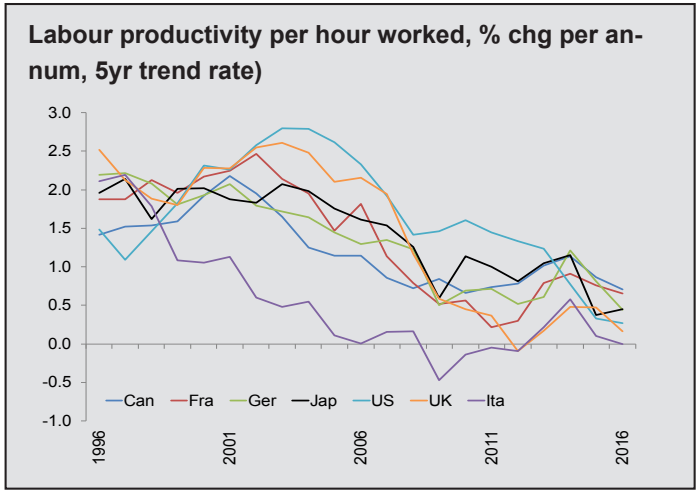

Figure 12. *Source: AMECO, Independent Strategy*

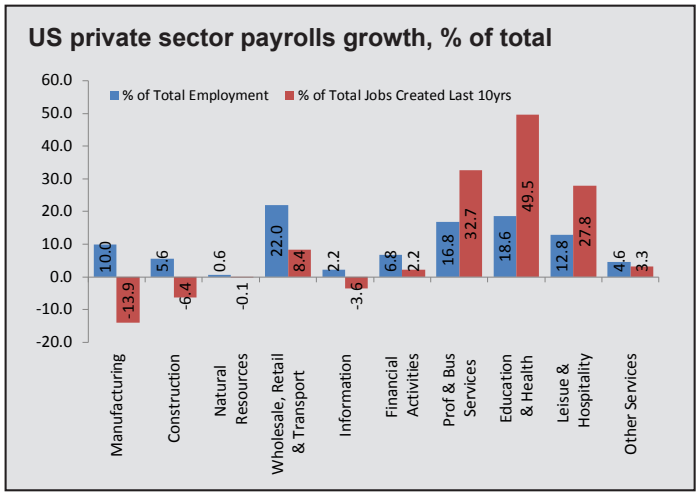

Figure 13. *Source: BLS, Independent Strategy*

that job creation is being dominated by the care sectors (Figure 13).

Second, as wealth is disproportionately concentrated in the hands of older and retired workers, both directly in the form of assets and indirectly in the form of unfunded liabilities, this dampens demand in two ways. Older workers spend less (peak consumption is in the 35-55 age range when family pressures are at their most acute), so structural demand within the economy falls. And concentrated wealth dampens consumption in the next cohort, which has to cover not only its own savings needs, but also the shortfall of the earlier generation.

This is reflected in the growing imbalance between fiscal spending on welfare liabilities and discretionary spending, which continues to shrink. It is also evident in asset prices and consumer debt levels, with leverage increasingly concentrated in more vulnerable demographic groups.

It's a corrosive self-reinforcing cycle, compounding the productivity slowdown by transferring spending from investment to welfare liabilities.

In reality, it is only investment spending that can create the foundations for the strong growth needed to fund these growing liabilities. But that would require a rebalancing of the spending pie, which given electoral participation is unlikely to happen voluntarily. In fact, the political appeal of maintaining entitlements has long undermined investment (Figure 14), which might go some way to explaining the current productivity dilemma.

Countries with deficient public investment, in terms of both fixed capital and education, alongside large unfunded liabilities, will find it difficult to raise productivity and growth rates. Fiscal accounts will see continual pressure. Historical investment returns will not be repeated. Increases in real per capita incomes will fall.

One possible solution would be to means-test all benefits, apply constant taxation into retirement on income (i.e. pensioners continue to pay social security contributions into retirement, like most commercial insurance policies require) and introduce wealth taxes. This would allow for increased investment in infrastructure, education and state backing for new technologies that are not

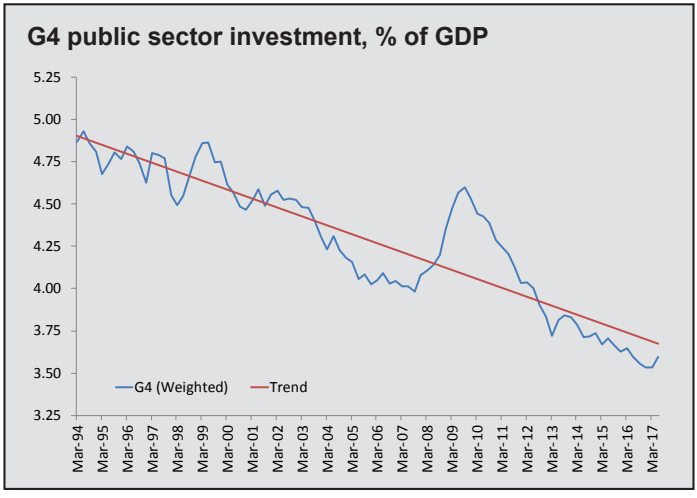

Figure 14. *Source: Datastream, Independent Strategy*

yet commercially viable. It is the latter that historically have proved critical to driving the technological breakthroughs needed to cope with such challenges.

Globally, both savings and investment rates, as well as potential output growth, are likely to fall as these demographic tailwinds become headwinds. The Bank of International Settlements (BIS) contends, however, that *ex ante* savings will fall faster than *ex ante* investment. The net impact will be a higher "market-clearing" real interest rate (*ex post*, of course, savings and investment must balance).

That might be right. But bear in mind also that the real cost of capital is partly a function of the real return that can be generated on it; and this is likely to fall as growth slows. Furthermore, inflationary pressures are likely to rise. The cheap expanding labour from productive areas of the world (i.e. the established global supply-chain) may be replaced at the margin by unproductive and forcibly-subsidised labour from other areas of the world (principally the AIME bloc, currently outside the supply-chain).This can only be highly inflationary. So even if real interest rates rise only gradually, nominal interest rates would be pushed up more significantly. Most governments in the western world have reached a debt limit that is only made sustainable due to historically low interest rates (Figure 15).

Zombie corporations, loaded with debt, survive for the same reason. Productivity growth is declining because too much cheap capital is being allocated to those who use it inefficiently or to speculate on high-yielding, high-risk assets. Central banks (CBs) co-opted as economic agents of last

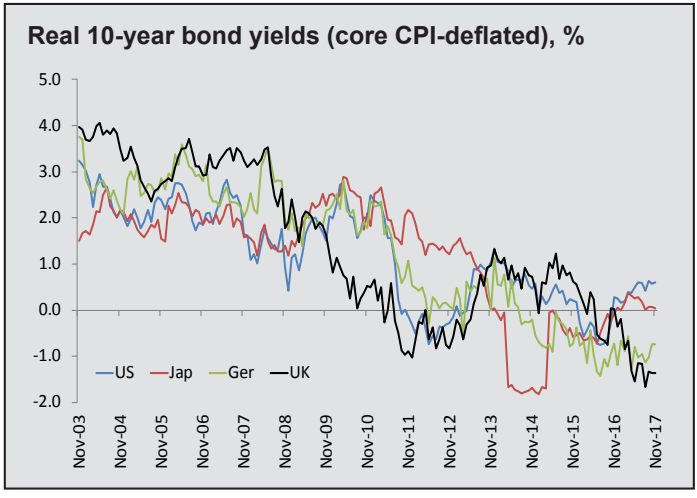

Figure 15. *Source: Bloomberg, Independent Strategy*

(and first!) resort, have been painted into a corner, unable to raise interest rates much even if they wanted to. This is a vicious cycle. Shrinking and ageing populations in the rich world, coupled with weak labour productivity growth, effectively limit the capacity of economies to "grow" their ways out of these debt burdens.

The implications for financial asset markets are profound. Lower savings and less growth reduce the capacity to pay down debt burdens or work them out. It's hard to see the discount rate dropping much from current levels. Similarly bond yields further along the curve are unlikely to go lower either in real or nominal terms. As growth slows, richly-valued equities would seem to be particularly vulnerable, not least given how complacent investors have become about risk (Inset 1). A more dramatic shift into a post-growth world could even bring to an end the golden age of investing.

Near term, of course, the question of CBs' reaction function comes into play. Falling stock prices, probably driven by contracting multiples, would undermine private sector balance sheets and investment confidence. Certainly, if there were to be a precipitous drop in equity markets, it seems likely that CB monetary policy would remain highly accommodative to offset the deterioration in "secondary market" liquidity conditions (under the mantra of maintaining financial stability).

Bubble trouble

- A painting sold for $450 million
- Bitcoin soared over 1600% from $952 to ~$17,000
- The BoJ and the ECB bought $2 trillion of assets
- Global debt rose to $225 trillion, or more than 324% of world GDP
- US corporations sold a record $1.75 trillion in bonds
- European high-yield bonds traded under a 2% yield
- Argentina, a serial defaulter, sold 100-year bonds in an oversubscribed offer
- Illinois, hopelessly insolvent, sold 3.75% bonds to bondholders fighting for allocations
- Global stock market capitalization skyrocketed by $15 trillion to over $85 trillion and a record 113% of global GDP
- The market cap of the FANGs increased by more than $1 trillion.
- S&P 500 volatility dropped to 50-year lows and Treasury volatility to 30-year lows
- Money-losing Tesla Inc. sold 5% bonds with no covenants as it burned $4+ billion in cash and produced very few cars

Inset 1. *Source: Independent Strategy*

This is the sort of Orwellian world where governments and CB's distribute cash as universal basic income to individual accounts (held at CBs?) using blockchain ledger technology and force spending through time limits on these transfers. It would make the achievement of financial stability, the key challenge CBs face in the next decades, illusory. Where this all comes unstuck is if inflation rises and CBs are backed into a corner from which they can't escape.

There is, of course, a more bullish scenario. If technological developments (AI, Big Data, blockchain etc.) push up productivity by reducing the demand for labour (just as its supply is shrinking), growth might remain more or less buoyant. And inflation would be kept at bay.

So where should investors and savers look to invest?

- Countries with young, dynamic populations, competitive economies, low public sector liabilities and governments that implement essential structural reform ahead of the curve should fare best.

- Governments in most DMs and many EMs will have to spend an ever-greater proportion of their tax revenue on pensions and healthcare. This diminishes the resources available for other discretionary expenditure items. Or else taxes will have to go up.

- Rising "unproductive" expenditure, as well as rising taxes, are bad for growth.

- Citizens in ageing societies will have to work for longer before gaining a pension. Those with assets (including their own home) will increasingly be relied upon to fund at least part of their own dotage.

- Pensions are likely to be lower as a share of final salary than in the past.

- Demographic shifts in China, as one of the fastest-ageing countries and for the time being the most populous, will have an enormous impact. Lower demand will weigh on export-dependent economies, especially the commodity producers. This reverses one of the major demographic drivers of globalisation, productivity and rising living standards through the supply of cheap and plentiful labour. After all, between 1990 and 2014 China and Eastern Europe alone increased the workforce available for global production by a staggering 120%.

- Boosting productivity will come into focus. Competition for skilled labour will rise and wages will reflect this, incentivising the substitution of capital for labour.

- Economic migration and refugee flows from war-torn and famine-ridden areas of the world will remain a constant theme. Europe is particularly vulnerable.

CHAPTER 4

Price and prejudice

The reflation trade took on renewed urgency in the first half of 2018, as the late-cycle fiscal stimulus delivered by the White House brought those already fretting over resurgent price risks to a fresh pique. The short-term cyclical drivers are certainly all pointing to a quickening of inflation. Indeed, headline US price levels have picked up and even core PCE is not too far from the Fed's 2% target. The gradual increase in nominal wage growth has also continued (Figure 1).

But do these glimmers of inflation present a meaningful risk? The recovery in wages has been the missing piece of the jigsaw for many. But real wage growth has been negligible in most top economies. In the US, real total economy earnings peaked back in 2015, alongside employment growth, and has been on a downward trajectory ever since (Figure 2, page 48). While the backdrop still points to slightly faster headline inflation rates and wages, the US economy still doesn't seem to be in a state to generate any real inflation risk. This is largely due to structural factors that the Fed and Wall Street's models struggle to capture.

The persistence of low inflation has not simply been an overhang from the financial crisis. Disinflation was present well in advance of the downturn. It

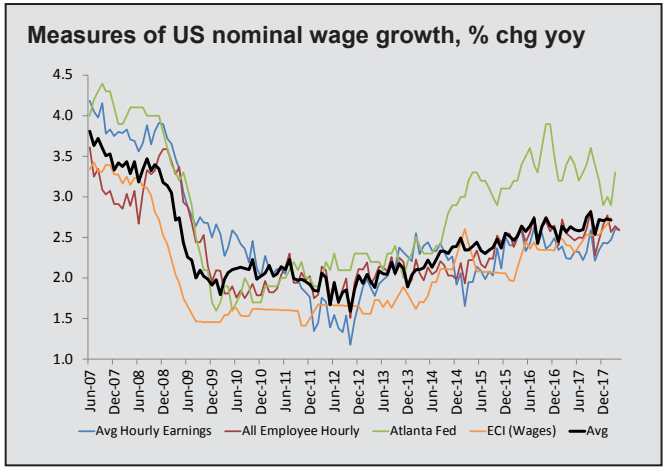

Figure 1. *Source: BLS, Independent Strategy*

just took this shock to create some clear water between the hangover from the 1970s and 1980s to the structurally low inflation environment that has dominated since the mid-1990s. While most academic economists (and theories) are wedded to the lessons learnt from the 1970s shock, the fact is this period is the historical outlier (Figure 3).

Even the very long-term averages don't look different. If you take US inflation all the way back to 1872 the annual change averages 2.2%. Ex-out the inflationary 1970/80s decade and it falls to just 1.8%. For a ten-year period

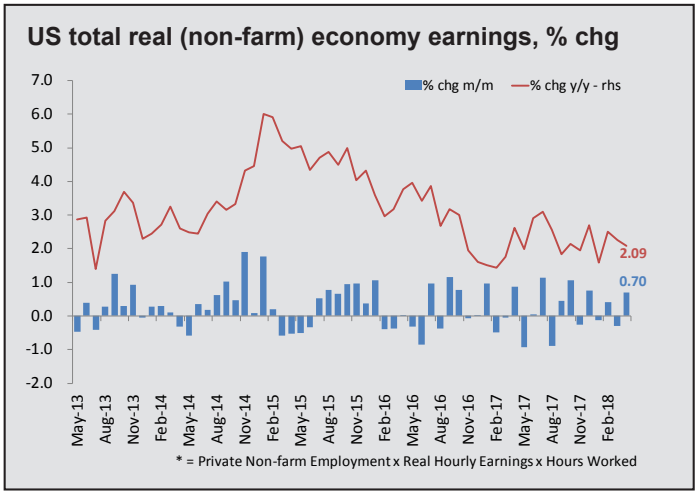

Figure 2. *Source: BLS, Independent Strategy*

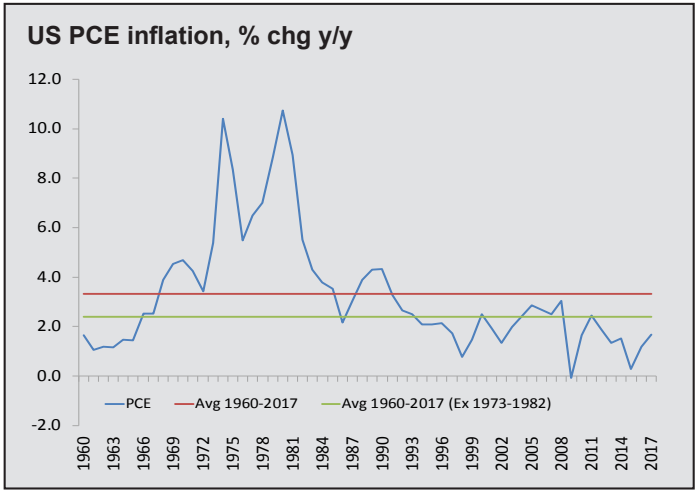

Figure 3. *Source: BEA, Independent Strategy*

within a near 150-year sample to have such an effect underlines how unique a time the stagflationary 1970s was. It also shows central banks have been undershooting their mandates for over a century!

Of course, pre-WW2, the volatility of both prices and growth was far more extreme. Jumps in inflation were followed by periods of equally acute deflation (Figure 4) while the economy naturally snapped back from recessions with bursts of rapid growth (Figure 5, page 49). That meant there were not ruinous periods of runaway prices where wealth was destroyed (outside of

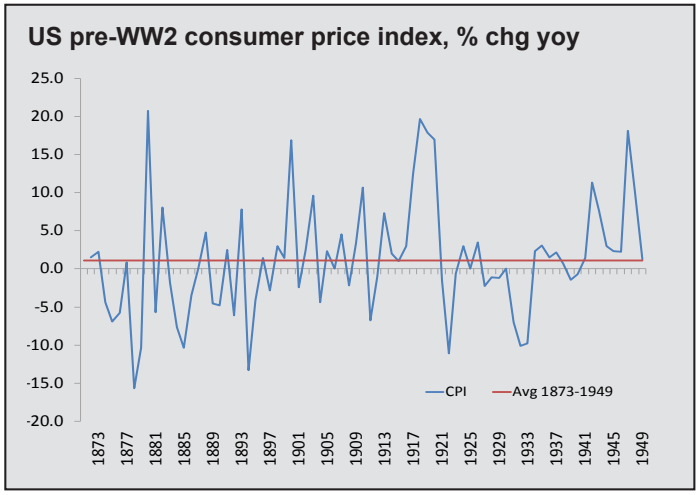

Figure 4. *Source: Robert Shiller, Independent Strategy*

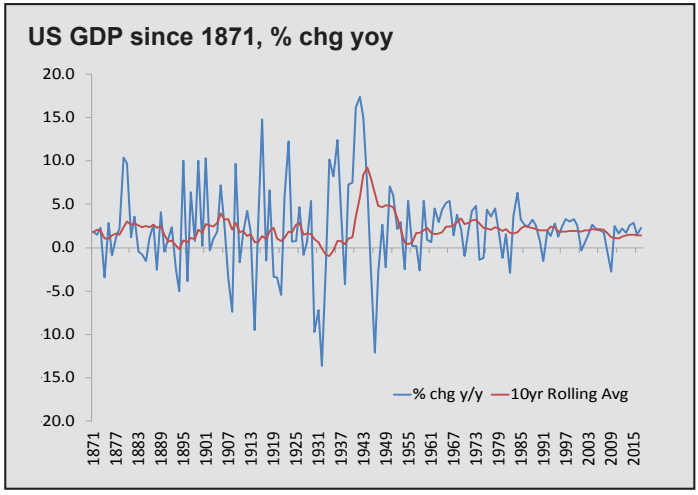

Figure 5. *Source: Robert Shiller, Independent Strategy*

the Great Depression). Losses one year were often recouped the next, while the underlying direction of travel remained positive.

Obviously, the economy changes over time, so it's reasonable to argue that the swings of pre-1945 are irrelevant today. Many of the institutions that we take for granted either did not exist, or were new — for example the Federal Reserve was not founded until 1913. Similarly, most of the economic theories policy makers now take for granted were either in their infancy or hadn't been thought of at all. Government's role in the economy was also far more limited. The result of these developments is a socio-economic structure that can now deliver counter-cyclical measures — both monetary and fiscal — as needed, theoretically smoothing the economic cycle.

The economy that delivered the inflationary rush of the 1970s is also fundamentally different to the one we live and work in today. Many of these structural shifts should influence price-setting behaviour. There were also other unique factors at play, most notably the adjustment which followed the demise of the post-war monetary regime — the gold standard.

The most visible structural difference is demography. It impacts the economy in a variety of ways and over varying timeframes. As it's a slow-moving beast, having little bearing on immediate inflationary pressures, it is perhaps neglected as an input into understanding underlying price risks. But it does have significant effects on levels of both supply and demand.

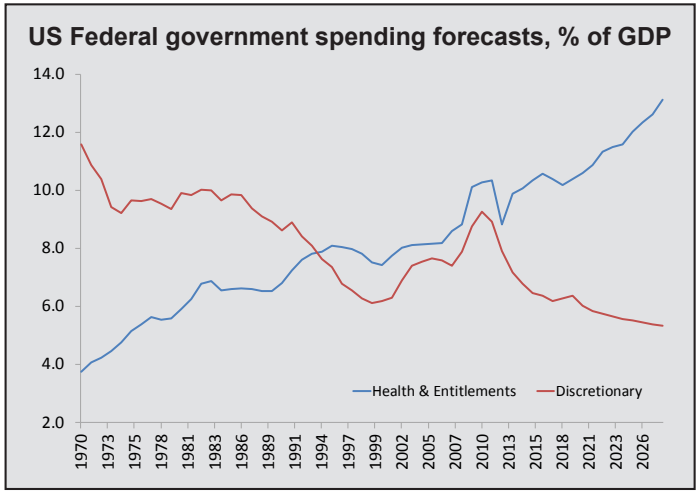

Figure 6. *Source: CBO, Independent Strategy*

There are two main demographic forces at currently at work.

First, population ageing. This is the combination of the baby boomer hump reaching its twilight years and the more general increased longevity. This is rapidly feeding in to entitlement and healthcare costs, creating significant fiscal stress. One only has to look at the shift in federal spending in the US to see the damage this has inflicted on value-added "discretionary expenditure". Unreformed entitlement programmes soak up an ever-growing (and increasingly disproportionate) share of revenues and the political class, representing this demographic bulge, has paid for this at the expense of future generations and more productive endeavours today (Figure 6, page 50).

The resulting decline in government investment (e.g. infrastructure, R&D and education) weakens the foundations the rest of the economy is built upon. It's no coincidence that government investment and productivity have been trending lower in lockstep (Figure 7). Nor that private non-residential fixed investment, net of depreciation, has also been in cyclical decline (Figure 8, page 52). Putting the accumulated capital deficit right will be a multi-year, multi-trillion dollar challenge.

The drag from demographics not only impacts the fiscal and investment story but also structural demand economy-wide. Older groups spend less, a function of the move to lower retirement incomes as well as the lifestyle changes that happen as we age. Taken together, these demographic shifts risk creating a demand and investment vortex.

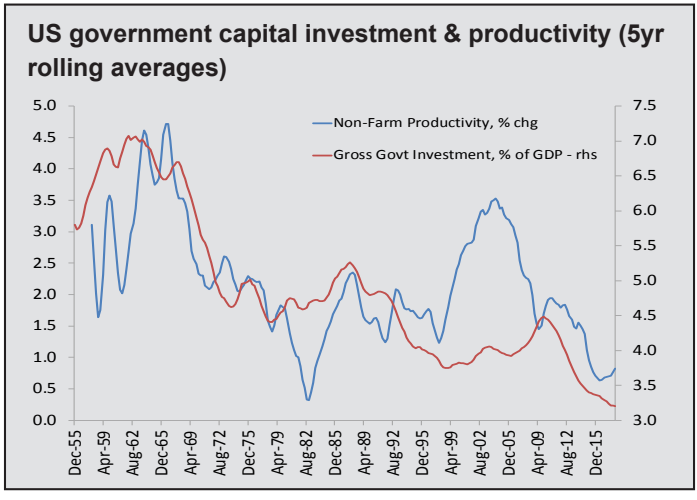

Figure 7. *Source: BLS, BEA, Independent Strategy*

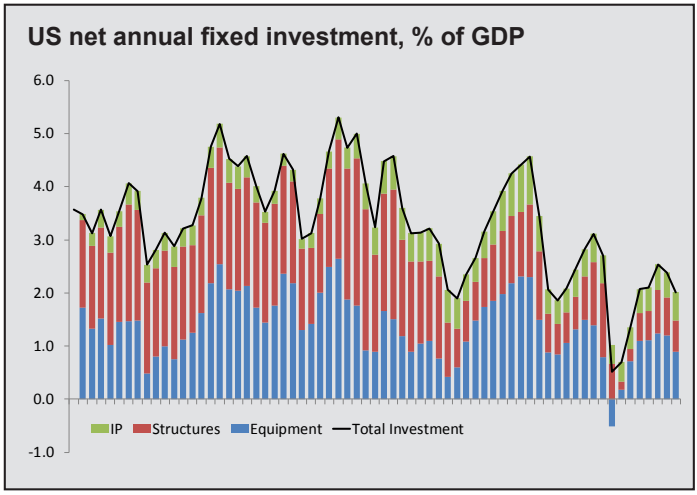

Figure 8. *Source: BEA, Independent Strategy*

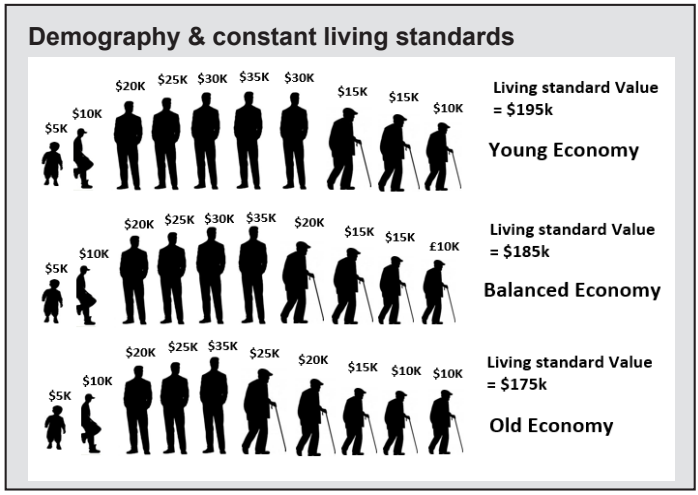

Figure 9. *Source: Independent Strategy*

Ironically, this does not necessarily lead to a collapse in living standards. Living costs change over one's lifetime, which can be simply illustrated (Figure 9). The rot can be obscured for perhaps decades. Japan is an extant example of this, with a stark divergence between GDP and per capita income growth. This proves you don't need to maintain real GDP growth to maintain living standards if the population is ageing, and then shrinking.

The second major aspect of demography is the slowdown in growth of the working-age population. And not just in relative terms due to the bulging

boomer bracket. The post-war baby-boom created a hump which drove labour market growth sharply higher until the late 1970s. But they didn't "reciprocate". Birth rates have since fallen, constricting labour market supply. This was a function of improvements in infant mortality, the advent of cheap effective contraception and the surge of women into the workforce — most noticeably between 1950 and 1990 (Figure 10).

More lately, declining fertility has been a contributor. These trends are difficult to reverse once culturally engrained. The US actually has a higher fertility rate than most DMs (the Eurozone's fertility rate is a lowly 1.5 while in Japan it's just 1.4), but with a birth rate of 1.8 children per mother it's still well below the 2.1 line needed to keep the general population stable.

The rate of change of the labour market has numerous impacts on inflation. The worker cohort has the highest propensity to consume and thus is the primary determinant of demand growth. This is the group that needs to buy a home and furnish it. Then raise children — an even more expensive hobby, which no doubt is another contributor to the decline in birth rates. It's hardly surprising that the period which saw the fastest growth in the labour force was the period where inflation was at its least controlled (Figure 11). This was the natural peak of the post-war demand boom. And it's a pattern that will not be repeated.

The 1970s were also a time when markets were beholden to labour, negating the supply-side response that the economy could be expected to generate today. Indeed, this was the golden age of unionisation with a quarter of US workers

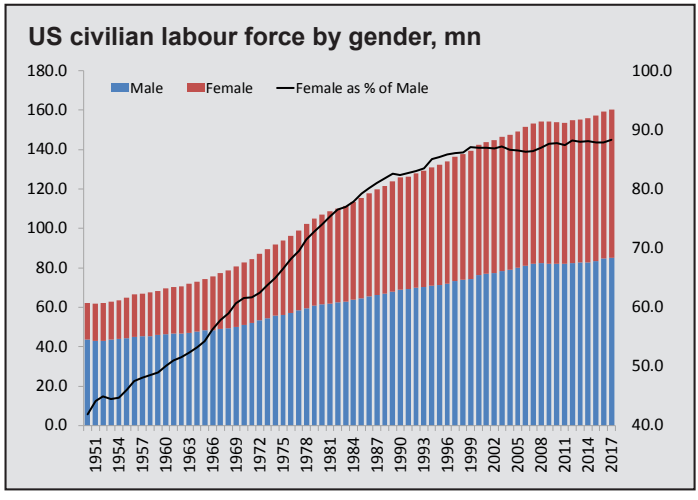

Figure 10. *Source: BLS, Independent Strategy*

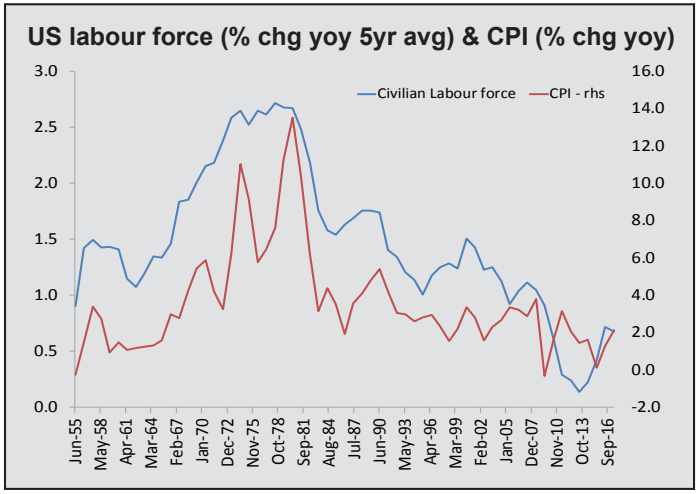

Figure 11. *Source: BLS, Independent Strategy*

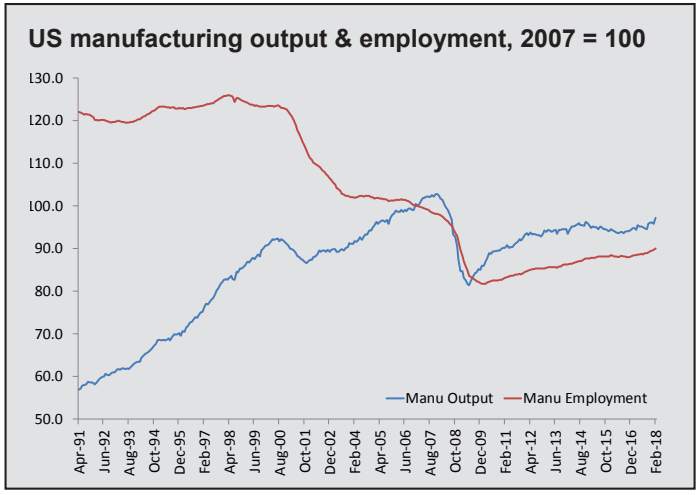

Figure 12. *Source: Federal Reserve, Independent Strategy*

in a labour organisation in 1970, compared to just 10% today. Manufacturing employment was still high (Figure 12), accounting for 40% of total private sector employment. The well-paid full-time blue-collar worker — fulfilling the American dream — was still base reality.

But just a decade later and the rot had set in. De-unionisation and the growth of part-time and temporary employment, in response to the inflation surge, created a far more flexible labour force. And the globalisation that followed in the 1990s, with the formation of the WTO, opened up domestic labour

markets to more international competition. The effect of these changes is most visible in the real wages of male workers (Figure 13), which, based on BLS data, are actually lower now that they were forty years ago. Households that could survive supported by a sole male breadwinner have been consigned to history.

It's not the entire story of course. Non-wage income has grown over this period, which adds a few percentage points to the tally. And there are arguments that the deflators used don't accurately capture the actual rise in living

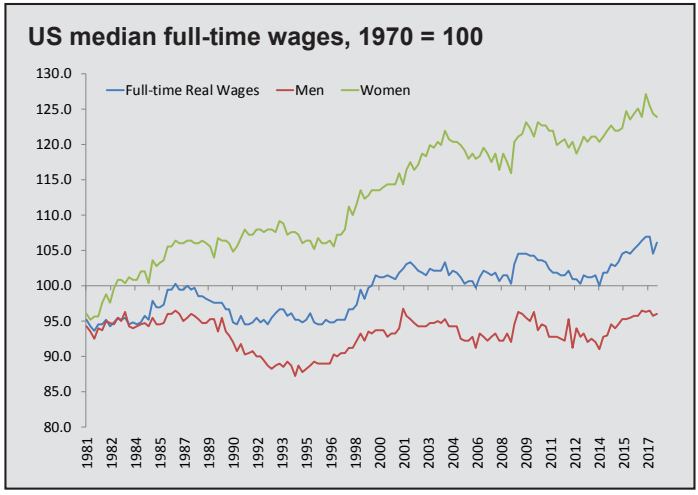

Figure 13. *Source: BLS, Independent Strategy*

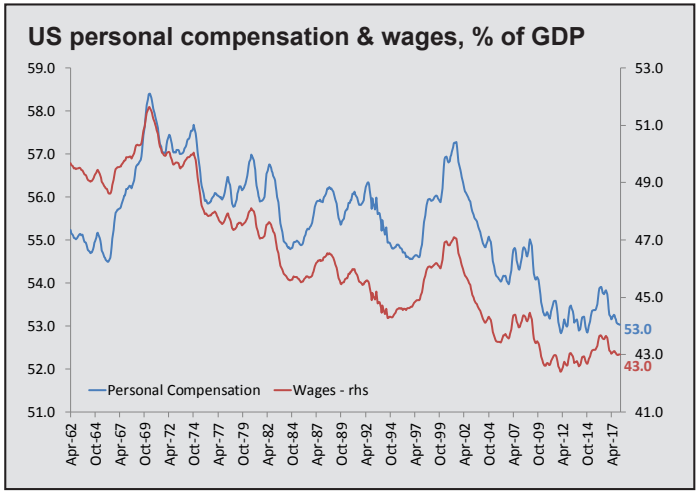

Figure 14. *Source: BLS, Independent Strategy*

standards over this period. It's doubtful any worker today would swap their life and its comforts for a trip back to 1975. But it's difficult to find a single metric that suggests workers have shared in the growth of the overall economy. Indeed, wage share has fallen from around 50% of GDP to just 43% (Figure 14, page 55). That acts as a further drag on demand, which in turn filters through to price levels.

In addition to changes in the size, there have been interesting shifts within the labour force that have similar effects. The decline in prime-age participation rates is the most visible variation. The bulk of the decline in the participation rate can be explained by boomers exiting the workforce. But there is a substantial residual that suggests there is still a large amount of "hidden" slack that low headline unemployment rates obscure. Indeed, the number of working-age people not in the labour force is some 15 million higher than it was pre-millennium (Figure 15). It's quite possible this reflects labour market flexibility, which makes dropping in and out of the labour force far easier. But there seems to be some fundamental social shift embedded here as well. This is evident in the decline in prime working male participation rates, the US being the only major country to exhibit this trend.

The loss of jobs in the US rustbelt and growth of new industries elsewhere is a factor, creating a misallocation of both skills and labour that in hindsight was beyond the free markets ability to respond to. We'd note that this period also ties with the massive increase in US incarceration rates. The prison population has grown by nearly 2mn since 1980 and, if you include those on parole, the net currently captures nearly 6mn Americans, or about

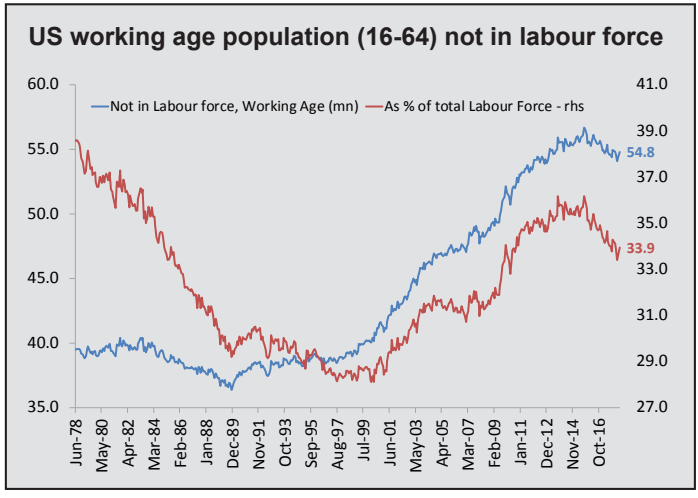

Figure 15. *Source: BLS, Independent Strategy*

half the increase seen in the prime-age non-working population during this time. That's a group that, assuming it is allowed to participate in the labour market, has far more limited bargaining power.

So there are several factors that form our structural nutshell. Demographics is the most far-reaching as it weighs both on supply and demand, via ageing and falling birth rates. These have proved self-reinforcing, sucking money from the solutions (investment and productivity). The decline in the growth of the working-age population is a further drag on demand. And falling birth rates act as yet another anchor.

Liberalisation, followed by globalisation, comes from the other corner. Workers have less leverage in regulated markets and globalisation has increased competition, bringing labour costs down in a mass global arbitrage. This has delivered cheaper, higher quality, goods by optimising supply chains and allowing the free flow of information and capital. That, in turn, has boosted living standards in developed markets and lifted billions of people out of poverty. But there are winners and losers in every process. In the former manufacturing heartlands of middle-America this has led to a misallocation of skills and resources. And capitalists who can't adapt are very unhappy capitalists indeed.

Furthermore, workers from everywhere are competing against technological change and automation, which is expanding beyond its more traditional realms into cognitive functions and services. All of these disruptive technologies are disinflationary.

This doesn't mean inflation can't ever rise again. But what it does suggest is that there will be more viscosity to short-term cyclical upswings in prices. Changes in underlying price levels should remain modest and the chance of any sustained period of runaway inflation is minimal, even after a lengthy period of low interest rates and an economy that is running closer to capacity.

That raises interesting questions in a world where central banks deem 2% to be the hallmark of price stability. It could well turn out to be the case that to sustain inflation at these mandated levels requires a permanently depressed real interest rate. Perhaps even negative real rates. This sounds perverse. But so is using monetary policy to target an arbitrary price level in a world that is structurally different from the period that conjured up modern monetarism. Rather than trying to depress rates in the endless pursuit of 2% inflation, central banks should focus on overall financial stability. Failure to do so will only increase risk of a repeat of the crisis and a real deflationary shock. Ultimately, the pursuit of price stability only contributes to economic stability

if it also shapes financial stability.[6]

The Fed is moving slowly towards this viewpoint. It is normalising policy (via both higher short-rates and quantitative tightening) not due to the risk of an inflation overshoot — it sees inflation moving back to target, but isn't forecasting it running much higher — but to better balance financial stability and, more lately, the risk of overheating from looser fiscal policy. This is more critical at a time when productivity growth remains weak. Not because this could trigger faster inflation, but because poor productivity is equally a structural phenomenon. Indeed, if there is one measure that would suggest that structural headwinds are abating, it would be an improvement in productivity. Until then, traditional econometric inflation models are likely to continue misfiring.

CHAPTER 5

Of rabbits, bankers and what matters

Central bankers' reluctance to address the failings of their quantitative macro models (while overlooking the qualitative forces that are affecting economies) is nothing new. As time goes by, the risks of continuing like this multiply. Essentially, growing unproductive debt at a rate faster than the economy can expand to service it is self-defeating. The fact that this strategy is pursued with the aim of generating an inflation rate of dubious value is all the more troubling.

While the central bank money-wheel keeps spinning, asset markets will continue to rise. But central banks need to embrace the structural forces that are affecting economies if they are to avoid the cycle ending in more than just an echo of recent disasters.

If central bankers were rabbits they would have three ears. This is not to say they are monsters. They are, in the main, diligent, dutiful and moderately paid. But they are inbred. They are selected out of a pool of academics (and the odd senior official) and return to academia when they are done — that is if they don't opt to cash-in at an investment bank instead. Their central bank conferences are peopled by their peers and academics, who present esoteric papers inaccessible to mankind, usually about yesterday's policy options. The result is an unrealism of thought that is critical now. "Now", because of the need to return to a normalised monetary policy almost everywhere that matters. As we'll explain, a lack of realism makes this more unlikely to be a smooth transition.

Left to their own devices, humans will generally concentrate on perfecting as narrow a perception of reality as they are allowed. How universal that will be depends on how broad their vision is. Jane Austen's two inches of ivory captured the universe. So does Monet's *jardin*. Not to mention Wordsworth's use of the pastoral microcosm to paint the macrocosm. But much of today's 'specialisation' of expertise lacks the imaginative gift to see this.

Dead too is the day of the 'generalist' like Francis Bacon, 17th century English philosopher, author, statesman, scientist, jurist and orator who died as a result of pneumonia caught burying a chicken in snow to test refrigeration. The result is narrow vision.

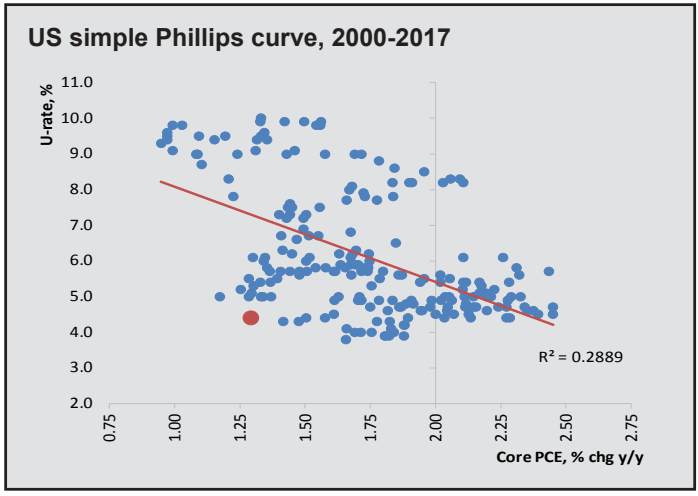

Figure 1. *Source: Datastream, Independent Strategy*

Today's major central banks all have the same target — 2% inflation — and similar tools for achieving it. But the target itself may not be relevant and the tools used to set the policies to achieve it are based on theoretical models which may lack reality.

Key components of these models are driven by unmeasurable variables like R*, the equilibrium rate of interest (to achieve maximum output without inflation or deflation), and NAIRU, the equally unobservable equilibrium unemployment rate. And, of course, the Phillips curve (Figure 1). These hypothetical models drive other models that set policy. This is at worst Kafkaesque and at best doubtful practice. Central bankers are only just beginning to question their models.

This fallacy of specialisation can be illustrated. All the above paraphernalia of tools and targets boil down to saying, if the economy has no output gap (capacity is used up and everyone who wants a job has one) growth will result in rising inflation when it exceeds the level of productivity of the resources employed.

But what if other forces drive the inflation rate — globalisation, technological change and demography, for example? And what if wages do not rise with employment because of the sorts of jobs now being created and the wages they are worth? And what if these forces are global and not domestic? The answer is that the models and policies are then dealing with a fantasy and central bankers are a cavalry host of Don Quixotes tilting at windmills. That is our view. If correct, it would mean that the traditional role of central bankers

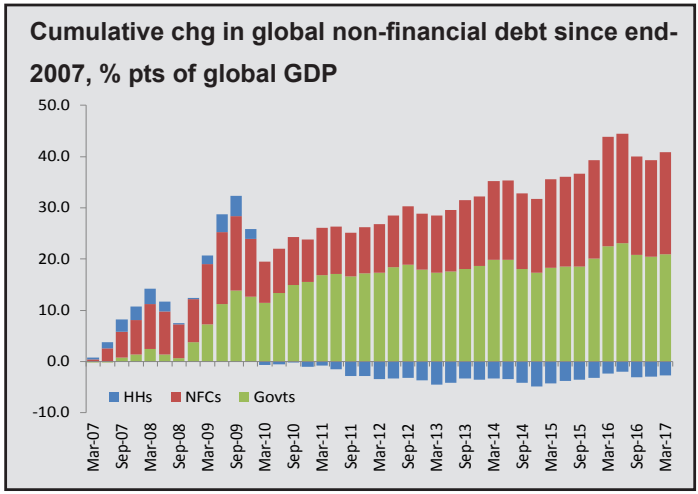

Figure 2. *Source: BIS, Independent Strategy*

as guardians of inflation is much diminished. But that does not mean they have no purpose. They do.

The other day we laid out on the kitchen table all the current central bank reports and minutes from the ECB, Fed, BoJ and also the BIS — the central bank of central banks and in many ways their collective conscience. Only the BIS dealt convincingly with what we see as the elephant in the room[7] or the major issue central banks should be addressing.

That elephant is the burgeoning mountain of debt in relation to GDP (Figure 2) and the misallocation of resources it entails. The proof that the increases in debt are inefficient is that it produces less GDP at the margin. And GDP is what should pay for it. There is also little doubt that the debt build-up is due to the mispricing of capital for which central banks are largely responsible. This frames the policy dilemma. If central banks raise interest rates significantly, the debt mountain will come crashing down. If they don't, the imbalance and source of future instability will continue to grow apace.

Yet there is no discussion in any of the world's major central banks about this. Only the BIS's Claudio Borio[8] is sounding the alarm. The rest are either in denial or aware of the danger and doing the three monkey thing. Is the obsession with the unmeasurable and the model down to denial or a smokescreen? In any case, this defines the future primary task of central banks: financial stability. This is all very neat but what does it mean for us as investors? Some things are already apparent.

The inflation targets pursued by the major central banks are determined globally more than domestically and won't be achieved. This means bond yields won't rise as much as we once thought. Central banks are only likely to raise rates very gradually because inflation targets will continue to be elusive (or because there is a subliminal awareness of the elephant in the room). But they will have to raise them nonetheless because they need a buffer for future crises.

The increase in policy rates will not result in a meaningful rise in real long-term rates. Central banks will[9] endeavour to hold down term-premia and long rates. The BoJ already does this as a part of its monetary policy targets. So the build-up in debt relative to GDP will continue.

The result is that a future debt crisis is in the making. Timing is difficult. But the new tools of central banks, such as high levels of excess commercial bank reserves, will only be partially successful in assuaging the effects. Until that happens, the markets will go on dancing to the music. The drivers of currencies are likely to change. Relative monetary policies will wane in influence. Relative growth and return on assets as well as geopolitical events will be more relevant.

CHAPTER 6

Technology — saviour or curse?

The second machine age, the fourth industrial revolution, however you want to term it, it's undeniable that we're living in an epoch of technological transformation. And one that is unprecedented in history. While the industrial revolution was disruptive, its reach was limited. But with the creation of thinking machines, we face technologies that could end up competing directly with what it means to be human. While the final outcome has yet to be determined, this changes the rules of the game. And the policy responses to cope will have to be equally innovative.

Optimism abounds that this revolution will transform society in a positive way, as previous technological revolutions have done. By its very nature the productivity enhancements that technology facilitates should raise wealth levels. But this approaches things from a very generalised, long-term standpoint. In the transition, such shifts can have highly variable effects. There will be winners. There will be losers.

The sheer breadth of disruption in the information age makes analysing these all the more problematic. Furthermore, there is a number of structural shifts that are happening in lockstep, most of which are rooted in demography. Disentangling these interwoven threads will be difficult. Explaining the impact of these changes to an electorate whose lives are being disrupted will be a task of even greater magnitude.

The low pay boom

It's the failure to grasp the challenges presented by technological change that have contributed to many of the problems that western democracies are already facing. This concept is captured most simply by the 'death of the middle class' thesis, which posits that the deindustrialisation wave that gathered steam in the 1980s hollowed out the middle classes, wiping out skilled blue collar middle-income jobs. As a result, many of these workers found themselves in unskilled work with commensurately lower pay, if in work at all. In the US since 1979, 66% of all job creation came from the four lowest-paying sectors, compared to 7.4% for the top four (Figure 1, page 64). That has lifted employment in these low pay areas from 31.4% of the total to 52.8% as of today. The US now proudly has the highest proportion of low paying jobs in the OECD.

While the information and technology revolution that developed over the course of this period created millions of new jobs, these were largely white collar posts that required higher levels of skills and education, or at least skills that were not directly transferrable from a Michigan car plant. And even in some of the more disruptive sectors, the surge in productivity meant that jobs created were often lost elsewhere in the industry, or even within individual firms. Information, for example, saw near zero net job creation over the entire pre- and post-crisis period, whereas professional

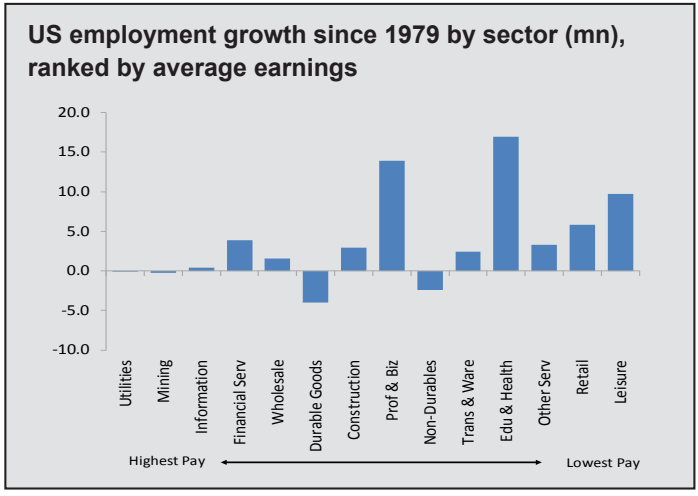

Figure 1. *Source: BLS, Independent Strategy*

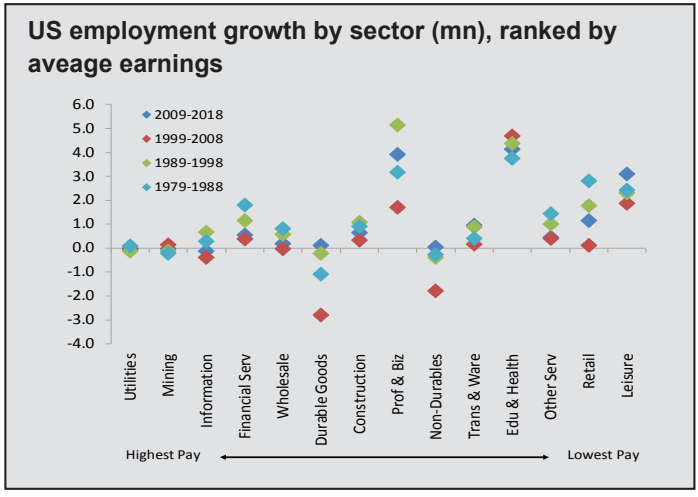

Figure 2. *Source: BLS, Independent Strategy*

and businesses services saw the strongest growth of any area (Figure 2, p. 64). The result has been a widening of inequality and decrease in social mobility, as the gaps between the rungs of the ladder were pulled apart. Indeed, in the US, the GINI coefficient rose from 34.6 in 1979 to 41.5 as of 2016, which puts America alongside Mexico and Argentina in the inequality stakes.

Some argue that globalisation was as much to blame as technological change. And this is obviously a factor, simply from the perspective that both cheap labour and technology investment provide similar outcomes in the shorter-term — they lower the cost of production. But however we split this, it's difficult to dispute that the gains of the computer and information revolution have been distributed unequally.

Disruption accelerating

We take this as the starting point for analysing just how technology will impact the economy and society over the next decade or two. We are optimistic that in the long-run the current information revolution will raise living standards across the board. There is not one sector of the economy that can't be improved (Inset 1, p. 66). But as these innovations wash through it's vital that governments take steps to prevent "winner takes all" outcomes.

Unfortunately, the network effects of the internet mean nearly all online sectors have a monopolistic predisposition. We've seen this in internet search, social media and retail for example. And new challengers are more often than not bought up by the dominant firms, further stifling competition. That's not to say that there is no social good to come from the network effects these behemoths create. There are clearly significant productivity gains to be unleashed from this growth and the growth of other "intangibles", both in terms of cost- and time-saving as well as the ability to replicate digital goods or services instantly, infinitely and for almost zero marginal cost.

Unlike more traditional monopolistic industries, the tech sector appears to have slightly more altruistic tendencies; at least at this stage. And the pace of disruption has been so fast that regulators have struggled to digest the implications of its dominance. Furthermore, by its nature tech survives because of the innovation it delivers. This is why tech firms are well known for funding investments in technologies that have no proven commercial success but hold huge promise, the so-called "moon shot" projects. The best example is Waymo, Google's self-driving car venture that aims to leap to fully autonomous driving in one giant step.

Total disruption

As artificial intelligence matures as a more generalised technology we should see breakthroughs in nearly every sector of the economy. The ability of AI to sift through and analyse vast troves of data will vastly improve the efficiency of most businesses. Medicine is the most interesting example; already this technology is revolutionising medical diagnosis, allowing diseases to be caught earlier and treated more effectively. These advances should be complemented by genetics, another field where AI is helping accelerate development, often in lockstep with diagnostic programmes. Advanced robotics meanwhile will improve everything from surgery to health and social care. In an aging society with a shrinking working age population all of these advances are essential.

Self-driving cars have the ability to massively increase capital efficiency across industries, improve time efficiency and equally importantly improve safety in an industry that still contributes to 1.25mn deaths globally each year. The internet of things will continue to disrupt supply chains, improving efficiency and helping reduce waste. Advances should continue to drive disruption in energy and distribution. Battery efficiency, energy storage and smart grids will move the global economy towards clean energy, while fields from geo-engineering through to asteroid mining could help pare dependency on finite natural resources. Even space based climate management (sails in space to reduce the level of solar energy hitting the planet) could become viable and safe options.

Inset 1. *Source: Datastream*

This research is driving forward some of the most critical new areas. This includes breakthroughs in machine learning, which have accelerated development of a number of dependent technologies such as big data, the internet of things, robotics, self-driving cars, medical diagnostics and genetics. Innovation is also driving down the costs of clean energy and battery storage, showing that the exponential improvements that Moore's law demonstrated for the silicon chip is in fact applicable to many other innovations. But these changes are not exclusive to new technologies. Machine learning can already process legal documents and compose newspaper articles and it won't be long before it displaces call centres; one of the "new" soon-to-be "old" industries that soaked up displaced workers from prior old industry.

The common denominator of all these innovations is that they will destroy existing systems and replace them with new ones. They will impact the production of things, but their real value-added is derived from their intangible nature. They will, over time, increase living standards, lowering costs and improving quality. Even at stable income levels, living standards will rise. It will also make economic growth less dependent upon capital and raw material

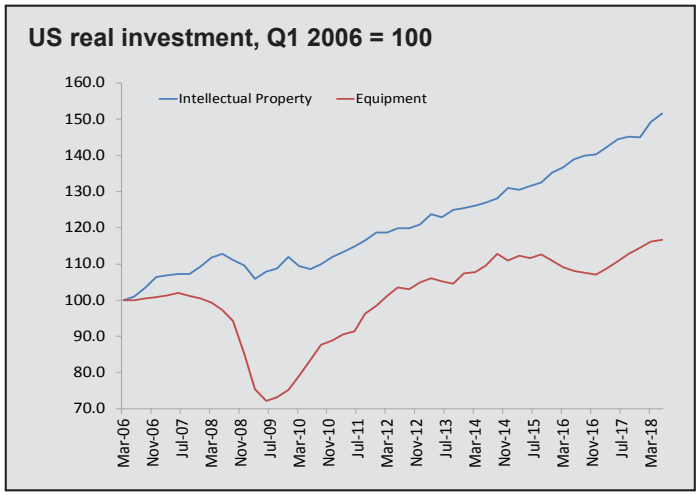

Figure 3. *Source: BEA, Independent Strategy*

inputs. Weak gross fixed capital formation alongside booming R&D spending in the US highlights this ongoing shift (Figure 3).

Disruptive technologies and the growth of intangibles also improve the quality of life. Intangibles use less material inputs (the major desecrators of the planet) and use them more efficiently. For example, using big data and the internet of things to improve food distribution could slash the one-third of production that is currently left to waste. That would decrease the cost of food, reduce the environmental damage from its production and distribution while delivering a social benefit by allowing land to be returned to the wilderness for our children.

Transitions are always problematic

This all sounds very utopian. And ultimately it should be. But it's moving from A to B that is the problem. It requires a different type of workforce from the one that currently exists. And there has been little sign that governments are willing to invest to cover these eventualities. Indeed, all they have really done is double down, protecting entitlements at the expense of investment (Figure 4, p. 68). Prioritised spending — health, social security and defence — has the most direct connection to voting groups. So while such behaviour is entirely irrational on a multi-decade timespan, given the high electoral frequency, behaving any other way would be just as odd.

Like all games everything has a finite lifespan and once the level of disruption reaches a tipping point it's difficult to recalibrate. That is the juncture many

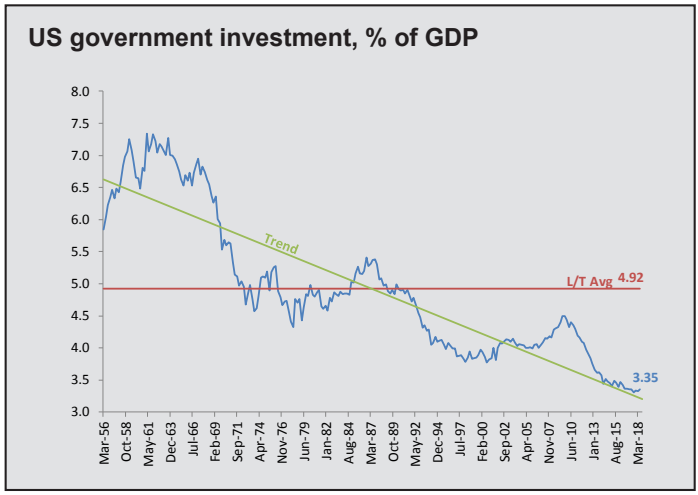

Figure 4. *Source: BEA, Independent Strategy*

western democracies seem to be approaching. While everyone will glow about the benefits of technological change, the underlying stresses it inflicts are more difficult for voters to adjust to and apportion blame for. Technology, in fact, has demonstrated itself to be highly effective at feeding voters new narratives to explain their misfortune!

Click for mass disinformation

One only has to look at social media. During the Arab spring and Ukraine's orange revolution it was championed as the propagator of freedom and democracy, allowing protestors to live-stream abuse from the authorities, triggering even larger popular support for anti-government demonstrations.

But the ability to push political narratives quickly, to millions, at almost zero cost, was seized upon by the less altruistic as a way of protecting their interests (or simply agitate). These ranged from state actors to private sponsors with specific agendas in mind. The most high-profile affront was executed by Cambridge Analytica which rather cleverly found a way of exploiting data on Facebook that allowed it to profile individual voters. The aim was to predict and influence decision-making and do so without voters ever being aware that they were being manipulated. Less sophisticated strategies have been used in countless elections across the world, from the US Presidential vote to Brexit.

Social media's problem is far broader than just electoral manipulation. It's the selling of unqualified untruths alongside traditional reporting that has

successfully blurred the lines between reality and people's perceptions of truth and reality. And it can do so out of view of most of society, contained for the most part within the echo chambers of online social groups. And when it spills over it becomes Trump's "fake news". Manipulation is not new, but the reach and efficacy with which provocateurs can now impact perceptions and outcomes has increased exponentially. This is potentially toxic for the democratic process.

A level of accountability is vital for effective discourse and this is something the internet falls woefully short off. But regulating news and opinion is the antithesis of many of the freedoms democracy is designed to protect. It's difficult to square these contradictions. Moreover, the pace of technological advancement means that even if you could fairly regulate this space, regulators would always be playing catch-up. The increasing power of big data and machine learning will allow the creation of even more accurate algorithms, targeting people's prejudices in subtle, undetectable ways. This threatens to be Orwellian brainwashing on steroids.

Big data has proven to be equally troublesome at a government level, providing the ability to embark on increasingly invasive mass surveillance. While the legality is often blurry, the narratives wheeled out to defend such practices are eerily similar in both democracies and authoritarian regimes: this information is designed to protect you and your country. China already seems to already be heading to the ultimate dystopian outcome. It aims to create a fully-networked national video surveillance system by 2020 to keep "citizens safe". Alongside this, it is developing a "social credit system" which would score citizens based on past behaviour, considering misdemeanours such as traffic offences and court records. That in turn would determine access to government services and even freedom to travel. There have even been trials in schools using facial recognition that informed teachers of everything from late arrivals and absences down to creating a digital dietary footprint to monitor those eating too much fatty food. While we'd like to think such extreme abuses of privacy could never happen in a democracy, much of the surveillance infrastructure is already there. It comes down to which setting the switch is on. It's the unforeseen outcomes of the best intentions that always present the greatest risk.

Ultimate benefits

It's natural to feel slightly uncomfortable with these threats, but it really only serves to highlight how quickly things are changing. There is no putting this genie back in the bottle but being aware of the vulnerabilities allows one to take steps to protect against them. The need to create more trusted

How blockchain works

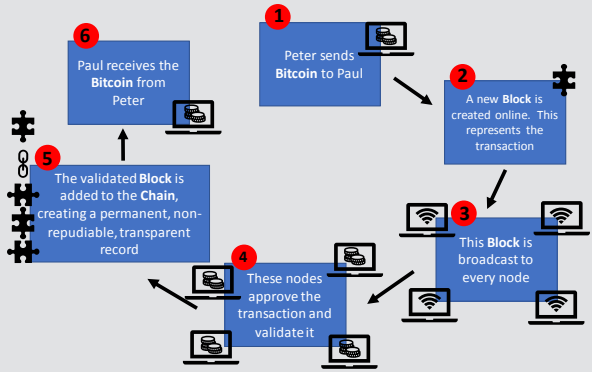

Figure A. *Source: Independent Strategy*

The blockchain's main innovation is a public transaction record of integrity without central authority. Blockchain technology offers everyone the opportunity to participate in secure contracts over-time, but without being able to avoid a record of what was agreed at that time. So a blockchain is a database based on a mutually distributed cryptographic ledger shared among all in a system. Fraud is prevented through block validation. The blockchain does not require a central authority or trusted third party to coordinate interactions or validate transactions. A full copy of the blockchain contains all the data ever recorded (and is lodged in "heavy" nodes), making information on the data belonging to every active address (account) accessible at any point in history (Figure A).

An example is a cryptocurrency transaction: banks and companies must keep detailed records of where they send money, making it possible to detect fraud and criminal activity. The blockchain works differently because it breaks each transaction into components (hashes), and then routes the pieces through a computer network - which stores the data as part of a blockchain — and directs them to a recipient who can then re-assemble the code together. If you don't have the right key, you can't own a bitcoin. And if you aren't at the right digital address (think your home network's IP address), then you can't receive bitcoin.

Inset 2. *Source: Independent Strategy*

and verifiable news sources in democracies is essential. This is something blockchain type distributed ledger technologies (Inset 2) could be suited for, creating the ability for media networks to verify content — basically triple-sourcing for the digital age. Verification will become all the more

important as we enter an age where even video content can be perfectly faked.

It equally applies to addressing the issue of inequality. It's no coincidence this disruption has been accompanied by concepts of the universal basic income (UBI), which aim to address the income side of the problem of labour displaced by technology.

That doesn't address the bigger questions of what will become of the human pecking order once intelligent machines are the norm. If it's only those at the top that will be able to capture the fruits of innovation more generalised artificial intelligence will bring, then the systems that confer legitimacy on these divergences will be increasingly called into question. That could lead to a real break away from democracy. But it does at least provide a platform from which to start to tackle the challenges presented by this process of technological disruption.

So what to make of all this? There are several forces at work.

For rich democracies:

• Technology in the medium term will increase inequality in developed democracies even as it lifts all living standards in the very long term.

• Social media and other forums that thrive on user-generated content will increase in their power to exploit social grievances for political ends — mainly in support of populism. This process erodes trust and accountability (fake news), threatening the entire democratic model.

For techno-autocracies:

• Technology will facilitate the control of citizens through big data, blockchain technologies and increasingly advanced forms of (AI-driven) surveillance;

• But technological advances will lift living standards as they are quickly applied to both demand and production while the social and equality issues are carefully controlled by the "all-seeing" state. This confers some degree of legitimacy on regimes, even if personal freedoms are curtailed. That's the techno-autocratic quid pro quo!

Endnotes

1 *All roads lead to Beijing* — Independent Strategy, 17 June 2017
2 *Democrisis* — David Roche and Bob McKee, Lulu, 2012
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4 Professor Christopher Whitty provides a brilliant summary at the Royal College of Physicians 2017 Harveian Oration
5 Ai Weiwei's documentary "Human Flow" is a timely reminder of the truly global scale of the refugee crisis
6 *Escaping the hydra* — Independent Strategy, 23 January 2018
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8 Claudio Borio — *Through the looking glass*, 22 September 2017
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