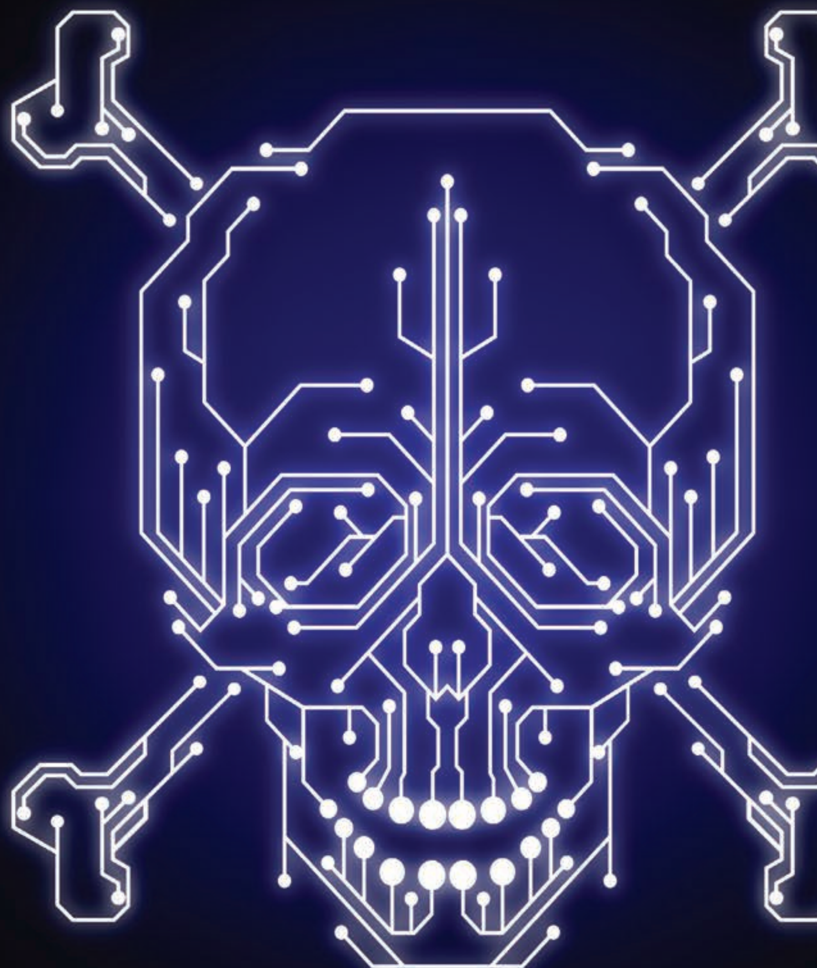
Delta: actuaries supporting change
ISSUE 2 | SPRING 2017

Messy divorce
Is Brexit the beginning of the end for free movement of skills?

Autonomous vehicles
Driverless cars are fast approaching, but are we ready for the great leap forward?

Defining benefits
Pension provision is under increasing pressure, but new thinking may prevent chaos

Cyber security
How insurers are manning the front lines in the war on cyber crime



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Welcome
Colin Wilson

On your marks...

The concept of disruption is not, despite what some commentators would have you believe, a new one. New technologies, ideas and methods have always been a factor in human development. But the increased pace of disruption is new: change appears to be happening at a faster and faster rate, making it more diffcult to respond in measured ways.

The established order – political, social, technological and demographic – is under the microscope as never before. The recent global cyber attack was further proof that risk continues to evolve, testing our response along the way.

It is for that reason that this second issue of *Delta* has at its heart an attempt to make sense of some of this change: to put it into context and to give some idea of how those at the front line are interpreting it all.

So, as the Brexit process begins, we examine how it might affect not only long-term regulation of the global insurance industry but also the careers of those working in it; we look at how driverless cars will challenge traditional notions of liability; how boards and investors are responding to climate change risk; and how radical thinking may offer a solution to troubled defined benefit pension schemes.

As our first issue demonstrated, we are committed to making *Delta* one of the indispensable guides in this brave new world. We believe now more than ever that regulators, legislators, investors and others need help to understand and adapt to the changes that promise to disrupt so much of what has come before. And we also believe that actuaries are in a unique position to help in this effort.

As our title suggests, *Delta* is focused on change: understanding, measuring and responding to it. And while the disruption may slow down, our efforts to understand and make sense of it must not.

Colin Wilson,
president of the Institute and Faculty of Actuaries

Illustrations: Sam Kerr

Institute and Faculty of Actuaries

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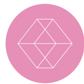

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Delta

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Comment

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Economics

The tempestuous prelude to Brexit and its aftermath has highlighted the value – and limits – of economic forecasts, Martin Weale writes

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Politics

Eurosceptic Tim Congdon argues that the hysteria over Brexit obscures what could be a pivotal point in the UK's national renewal

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Social care

The system of caring for those in need is broken and ripe for change, argues Sir Andrew Dilnot, who believes that creative disruption of the sector is overdue

MARTIN WEALE lectured on economics at Cambridge, and was a member of the Monetary Policy Committee from 2010-2015. He is an honorary fellow of the IFoA

MARTIN WEALE

Forecasting imperfection

J.K. Galbraith famously wrote of economic forecasters: "The only function of economic forecasting is to make astrology look respectable". More recently, my former colleague, Andrew Haldane, suggested to a parliamentary committee that the economics profession was in crisis because it failed to forecast the banking collapse of 2008.

Businesses have to plan on the basis of what they expect to happen, and economic policymakers have to do the same. The Bank of England's Monetary Policy Committee (MPC) cannot be expected to adjust monetary policy so as to keep inflation at its 2% target in the near term. The instruments available to it have little impact on inflation in the near term, and will probably see their influence peak in one to two years' time. So it makes sense to view policy with reference to prospects over the next two years rather than just on the basis of the current situation and recent past. Those prospects must be assessed by means of an economic forecast.

So what is a good forecast? Everything is relative, of course. 'Good' has to mean better than some alternative, rather than perfect. The most obvious alternative to the MPC are simple assumptions: the future will be like the recent past, or it will start off like the recent past and evolve gradually into the average of past experience. Most evidence suggests that this second approach gives economic forecasters a run for their money.

Some 20 years ago it seemed as though economists could outperform simple forecasts for GDP growth up to about 18 months ahead. In the long period of economic stability from 1992-2007 that lead probably shortened, although, equally, a stable economy helped forecasts become more accurate.

None of the alternative methods would have predicted the 2008 crisis

A key point, however, is that none of the alternative forecasting methods would have predicted the 2008 crisis. You can say that there is a risk of a crisis by studying past data, but you cannot predict when it might happen. Those who had claimed to forecast the crisis had, before the event, said simply that it was something that "could happen". Or they relied on the time-keeping power of a stopped clock; those who keep predicting crises are right in the end, but their predictions are of no practical use.

The forecasting trade similarly came in for criticism after the EU referendum. The MPC forecast for economic growth in August of 2016 showed a probability distribution for the growth rate over the four quarters and they represent what every economic forecaster knows; there are large margins of error surrounding economic forecasts. It is a complete misunderstanding of them to regard them as wrong simply because things turn out differently.

Since the Brexit forecast was produced, two more data points have emerged, showing four-quarter growth at 2%. A quick glance at the data shows this was hardly a surprise to the MPC, and it should not have been a surprise to anyone else.

But there are lessons to be learned from recent forecasting experience. Forecasts produced last summer relied heavily on a view that the economy weakened after the referendum. That was based not on any official data but simply on surveys of a small number of firms. These surveys are known to be indicators of limited value, partly because they reflect collective sentiment as well as actual developments. With hindsight, not enough attention was given to this. Secondly, a great deal of attention focused on the effects of uncertainty. This was probably given more weight, relative to other forecasting tools, than the robustness of the relationship justified.

Download the IFoA Fiscal Risks Report in response to an Office for Budget Responsibility consultation, which covers forecasting issues, at **WWW.ACTUARIES.ORG.UK/IFOA-RESPONSE-OBR-FISCAL-RISKS**

Comment
Politics

TIM CONGDON is an economist, political commentator and former UKIP parliamentary candidate. He is an honorary fellow of the IFoA

TIM CONGDON

Brexit need not be the abyss

In his speech to the House of Commons on 22 February last year, David Cameron described Brexit as "a leap in the dark". The same sort of phrase had long been a commonplace of pro-European Union rhetoric. Only a few weeks earlier, the *Financial Times*' chief economic commentator, Martin Wolf, had said that leaving the EU would be "a leap into the abyss". Back in a House of Commons debate in December 1991, Geoffrey Howe, a former foreign secretary, had opined that, if Britain did not participate in the European single currency project, "it would be locked on a conveyor belt, not to federalism, but to economic outer space". Keeping the pound was, in his view, to plough "a lonely furrow".

When a majority of the British people voted to quit the EU in the referendum on 23 June, they knew that in due course the UK would cease to be an EU member state. The Article 50 negotiations on EU exit are now under way. Is it the case that Britain has jumped over the precipice and is plunging into an abyss? Is our country heading towards ever more intense darkness on a journey towards "economic outer space"? Are we "locked" into a future of obscurity, remoteness, isolation and even solitude?

Does leaving the EU really hurl us into 'economic outer space'?

Certain obvious facts about contemporary international relations have to be stated. The modern world consists of two kinds of nation, those that belong to the EU and those that do not. At the latest count, the United Nations has 192 members, split between 28 that are in the EU and 164 that are 'outside'. The notion of being 'outside' the EU is surprisingly complex. Of the 164 non-EU members of the UN, no less than 19 could be deemed European and some of these are 'inside' the EU's borders, as these are usually understood. Andorra, Monaco and San Marino are the awkward squad, as they are semi-incorporated in EU states, but – strictly speaking – are not EU members. The Channel Islands and the Isle of Man are in neither the UN nor the EU, but are more substantial than Lichtenstein. Lichtenstein belongs to the UN but not to the EU, and is not semi-incorporated in any EU member.

Evidently, Europe is a mosaic of contingent entities that have arisen from the cock-ups and conspiracies of history. No doubt Andorra and Monaco, and the Channel Islands and the Isle of Man, and Norway and Switzerland, have their moments of tension with their neighbours. But life goes on, and to say that they are in a dark abyss or economic outer space is poppycock. Actually, incomes per head are higher in these small states than in the larger neighbours that are full EU members.

More fundamentally, 145 nations are outside the European continent altogether. The 145 nations include the United States of America, China and Japan, and Canada and Australia. Is the US in geopolitical outer darkness? Are China and Japan struggling to escape from a tenebrous abyss? Have Canada and Australia been hurled into "economic outer space"? Advocates of Brexit proposed that the UK ceases to be a member of the EU and takes a position among the nations of the world similar to that of the 164 present non-EU states. That is all.

The UK has long been a leader in the development of actuarial science and practice, and the body of investment expertise in this country has helped other English-speaking countries around the world. No doubt the next few years will see some disturbance to the profession, as we recover the ability to build up precedents and arrangements that suit us, and reject the regulations and directives in the EU's *acquis communautaire* when these are inappropriate for us. But let us be clear: Australia, Canada and New Zealand – three nations outside the EU – have thriving insurance and pension sectors benefiting from actuarial expertise. If they can be in this satisfactory situation when they are not EU members, then the UK can be equally well placed when it too goes it alone.

+ To learn more about Brexit and the insurance industry, visit **WWW.ACTUARIES.ORG.UK/BREXIT**

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SIR ANDREW DILNOT

Social care: radical cure needed

I'm not the first person to point out that social care provision is broken. Despite the fact that UK GDP has grown fivefold since the welfare state's inception in the aftermath of the Second World War, the social care sector is chronically underfunded. It is fair to say that the market failure in social care is unique in its scale and comprehensiveness. That failure now presents the UK, and indeed other countries, with a challenge unlike any other. We have an ageing population with growing care needs, and little sign that politicians have the will to address this with the urgency it requires. This is coupled with austerity and the understandable fear among insurers of the potential downside risk of offering coverage in such an unpredictable sector.

Those demographics are worth looking at in detail. In 1901, there were 61,000 people aged 85 or older; now, there are 1.5m, 25 times more. The fact that more of us live longer should be cause for celebration and a triumph of improved care and living standards, but there's no denying that changing demographics demand a new take on how we fund and deliver social care.

The median cost of social care sits at around £20k. Many adults – those that die younger, or who live disability-free into old age, won't incur any costs; some at the very end of the spectrum may require care costing upwards of half a million pounds. And it is that outlying risk that has everyone worried – who should pay for that care? But despite the panic surrounding this demographic 'timebomb', we can cope and adapt. There is a solution at hand that does not involve exponential increases in government spending that will bankrupt future generations. Currently, all government activity in social care is based on means testing, unlike in other areas such as health and education for instance. And while that system has its strengths, its weaknesses are beginning to look terminal in terms of solving the social care dilemma long term.

Demographics demand a new approach to how we fund and deliver social care

Some argue that tweaking the means-tested system would be sufficient: close loopholes that lead to cheating, clarify the test itself and offer a more streamlined, equitable system. That is fine, but to tackle this in an effective way, some creative disruption will be required.

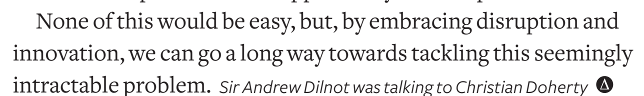
First, and most important, is the introduction of social insurance. It's not a radical approach – it simply involves individuals sharing the cost of social care with the state. By using an excess system, people know what their potential costs will be – if we were obliged to cover the first £10k of costs, it encourages better saving and planning; the state can rest assured much of the cost will be covered, leaving only the outliers to worry about. It's a classic social insurance model, as seen in unemployment benefit for instance.

This is not a matter of lack of resources; rather it is a failure to efficiently allocate the resources we already have. Considering the amount we spend on health, social care, pension provision and welfare generally, bringing a new and innovative insurance model into being would not cost the earth.

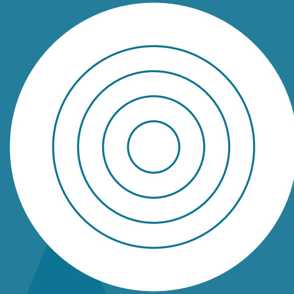
Disrupting our social care delivery system would bring a range of additional benefits to the sector itself. Currently we have providers looking to exit the sector; a large but undertrained and poorly paid workforce, and a sclerotic public sector unaffected by the beneficial innovation and disruption we see in technology, health and elsewhere. There are very few new ideas and market entrants.

By reforming the system we can unlock the pent-up energy and unleash the power of disruption. The private sector would be enticed back into the arena, keen to work with government on developing products and services to underpin a new system with pooled risk at its centre that represents a real opportunity to make profit.

None of this would be easy, but, by embracing disruption and innovation, we can go a long way towards tackling this seemingly intractable problem. *Sir Andrew Dilnot was talking to Christian Doherty*



Read the IFoA's views on changing the pension tax system at **WWW.ACTUARIES.ORG.UK/PENSION-TAX**
Download the IFoA report on social care funding at **WWW.ACTUARIES.ORG.UK/SOCIAL-CARE-FUNDING**



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Brexit and insurance

Is Brexit a challenge or opportunity for the insurance industry in Britain, and how should insurers prepare for change?

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Brexit skills gap

Passporting of both individuals and financial services may affect skilled workers in the UK, as will the type of relationship with the EU and resulting employment environment

BREXIT

A challenge but not a game changer: insurers brace for Brexit

As a political event, the UK's decision to leave the EU is unparalleled. For insurers, Brexit represents a unique opportunity to rewrite the rulebook. The question now is: will they take it?

WORDS: PHIL THORNTON

If there is one profession that should be well placed to gauge and adapt to the disruptive challenges thrown up by the Brexit vote, it is the UK's insurance industry, which has been expert in handling risk for four centuries.

But with two years of negotiations with Brussels to go before Britain leaves the European Union, the industry is working hard to calibrate the impact on its business of the uncertainties thrown up by an event almost without parallel in its history.

At the heart of its concern is what the regulatory regime will look like after Brexit, and how that will affect both how insurers run their business and the access they will have to the European market.

Both of these issues are tied up with Solvency II, the directive that codifies and harmonises EU-wide legislation, and which, since January 2016, has covered the insurance industries of all 28 member states.

But it is particularly significant for the UK sector, which is the largest in Europe and

Analysis
Brexit and insurance

Brexit means that the Solvency II regime will cease to have any legal authority over the UK insurance industry

the third-largest in the world, managing investments of £1.6trn and contributing £29bn a year to UK economic growth.

Solvency II is important because it provides the overall regulatory umbrella under which EU insurers can operate. It introduced a new, harmonised EU-wide insurance regulatory regime that replaced no fewer than 14 existing insurance directives. Compliance with Solvency II in turn gives UK-based insurers what is known as the financial passport, which allows them to do cross-border business without further regulatory approval.

But once the UK has left, Solvency II, which sets down rules on the amount of capital that EU insurance companies must hold to reduce the risk of insolvency, will cease to have any legal authority in the UK.

Regulation trumps access

While many sectors in the City, and particularly the banks, are concerned, for many insurers the passport is a sideshow.

According to Dirk Schoenmaker, a fellow at the Brussels think-tank Bruegel, fewer than one in 10 (9% of) UK insurance businesses use the passport. And even for the EU as a whole, the figure is 13%.

This compares with 69% of banks. "Insurance will be far less affected than banking, if and when the UK leaves the EU," Schoenmaker says.

Of course, for that important minority of insurers, such as Lloyd's of London, for whom 11% of gross written premiums come from the rest of the EU, the passport will be an issue. According to PwC, Solvency II has 220 UK outbound firms under passporting, and 726 non-UK EEA inbound firms.

But for the insurance and actuarial professions as a whole, the real uncertainty is over the nature of the regulatory framework after Brexit. According to George Swan, corporate insurance partner at global law firm Freshfields Bruckhaus Deringer, there is a wide spectrum of scenarios after Brexit.

"At one end – the best case – is something looking like what we currently have, so, in effect, a special deal with some rights of access but something that is less than full EU membership. At the other end, you have a hard Brexit, where the UK is effectively treated as a third country in terms of the EU insurance regulatory regimes," he says.

"There are lots of permutations between those ends, but I guess that the potential scenario – assuming that we don't get to a point where everything breaks down over the UK's bill to the EU, and that a deal is done in some form – is that it will be more or less the same."

'Manifest shortcomings'

For some, that is a cause for commiseration rather than celebration. The rules imposed by Solvency II have come in for criticism from the insurance industry, and some leading figures have seen an opportunity for the UK to disrupt the status quo and forge its own regulatory effort.

Launching an inquiry last year into EU insurance regulation by the Commons Treasury Select Committee, chairman Andrew Tyrie MP said one of its "manifest shortcomings" was the failure to secure value for money over its implementation. "Brexit provides an opportunity for the UK to assume greater control of insurance regulation," he said.

The committee heard from a range of voices, with the IFoA's Andrew Chamberlain pointing out that although parts of

WORLDWIDE GENERAL BUSINESS TRADING RESULTS

	NET WRITTEN PREMIUMS	UNDERWRITING RESULTS	INVESTMENT INCOME	TRADING RESULTS	PERCENTAGE OF PREMIUMS
	£m	£m	£m	£m	%
2007	43,697	511	5,392	5,903	13.5
2008	47,351	1,191	3,385	4,576	9.7
2009	44,280	20	3,971	3,992	9.0
2010	46,843	(1,061)	4,637	3,576	7.6
2011	48,494	967	3,435	4,401	9.1
2012	47,162	781	2,791	3,572	7.6
2013	50,535	1,484	1,365	2,849	5.6
2014	47,196	1,636	4,162	5,799	12.3
2015	42,515	1,132	2,103	3,235	7.6

Source: ABI

Photography: Getty

To see how the IFoA is playing an active part in informing Brexit negotiations and debates, visit
WWW.ACTUARIES.ORG.UK/BREXIT

Solvency II were "muddled and complex", whether the UK is better off out of its reach depends on any modifications to the existing standard that Brexit may bring.

One of the committee's other witnesses, former cabinet secretary and non-executive director at Prudential, Lord Andrew Turnbull, put it even more bluntly, describing Solvency II as "an absolutely dreadful piece of legislation".

"It will actually help insurance companies if we can leave that arrangement, and then you can arrange your insurance, and people can come to London to insure – whether it is aircraft, factories, satellites or whatever – and they may find we are in a better place to offer trade," he said.

But while the freedom to disrupt might seem a beguiling prospect, most insurance firms want to see regulators build on, rather than knock down, that regulatory structure.

Despite the fact that Britain will leave the EU in or around March 2019, the approach to the regulation of UK-based insurers is unlikely to change, as the UK's Prudential Regulation Authority (PRA) was heavily involved in designing the new system and injecting the UK's own risk-based system.

Swan says that retention of Solvency II was a likely outcome, as neither the PRA nor the Financial Conduct Authority (FCA), which oversees consumer protection and competition, would have the "bandwidth" to draw up new laws.

"I think day one, post-Brexit, will look exactly like day one, pre-Brexit. There's not much appetite for a wholesale rewrite of the rules," he says. "And there is also very little appetite among the insurance community, having sunk closer to billions than mere hundreds of millions of pounds into preparing and implementing Solvency II."

According to the Association of British Insurers (ABI), the cost of drawing up and implementing Solvency II was £3bn.
But while insurers may not want to quit the EU regulatory regime, they do want amendments. One of the most problematic rules is the obligation to hold an additional risk margin of 6% on top of its solvency capital requirement. Legal & General, the FTSE100 insurer with £842bn of assets under management, is one of many insurers calling for change.

Nigel Wilson, its chief executive, says it meant "billions and billions of wasted capital locked up unnecessarily, resulting in very long-term adverse outcomes for the UK". Prudential and Lloyd's of London have echoed that.

Insurers are hopeful that the review of Solvency II, which all EU regulators must agree by December 2018, when the UK will still be an EU member, will resolve that and other outstanding issues.

UK insurers manage investments of £1.6trn and pay nearly £12bn in tax to HMRC

Responding to insurers' concerns, PRA chief executive Sam Woods says that Solvency II was a "sensible and good" regime, pointing out that the running cost was about £200m a year or 0.08% of the industry's annual income. But he added: "There are things about Solvency II such as bugs that need to be fixed, and design features that are not good.

"On the risk margin, I think the calculation of that is fundamentally flawed and needs to be fixed."

Potential for conflict

One immediate quick fix post-Brexit is for the UK to ask the EU to grant what is known as equivalence under Solvency II. This does not guarantee market access but is a framework by which regulators

Regulation: more than just Solvency II

While much of the focus among insurers and their business advisers in a post-Brexit world is on Solvency II, the sector is subject to other EU regulations whose authority over British companies will lapse when the UK leaves.

Another major piece of EU legislation is the Insurance Distribution Directive (IDD). It aims to makes it easier for firms to trade cross-border, create a level playing field among all participants and strengthen policyholder protection.

IDD came into force in February 2016 and replaced the Insurance Mediation Directive (IMD). While the IMD applied to the regulation of insurance intermediaries, IDD applies to all sellers of insurance products, including those that sell directly to customers.

Member states have two years in which to transpose it into national law, which means that the UK must implement it by February 2018, a full year before it leaves the EU. Like its predecessor, the IDD is a 'minimum harmonising' directive, and member states will be able to 'gold-plate' it by adding extra requirements to it on implementation.

Before it comes into force next year, EIOPA and the European Commission will work on producing more detailed advice known as level 2 measures and level 3 guidelines.
In March 2017, the UK's FCA launched a three-month consultation.

"Many of the changes extend UK standards to other parts of the EU, and where domestic provisions already exist, we will seek to minimise the disruption to UK firms," says Christopher Woolard, the FCA's executive director of strategy and competition.

EIOPA is also standardising the presentation format of the insurance product information document (IPID). The IPID will be provided to the customer prior to the conclusion of a non-life insurance contract.

can work with each other to enable trade across borders.

When the UK leaves the EU, there will still be the need for a prudential regime for insurance. There are many reasons – including cost of change, lack of time and desire for EU equivalence – that the new UK regime is likely to be close in substance to the EU's Solvency II.

In a detailed assessment of the sector, AM Best, the credit ratings agency, anticipated that the UK would secure equivalence, which the EU would be likely to grant. "The PRA has already established itself as a strong regulator, which has been strict with its application of Solvency II," says Yvette Essen, AM Best's director of research and communications for EMEA.

The ABI says exit would leave numerous cross-references and gaps in UK legislation and regulation that would need to be addressed. To prevent legal and regulatory limbo, it says parliament should initially adopt the EU-level text directly into UK legislation and regulation.

While the UK government has committed to use the Great Repeal Bill to convert all the EU legislative provisions in British law on the day of exit from the bloc, that has not eliminated the potential for conflict.

While UK insurance may be effectively the same as EU insurance law on day one of Brexit, there may be a judgment by the European Court of Justice (ECJ) or a new guideline from the European Insurance and Occupational Pensions Authority (EIOPA), the EU's financial regulator, on day two.

However, Theresa May has made clear that the UK will not be bound by judgments of the ECJ. "You have immediately a potential divergence between what European insurance regulation covers and the UK position, where insurers have been told that the law remains the same. So we won't know whether to follow the European position or not," says Swan.

There is a parallel potential for conflict if the UK regulatory authorities write rules that differ from Europe. "Equivalence does not always mean the same thing, so there is scope for divergence," says Swan. "That is an example of the sorts of issues that will need to be thought about and dealt with."

Given that there are now only two years to resolve these issues, insurers will focus on ensuring that they can continue business as usual. Swan says insurers were telling their clients they were simply "rewiring" their business processes in order to be able to deliver the same services.

"Everyone would like to think that is the case, notwithstanding the large amount of pain that will need to be endured from a process and procedure point of view to get there."

In the meantime, there is a risk that Brexit will change some of the competitive landscape, particularly if European insurers see it as an option to muscle in a little bit on London's business.

However, Swan does not think it has imperilled London's position as an insurance destination.

"It's not going to be that sort of game-changer, but it certainly is the biggest upheaval of the regulatory landscape for a long time," he says.

Operating in the EU: a subsidiary issue

Those insurers that do want to remain in or move into the EU market after Brexit will have to work out the right legal structure to ensure they can operate within the EU regulations.

Currently, they are able to use branches under passporting, but after Brexit that will not be an option, as a branch in Paris of a London-based "company A" is effectively part of a British company as far as regulators are concerned.

The viable alternative is to establish a subsidiary company in the EU country and apply for registration with the regulator. Many UK insurers with operations in the EU already do that.

New entrants will have to reorganise their business models and establish subsidiaries, which will give rise to both operational costs and increased capital requirements.

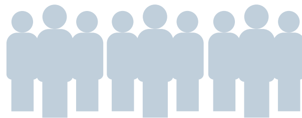
That will involve the cost of establishing a subsidiary, setting up a board and management system and talking to the regulators in the European country to establish what the tax regime would be and other regulatory requirements.

The challenge for companies is to ensure they remain in a position to meet clients' needs as the UK moves towards an exit.

According to the ABI, the process of regulatory approval can take 18 months to two years, while at the same time they need to set up the business, transfer or hire staff and get ready to deliver services.

£200m

Estimated running cost of Solvency II, or 0.08% of European insurance income



300,000

UK insurance industry employs around 300,000 individuals, of which a third are employed directly by providers

BREXIT

Brexit and skills: mind the gap?

Passports, both of individuals and financial services, are an increasingly important issue after the EU referendum vote, as the UK, and especially London, relies on the easy transference of workers, their skills and business in the banking and insurance sectors

WORDS: KEVIN REED

Passports aren't just about people. Countries, regions, jurisdictions can have their 'own' passports – as can sectors and services.

And the UK financial services industry is at the forefront of all manner of passport, visa and access issues post EU referendum – issues that are yet to be clarified, let alone mitigated.

An estimated 11% of the City of London's 360,000 workers are from other EU countries, according to the *2011 Census*, while 5,500 UK-registered companies access the EU market to offer financial services.

With London regarded as the world's leading financial centre, its ability to glean the best skills from across the EU, while offering non-EU businesses a launch pad across to Europe, are vital for its continued success.

But it's those pesky passports that could prove a big problem.

Passports, in the context of financial services, refer to the ability of a financial institution operating within the European

Some of the UK's largest financial services companies are bracing for the impact of Brexit

Economic Area to carry out its services in other member states.

Without this access, life becomes much tougher for banks and asset managers to operate in the EU. Of equal concern is its blocking effect on London's use as a gateway for other countries to set up camp, access the passport, and use it in other EU states.

But when it comes to passports of the more personal kind, it is still unclear how the UK government's planned migration control will affect the movement of inbound skilled workers.

So, a combination of both restricted access to markets and people will mean a different approach by financial services organisations to their investment in skills and human capital.

A look at the current landscape is instructive. The rhetoric from the UK government has been around "openness to international talent" post-Brexit – however, this is likely to come in the form of visa and permit controls.

The lack of certainty means that business has it very tough in planning and investing. New figures show that clearly.

Manpower's latest quarterly survey of 2,000 employers finds a sharp slowdown in hiring in the big financial centres of London and Edinburgh.

"London is the financial capital of Europe – it's dependent on our services. If the City is weakened, it doesn't help the EU either"

"With huge uncertainty surrounding sectors like banking and financial services – critical to the economy in London and Edinburgh – it's no surprise that confidence in these regions is suffering," says its UK managing director, Mark Cahill.

So, what is the future direction of travel for the insurers, investment bankers and those in their orbit, such as accountants, lawyers and actuaries? Where will the work be? Which professionals will undertake that work, and where will they come from?

Michael Stefan, a partner specialising in insurance hires for recruiter Hanover Search Group, has a clear vision for the actuarial market. And he has impeccable credentials to attempt to divine the future.

Formerly a lead consultant with a FTSE-listed insurer, he has since spent 13 years recruiting talent – including international talent searches as far afield as Mexico to South Korea.

He says that there are some strong reasons to believe the UK actuarial community and its employers will come through the other side of Brexit in one piece. But not entirely unscathed.

First, there will always be a "latent" need for high-quality actuaries – particularly as both the insurance industry and clients continue to seek better ways of understanding the world in which they operate.

The best actuaries require the best education, and Stefan cites both the IFoA and the dual-track US qualifications as "the gold standard".

But that need may not be fulfilled by the UK if foreign nationals find it more difficult to get across the Channel. Stefan suggests

To see how the IFoA is playing an active part in informing Brexit negotiations and debates, visit **WWW.ACTUARIES.ORG.UK/BREXIT**

that as many as 30% of UK-based actuaries are split evenly between EU and non-EU (mainly Indian and Chinese) nationals. Those that currently reside in the UK may simply decide to follow the work if the work moves on.

"Actuaries move from lower income countries to the UK for two reasons: professional and economic. There is a clear economic argument for Romanian or Polish professionals to move here based on earnings and currency exchange. There is also the prestige of working here, which will mean they can go back to their home country and 'jump up' two or three career steps."

If the UK market becomes too difficult to work in, they will simply look for the next option – with Germany and Switzerland particularly attractive.

A simple logic that can be applied to this is that, without access to the same quantity and quality of skillset, UK roles will take longer to fill and remuneration will increase. If the cost base increases, then UK financial services will have to manage their margins – with that cost likely to be passed onto clients, and ultimately retail consumers.

"It will become more expensive to undertake finance," agrees Stuart Weinstein, professor of practice informed legal education at Coventry Law School.

Weinstein doesn't envisage "hundreds of thousands" of roles leaving the UK. However, the Trump effect will loom large in terms of how attractive the US can make itself to inbound trading and finance-raising. Its higher interest rates are already enticing some business, along with its expertise in handling over-the counter (OTC) derivatives.

One bone of contention that has already shown itself is in the UK's lucrative Euro clearing house service, with the EU suggesting that retaining the role will require European oversight – an area of potential opportunity for the US. But any "third-country treatment" by the EU would also need to be applicable to the US as well, suggests professor Weinstein.

"London really is the financial capital of Europe – it's dependent on our services. If the City is weakened, it doesn't help [the EU] either."

But the skillsetters and associated recruiters must consider their options. Could the qualifying bodies such as the IFoA, Law Society or accountancy's ICAEW simply ease the qualification route if required? The short answer is no – diluting qualifications is an unsatisfactory option for all parties. There are other types of approach – including more nurturing of home-grown talent.

Developing technical education in the UK has become a hot topic, particularly in a climate where university studies can cost as much as £12,000 a year. Chancellor Hammond announced in March's Budget that an additional £500m a year will be invested in technical programmes for 16- to 19-year-olds, equating to 500 hours per person a year.

And financial services may want to take a leaf from the book of its ecosystem partners – the accountants.

The UK's 'Big Four' accountancy firms have recognised that the pool for talent to meet their ambitious demands requires expansion. In 2015, EY removed academic criteria from its entry process, and in September 2016 it offered 200 apprenticeship places.

"It is a commercial imperative for us to attract talented individuals from all backgrounds. At EY, we have seen firsthand

Heeding travel warnings

It's said that all change is good for the advisory community – particularly when it affects their client base.

An ability to understand the range of possibilities, quantify them and then apply findings into a meaningful direction of travel may sound like the preserve of the actuarial profession. But the UK's management consulting sector is lining up Brexit as a potential boom time – despite potential issues it might cause them.

Management consultants billed the financial services sector £2.3bn in 2016, up 8.2% on the previous year, research from Global Research reveals.

While highly likely that financial services will require advice from consultants on Brexit matters, the lack of clarity around the range of issues, including passporting and regulation, means that the two parties are playing the waiting game – to a degree.

"There was a contradiction regarding Brexit in the summer. There was both a feeling that it would create a further set of opportunities but also a huge uncertainty and a decrease in confidence," says Andrew Hooke, COO and head of consulting, sectors, at PA Consulting, in the report.

However, consultants are not apprehensive – particularly those focused on the public sector. This area, while still lucrative, has faced many headwinds, most significantly a political desire to cut what is viewed as "wasteful and poor value" spend.

Ironically, politicians are likely to require their support during Brexit negotiations, with one consultant telling agency Source that "there could be a need for 3,000 to 5,000 consultants, lawyers supporting the government's negotiations".

Global Research has previously flagged up this polarisation of views and stances. An earlier survey found 46% of clients expect business confidence to suffer because of Brexit; which is normally an indicator of a downturn in consultancies' fortunes. However, 26% of those surveyed have already stepped up use of consultants in response to Brexit.

"The aftermath of Brexit put the consulting market on pause, as everyone took a step back to assess the implications," explains Source director Fiona Czerniawska. "We can be certain that a post-Article 50 world will feel very different from one industry to the next; clients in financial services have a number of concerns ranging from passporting to regulation, while the relative value of the pound will be of concern to retailers – all of which could generate considerable demand for consulting services."

how diverse teams working in an inclusive environment can drive a better business performance," said EY's UK & Ireland managing partner for talent, Maggie Stilwell, at its launch.

Deloitte operates two 'universities': Dallas; and Dolce La Hulpe on the outskirts of Brussels. Its Brussels operation is expected to offer 30,000 training days in 2017.

Rik Vanpeteghem, Deloitte Belgium CEO, set out the firm's thinking at its launch: "Competition for talent in the coming years will be challenging. Deloitte University EMEA will help the organisation attract and retain talent by distinguishing Deloitte from its competitors."

Another aspect to consider is that the requirement for skills abroad comes from supply and demand – and often that demand is driven by regulatory change. The risk management and frameworks required by insurers to deal with the implementation of Solvency II will be tailing off. It is possible that we are entering a period where the talent requirements cool off.

Accountants haven't been shy of letting people go when times aren't so good, a strategy that fits with maintaining partner profits. But, as they are multidisciplinary,

11% of the City of London's 360,000 workers are from other EU countries

they have shifted focus onto the next growth area, whether regionally or by discipline. Both points are illustrated here: In the past 12 months (to March 2017) the 'Big Four' firms provided $8.6bn (£7.1bn) of transactional services on cross-border acquisitions by Chinese groups – a fourfold increase on the previous year.

For all the optimism, and discussion of flexible businesses and in-house training, there are more leftfield and challenging takes on the future.

Gill Ringland, a director of Unlocking Foresight, a social enterprise to support decisionmakers to take long-term views, believes much thinking around Brexit has been "shallow".

In her discussions with other experts, a number of more disruptive scenarios have been mooted. Three views of the UK's relationship with the EU, post-Brexit, were formed – using existing models as a basis.

First, that the UK/EU relationship models that of the US/Canada: that the parties "get on with making things work"; are "similar but different", with few major arguments. In fact, similar to the UK and EU at the moment.

The second model would be a relationship more akin to the US/Mexico: one of a dependency in terms of skills and labour, but mistrust and suspicion - where Mexico is a low-cost place to operate. The EU may maintain a high-cost/high-wage model while the UK becomes low-cost. This would marginalise the UK, and it would become a low-wage/low-skilled economy.

Third, the relationship could become similar to that of the US/Cuba pre-lifting of trade embargoes in 2001: totally separate economically, socially and politically; little official connection; suspicion; and hostility.

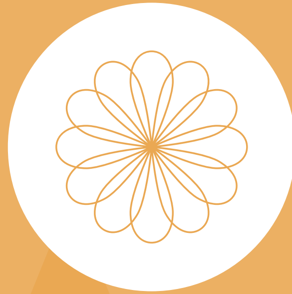
For professionals, particularly actuaries, another disruptive factor comes into play from leftfield, suggests Ringland: that of machine learning. Not only will intelligent systems impact on all professional services roles; this impact will be nuanced dependent on the social and political climate in which the professionals and systems are based.

"In the Canada scenario, it's more likely there would be enough emotional intelligence in the system that it could be synergistic of machines and actuaries", explains Ringland. But in the Mexico example, "it's a straight replacement".

As strange as it may seem, if the UK evolves into a society similar to that of Cuba then we could become a "more buccaneering, risk-taking" nation.

"In that scenario, would actuaries be valued partners, or would society be such that people prefer to not bother with them... [so] they become less relevant?"

Huge uncertainty surrounds sectors like banking and financial services – critical to the economy in London and Edinburgh



Wider fields

20

Climate change

The Paris Agreement has been a key turning point for many investment funds, and the role of long-term institutional investors is in the spotlight

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The fight to engage investors and insurers

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WORDS: DINA MEDLAND

Wider fields

Climate change

"Investors who don't think they need their funds to address the long-term material risks are failing to understand what will drive value creation in the coming decades"

When Mark Carney, governor of the Bank of England, gave what was to become a seminal speech in 2015 on breaking "the tragedy of the horizon" on climate change and financial stability, the venue was Lloyd's of London. But that speech heralded the launch of the Financial Stability Board's Task Force on Climate-Related Financial Disclosure (FSB TCFD) and a move towards the adoption of a set of global standards, not just for insurance but all businesses.

"Climate change is not only an environmental problem but a business one as well," said Michael Bloomberg, former mayor of New York and chair of the task force.

Not everyone – even among members of the task force – agrees with Carney that climate change poses a 'systemic' risk. "That is a hypothesis that has not yet been proven," says Andreas Spiegel, special climate change adviser at Swiss Re and a member of the task force. "But one way is for companies (voluntarily) to disclose how climate risk will constitute systemic risks. If we see that there are material risks that do have an impact, then I can well imagine voluntary disclosure will get translated into regulation and adopted by stock exchanges," he adds.

There is a multiplicity of risks to consider, and the disruptive consequences of each will differ. Work by Swiss Re has indicated that disaster risks, for example, are increasing but that insurance hasn't kept pace. On average, only about 30% of catastrophe losses have been covered by insurance over the past 10 years. That means that about 70% of catastrophe losses – or $1.3trn – have been borne by individuals, firms and governments. A Swiss Re report argues for the need to close the 'protection gap' to better cover physical risk – such as the impact of storms, floods and other weather extremes – on a societal level.

The IFoA has become more vocal in its position on actuarial principles for risk management for climate change. Last year, it signed a statement from the thinktank the Overseas Development Institute (ODI) calling on G20 governments to follow through on their commitment to phase out fossil fuel subsidies, saying they undermined efforts to mitigate the negative effects of climate change.

Nico Aspinall, chair of the IFoA Resource & Environment Board set up in 2014, says: "What we are debating now is risk, not the existence of climate change. So much uncertainty creates risk, and as actuaries we need to understand all the various possible scenarios. It's not about averaging across scenarios but discussing each real scenario and seeing what it adds up to."

Publicly listed businesses, at their heart, are aiming to make a profit, and see their fiduciary duty as being "to tear up the planet as quickly as possible," says Aspinall. Time horizons on climate risk mean that while the climate talks at COP21 were an achievement, we "need to go a lot further", he says, in order to avoid dire consequences for the world at large, and for future generations.

Mark Carney, governor of the Bank of England, set the ball rolling in 2015 with his call for global standardised disclosures on climate-related risks

Photography: Getty

For a broad perspective from a range of important voices, visit
WWW.ACTUARIES.ORG.UK/INTERGENERATIONAL-FAIRNESS-CLIMATE-CHANGE

"The FSB TCFD is asking us to look at the future possible impact (of various scenarios) on our business and what it would mean for us," Aspinall explains.

"We will adopt their principles and try to quantify the impact and disclose that," says Spiegel at Swiss Re. "If it's a material risk that will affect the business, we need to find a way to disclose it without revealing strategic information, but at the same time agreeing to disclose the annual aggregated expected losses of weather business.

"It's about finding a way to disclose how climate change would affect us – without giving away secrets," he adds.

As far as the need to adopt guidelines for business reporting on exposure to climate risk is concerned, Aspinall believes a lot of institutions "won't jump out of the way of an oncoming bus – no matter how absurd that seems – until they figure out the probability of being hit. Giving them the right data to analyse this will help them come to the right decision."

Finding a way to identify and then share the right data is a critical part of phase one of the FSB TCFD consultation, launched last year. It has now received written feedback via more than 300 online responses and almost 60 comment letters from respondents in 30 countries.

Overall, it says, respondents were generally supportive of its recommendations and guidance, but, as anticipated, certain areas will need further work. It is expected to present its full report on progress to date to the meeting of G20 leaders in June.

The FSB TCFD aims to improve the usefulness, ease of implementation, and comparability of scenario analysis by specifying standard scenarios and assumptions and providing additional guidance and tools. It says it has become apparent that clarifying the role of 'materiality' versus line item disclosures is critical. So, too, is providing flexibility for organisations to provide some, or all, of the recommended disclosures in reports other than their financial filing, it says.

It will now consider further the illustrative metrics to more explicitly demonstrate financial impact, consolidating metrics for broader applicability, and being more explicit in connecting with existing disclosure regimes.

As a result, the investment world needs to sit up and take note: the FSB Task Force will be encouraging further development and standardisation of metrics for the financial sector, especially as they relate to climate-related risks associated with investment. It says it is also developing 'mock disclosure' examples to prompt the thoughtful consideration and preparation of relevant climate-related disclosures.

As businesses start to get to grips with the task of changing their business models to move towards a low-carbon future, there has been some activity among investors on this front in partnership with a whole host of organisations, such as the United Nations Environment Programme (UNEP), the UN-affiliated Principles for Responsible Investment (PRI), the UK's Environment Agency and even the Church of England, as well as numerous consultancies.

Pathway to the future

The Transition Pathway Initiative (TPI) is an asset owner-led initiative, supported by asset managers and owners with over £2trn in assets under management. It assesses how companies are preparing for the transition to a low-carbon economy.

TPI aims to help asset owners make investment decisions by giving them clear information about how companies with the biggest climate impacts are changing their business models away from high carbon intensity. It focuses on companies in the oil and gas, mining and electricity generation sectors.

The first 40 companies have been given a ranking from zero to four – from not recognising climate change as an issue, to setting long-term quantified emissions reduction targets. Just one on the list has yet to acknowledge climate change as a concern – US fracking firm Pioneer Natural Resources.

Among those given the top score of four, which acknowledges significant commitment to climate mitigation, is Italian electricity company Enel, which recently announced a €1.25bn green bond, which will be used for developing new renewable power plants.

NextEra Energy, which claims to be the world's largest generator of renewable energy from wind and solar, was awarded level two – given to companies that have set some emissions reduction targets but haven't committed to quantified targets or emissions data verification.

"Businesses should be able to explain to investors how they plan to manage climate change risks, invest and innovate on the way to the zero-carbon economy of the future," says Emma Howard Boyd, chair of the UK Environment Agency. "With the launch of the Transition Pathway Initiative, asset owners from around the world are sending a strong signal that portfolios will align in the future with companies that are taking the transition to a low-carbon economy seriously."

"Investors are increasingly seeking to better understand how exposure to climate change risks will impact their portfolios—although implementation is progressing slowly," says Fiona Reynolds, managing director of PRI.

"Investors who don't think they need their funds to address the long-term material risks arising from issues like climate change, environmental sustainability, resource depletion or supply-change risks are failing to understand what will drive value creation in the coming decades," she adds.

In January, in collaboration with the Environment Agency, LSE's Grantham Research Institute and investors including Standard Life, BNP Paribas and Aviva Investors, which together control over £2trn in assets, the Church of England's investment arm launched a ranking of energy companies' progress on moving to low carbon.

Led by the Transition Pathway Initiative (TPI), this scheme focuses on companies in the oil and gas, mining and electricity generation sectors. It aims to help asset owners make investment decisions by giving them clear information about how firms with the biggest climate impacts are changing their business models (see box, p23).

The concept of 'intergenerational fairness' is being explored by the IFoA in the context of risks to financial stability posed by climate change for the next generations, who will feel its impact most. Here, the role of long-term institutional investors, such as pension funds and life insurance companies, is again in the spotlight. And climate risk has been in increasingly sharp focus among the consultancies. Mercer's report *Investing In a Time of Climate Change* offers an in-depth collaborative study with 16 investors to answer critical questions on key risks and opportunities, as well as planning for portfolio resistance. It considers four climate scenarios and four climate risk factors to estimate the impact on potential returns.

"We see a growing number of investors pushing climate risk management up the priority list," says Jane Ambachtsheer, partner and chair, responsible investment, at Mercer Investments. "This has been building over time – with the Paris Agreement being a key turning point for many funds – but recent regulatory focus in Europe on this topic is definitely having an impact, as well as the launch of the FSB TCFD draft recommendations."

There has also been growing pressure on financial firms in the EU to undergo stress tests on their exposure to climate change risk, such as floods, and to energy-intensive sectors with assets more exposed to repricing.

Scenario analysis for the financial sector is likely to increase in the wake of the TCFD's summary report. "Long-term financial institutions over the next five years will face regulatory concern over climate change and they will have to disclose their assets," says Aspinall. "The likelihood of companies publishing data voluntarily is low. The likelihood of shareholders demanding the information, however, is quite high."

As divestment remains a very live debate, the pressure on investors for engagement is unlikely to ease. A report just out from ShareAction, a non-profit group in the UK that campaigns for responsible investment, found striking variation in both the performance and the transparency of the largest asset managers operating in Europe.

It ranks the 40 mega-managers, which between them invest over €21trn ($22.4trn) on behalf of pension schemes, charities, universities and individuals across the world.

As efforts gather pace on multiple fronts to keep these issues in the spotlight, climate risk in 2017 is beginning to feel increasingly very personal – with implications for all businesses and investors.

FAST FACTS

30%
OF CATASTROPHE
losses covered in past 10 years

$1.3
TRILLION
losses borne by governments

60%
OF INVESTORS
are taking action on climate change

$40
TRILLION
spending required to reach global climate goals

EU pressure is growing on energy-intensive businesses to more accurately report on their pricing risks

Tech futures

26

Autonomous cars

Driverless cars are set to disrupt transport planning, but what about the liability issues they raise?

30

Cyber security

The world is waking up to a new type of warfare, but are businesses and the insurers that protect them ready to grapple with the threat?

Braking bad

The disruptive potential of autonomous vehicles is vast. And while the potential benefits are clear, self-driving cars also present some thorny dilemmas for lawmakers, manufacturers and insurers

WORDS: DAVID BURROWS

Elon Musk, chief executive officer of US car maker Tesla, announced recently that all its new vehicles will come with built-in self-driving hardware. He also insisted that the car company wouldn't be liable if there were an accident with a car in self-driving mode.

However, Tesla's stance contrasts sharply with that of Volvo, which said last year that it would take full liability for any of its cars while they were in autonomous mode. Such mixed messages reflect the confusion over a key question: is today's framework adequate to cover potential liability issues?

Some, including John Villasenor, a senior fellow at the Center for Technology Innovation at the Brookings Institution in Washington DC, say yes, citing existing product liability laws as a sufficiently adaptable tool. He points to comparable tech for which insurers have been able to successfully write new business. As an illustration, Villasenor highlighted electronic stability control systems, which help drivers maintain control on bends and slippery roads by automatically selecting which wheels to use for braking. He explains that these systems have already saved thousands of lives without presenting the courts with intractable questions regarding liability.

However, until autonomous cars become common on roads and in cities worldwide, policy will be based more on assumption than fact. Can insurers be confident that autonomous vehicles don't create insurmountable problems?

Controlling influence

David Williams, head of underwriting at AXA UK, believes there are areas of concern, notably around the definition of 'self-driving'. "People tend to talk about autonomous cars being level 3 and upwards (see p28), but that is not really the case," he says. "A level 3 car will let the vehicle do most things, but the driver must be ready to take control at a moment's notice. We see this as a dangerous combination, as the driver may be thinking about something else and

For the IFoA's response to the House of Lords' call for evidence on this issue, visit
WWW.ACTUARIES.ORG.UK/IFOA-RESPONSE-AUTONOMOUS-VEHICLES

Controversy over the ownership of its self-driving technology has dogged Uber in recent months

then suddenly the car demands their instant attention."

His sentiments on safety are shared by Jim McBride, a research and innovation expert at Ford, who argues that asking the driver to make instantaneous interventions is an unfair proposition. The view at Ford is straightforward - there is no reliable model for handing back control to drivers in semi-autonomous vehicles at short notice (hence the company's preference for full autonomy).

But if the transition to full autonomy is gradual, will drivers require specific training before they are permitted to drive cars using autonomous technology – especially for times when the car is switching between autonomous and non-autonomous modes? This remains unclear.

Legal and regulatory issues present challenges too. Not all countries, states or counties may legalise these cars at the same time, so border crossing might prove interesting.

Then there is the subject of insurance. Typically, a motorist's insurance rate is based on a mixture of factors, including age, marital status, vehicle type, vehicle use, number of accidents and points on licence. But these calculations become largely redundant for self-driving vehicles. The question of who is at fault in the event of an accident changes completely, as driver error will no longer be the default explanation.

And what if an accident is caused by black ice, a pothole or debris within a tunnel or on a private toll road? The manufacturer would argue that it was blameless, as too would the motorist, but what about the council or road owner?

Autonomous driving levels

0 **LEVEL 0:** The driver controls everything; steering, brakes, accelerator, power

1 **LEVEL 1:** Most functions are still controlled by the driver, but a specific function (like steering or accelerating) can be done automatically by the car

2 **LEVEL 2:** At least one driver assistance system of both steering and acceleration is automated, like cruise control and lane-centering. The driver must always be ready to take control of the vehicle

3 **LEVEL 3:** Drivers are still necessary and will intervene if necessary, but are not required to monitor the situation in the same way as levels 0-2

4 **LEVEL 4:** These vehicles are "designed to perform all safety-critical driving functions and monitor roadway conditions for an entire trip." However, it does not cover every driving scenario

5 **LEVEL 5:** This represents full autonomy. The vehicle's performance to equal that of a human driver, in every driving scenario – including extreme environments such as tracks

Williams argues the bill represents a positive step as it provides greater clarity to insurers. He points out that the vast majority of accidents are caused by human error, therefore automated vehicles will have a critical impact in reducing the number and severity of accidents. As for accidents caused by unforeseen hazards, such as potholes or black ice, he insists the new legislation is helpful. "The most important thing is that the insurer pays in the first instance. If there is clear negligence – that potholes have been reported and not dealt with, for instance – then the insurer may look to recover costs but the motorist has already been compensated."

In terms of premiums, Williams does not believe the advent of autonomous cars will make insurance costs for manual cars prohibitive. "If, for example, 50% of cars on the road are autonomous and the other half are manually driven, driverless cars will still make roads safer in general. This will result in lower premiums for manual cars, just not as low as for autonomous cars."

However, Williams is concerned about data held by car manufacturers. "Even with accident levels dramatically reduced – with autonomous ABS alone, you are talking about a 15% reduction in accidents – there will still be some apportionment of blame. I am concerned about how far car manufacturers will be prepared to make all data available that is captured on a car's computer." Indeed, he reveals that insurer groups have expressed their concerns on this matter to manufacturers, and dialogue is ongoing.

Hacking by terrorists or criminals has also been identified as a potential problem. *Wired* magazine recently made headlines when it showed how two security researchers were able to take control of a Jeep remotely and disable its engine and brake. If this were real rather than staged, the onus would be on the insurer to prove that the manufacturer had been negligent in installing software that failed to resist an attempted hack.

Clearer insurance laws

Recent progress in the legislative environment addresses some of these questions, at least in the UK, where new insurance rules for self-driving cars were proposed in February 2017, as part of the Vehicle Technology and Aviation Bill.

According to the Department for Transport, a single insurance product for automated vehicles will now cover both the motorist when they are driving, as well as the car when it is in automated mode. This will mean blameless victims of any collision involving an automated vehicle will have easy access to compensation.

Tesla CEO Elon Musk has made it clear the company will not accept liability for any accidents in its cars being driven in autonomous mode

Photography: Getty

The road ahead

Whether liability issues will stifle and hinder the growth of driverless cars, Williams' view is that, by keeping protection of the general public at its heart, the Vehicle Technology and Aviation Bill will encourage early adoption of the most advanced technology.

And car manufacturers such as Ford have certainly not held back on technological innovation. In January, Ken Washington, vice-president, research and advanced engineering, at Ford, told the BBC that the company would have a fully autonomous car on the road as soon as 2021. By "fully autonomous" he meant vehicles with no steering wheel and no brake pedal.

Does this mean we are going to see autonomous cars driving at high speed on all roads within just a few years?

Probably not, but a consortium of British companies has unveiled a plan to test driverless cars on roads and motorways by 2019. Backed by an £8.6m government grant, the project involves an insurer, which will assess the risks involved at each stage of the journey.

The direction of travel has clearly been set; EY is already working with a range of clients in the sector, and says: "Given the implementation complexities, we expect autonomous vehicles (AVs) to be launched through multiple controlled scenarios in and around urban areas. As the benefits outweigh the costs, and liability, safety and security concerns are addressed, these controlled scenarios will expand and merge across vast urban areas and eventually integrate intercity mobility as well."

Unquestioned benefits

By doing away with the need for a driver – and eliminating the risks associated with human decision-making and driver distraction – whether owing to mobile phones, road rage or fatigue – autonomous cars should be safer. Drink-driving would become a thing of the past, while life-changing mobility options for anyone unable to drive conventional cars should materialise.

Self-driving vehicles should also reduce traffic congestion, with fewer accidents blocking main commuter routes – it may even lead to the eventual abolition of junctions. Businesses could enjoy better productivity, with less work time lost to traffic snarl-ups in rush hour.

EY suggests that attitudes towards car ownership and the overall 'driving experience' could change radically. The introduction of AVs could accelerate the move away from vehicle ownership to having access to different integrated mobility solutions such as car-sharing programmes, it argues.

Cost is clearly a concern, but, as with all technology, affordability improves over time. Williams believes cost will be driven down relatively quickly. "Initially, you are talking about quite an expense (£100,000-plus for a fully AV vehicle), but prices come down fast. The price of key sensors has already dropped 10% from the original cost. Economies of scale also reduce costs massively, so, over time, affordability is not a major problem." And if car-sharing and commercial AV services become common, then costs become even less of an obstacle.

The road ahead

The haulage industry is already aware of the advantages of autonomous HGVs, and investment in this area has gathered pace. AV technology would mean one driver rather than two on long hauls and no need for tachographs as the 'driver' is only overseeing the loading/unloading at either end. This is industry changing.

One obvious reservation with regard to AV advances is whether manufacturers follow Ford's example and skip the contentious level 2-3 technology and move straight to full autonomy (levels 4-5). These vehicles will inevitably be more costly to produce and buy and will demand a culture change – cars are typically sold on the driver experience.

Some manufacturers insist that autonomous travel within vehicles that allow the driver to take over when desired is completely workable. Only time will tell, but, from an insurer's point of view, Williams at Axa is far more reassured by Ford's way of thinking.

"Level 5, where the car is in complete control, is a great idea. It is safer and it also hugely enabling for the disabled and the elderly. Level 3 is not autonomous driving and is not the way forward."

UK FAST FACTS

1,380
PEOPLE
killed or seriously injured in 2015 when at least one driver was over the limit

5,740
ACCIDENTS
where at least one driver was over the alcohol limit

1,810
ROAD DEATHS
in the year ending September 2016

11.7%
PREMIUMS UP
five times more than train fares over 2016

For the latest thinking on cyber risk, visit
WWW.ACTUARIES.ORG.UK/CYBER-RISK-WP

WORDS: KIRSTEN MOREL

Cyber crime is the fastest-growing menace to organisations across the world, as shown by May's global cyber attack. Its disruptive potential has many worried that those protecting us are getting left behind by the hackers

Insurers on the front line

Two years ago, in a pre-Brexit world when David Cameron was UK prime minister and his deputy was Nick Clegg, the coalition government proudly proclaimed that it wanted the UK to become a "world centre" for the provision of cyber insurance. Francis Maude, then cabinet office minister with responsibility for the UK's cyber security strategy, outlined the plan:

"The UK's insurance market is world-renowned and we want it to be the same in relation to cyber risks. The market has extensive knowledge and experience of more established risks to help businesses manage and mitigate relatively new cyber risks."

Politically, the world has moved on since the early days of 2015, but cyber security remains as much, if not more, of an issue now. That is certainly true across the world, with some of the biggest news stories of 2017 and 2016 – think WannaCry, Trump, North Korea and the hacking of a driverless car (if only as a test exercise, see p26) – involving some element of cyber crime. The potential for disrupting not just information and financial networks but to do serious harm to critical infrastructure and influence world events has driven this issue up risk matrices across the world.

In the UK's case, it's something that was highlighted by the recent publication of the UK's *National Cyber Security Strategy 2016-2021*. The document makes no further references to the UK's potential as a leading jurisdiction for the writing of cyber security policies but does confirm that the government sees the insurance industry as one that can exert "influence over companies to ensure they manage cyber risk". Other jurisdictions are expected to follow suit as they draft up bills on the issue.

Double duty

From a political perspective, cyber insurance is seen to play a dual role in managing risk; on the one hand, the industry has an important role in promoting the practical cyber security capabilities of businesses large and small, while, on the other, the industry is a moneymaker.

Given the uncertainties surrounding the UK's future relationship with the EU, it's understandable that UK policy is coalescing around the former. But, as government figures show that just 2% of large firms have explicit cyber risk insurance (a number that is close to zero for SMEs), it's clear that there's a lot of work to do before the industry is in a position to play an effective role in helping the UK protect itself from cyber threats.

This isn't to say that the industry isn't playing a part, it's just that cyber insurance is currently a bit part rather than a protagonist.

Ignorance of the existence of specific cyber insurance policies is one reason for such low uptake. According to the UK government report, *UK Cyber Security: The Role Of Insurance In Managing And Mitigating The Risk*, "around half the business leaders we talked to [were] not aware that insurance covers cyber risk".

A secondary reason is the fact that many business insurance policies already cover cyber risks and so discourage companies from buying cyber-specific policies – but the effect of this isn't limited to dampening the market, it also creates a risk for business insurers.

"We ascertained that every single type of business insurance policy that we surveyed would be subject to cyber risks," says Jeremy Haynes, partner at Deloitte.

The problem for insurers is that the scale of risk involved with

traditional business policies is unknown, as Dani Katz, director at analytical firm, Optalitix, describes.

"Silent cyber risk is when you carry a business interruption policy but you don't specifically exclude cyber threats. There is a concern that there could be a major risk being carried."

The fact that silent risks exist has already been identified by regulators, and some are now looking to insurers to maintain adequate protections against it, as a spokesperson for the European Insurance and Occupational Pensions Authority (EIOPA), explains:

"EIOPA considers adequate monitoring of cyber risks as very important. Supervisors need to be particularly attentive about silent and accumulated exposure in the (re)insurers' portfolio in view of potential threats to financial stability.

"It is important that insurance undertakings properly manage cyber risks, have adequate risk management practices in place and the control of the overall portfolio exposure."

Everything is connected

The threat of the unknown seems to characterise much of today's understanding of cyber risk. There's a lack of historical data, and the innovative nature of bad actors means that the threats themselves carry an unknown element and the extent to which organisations can be compromised is extensive, particularly as the internet of things gains traction.

As devices are increasingly able to talk to each other, so the threat landscape broadens (see box, p33). Last year's massive internet outage in the US was triggered by DDoS malware that had infected over 100,000 CCTV cameras and other connected home devices. While costly for the affected company, Dyn, which lost approximately 8% of the domains it hosted in the aftermath of the attack, it also serves as an example of the scope of our connected world, in which almost any electrical device within a firm's premises or network could be considered a gateway for attack.

On top of this, the effects of data loss are difficult to quantify, particularly when it involves data owned by third parties. The scale and nature of media activity following any data breach are also challenging to predict, but will become more important to UK insurers following the introduction of the EU's new General Data Protection Regulation (GDPR) in May 2018. This will make notification of data breaches mandatory across the EU, increasing the likelihood of adverse publicity. And because the rules are extra-territorial in scope, they are unlikely to be affected by Brexit. The fact that GDPR breaches carry maximum fines of 4% of global turnover should also focus the mind of businesses across the continent.

Such unknowns are, of course, regularly appraised by actuaries. While challenging, they are not insurmountable obstacles to the provision of cyber insurance and are provided for within the EU's Solvency II directive.

"The capital framework includes an events not in data (ENID) component that encourages companies to think of doomsday scenarios and to hold capital against them. However, cyber insurance may need a slightly greater ENID component than other types of insurance," says Deloitte's Haynes.

Looking for new models

Alongside the difficulty in assessing the scale of cyber risks, the growth in the cyber insurance market, which according to Haynes is set to expand by 28% and be worth $14 billion by 2022, has attracted the attention of regulatory bodies.

EIOPA sees that rapid market growth and increasing amounts of data stored by insurers and the insured could require new approaches.

"The demand and commercialisation of cyber insurance policies in Europe is expected to grow substantially due to the increasing digitalisation of the European economy and the increasing number of cyber incidents.

"Collecting and managing large stores of personal information from consumers, claimants and beneficiaries also means that insurers are increasingly exposed to cyber attacks.

FAST FACTS

$7 MILLION
average cost of major data breach

90% OF ATTACKS
on companies are launched via email

2% OF UK plcs
carry cyber cover

8% OF DOMAINS
lost when US hosting company Dyn was attacked

For the latest thinking on cyber risk, visit
WWW.ACTUARIES.ORG.UK/CYBER-RISK-WP

Target in the US has suffered known losses and costs of over $150m dollars from an attack in 2013

The increasing amount of personal data available and the power of data analytics is likely to change insurance underwriting models in the future."

Such uncertainty makes pricing of policies difficult, particularly as insurance companies targeting smaller businesses currently find that their number and diversity make a manual approach to policy pricing unrealistic.

"One of the challenges in composing a cyber insurance policy is that the cyber profile of every business is unique; you need to manually write each one," says John Davison, chief information officer of insurer First Central Group.

"As greater numbers of smaller businesses demand cyber insurance, so you are going to need more standardisation."

Aside from the challenges presented by providing insurance at scale, there is also a huge range in the value of losses suffered by businesses. According to the UK government, the average cost of a cyber security breach is £600,000-£1.15m for large businesses and £65,000-£115,000 for SMEs, but these figures can change enormously according to the profile of the business.

A large corporation like Target in the US has suffered known losses and costs of over $150m dollars from an attack in 2013. Looking at the UK, the Ponemon Institute has calculated average per-breach losses to UK companies of $7.21m in 2016, up from $4.72m in 2013.

According to Katz, the rapidity of the changes in terms of the values that can be lost and growth in the number of attack vectors require a particular approach to risk assessment and price valuation:

"It's changing so quickly that it's hard to work out what the risk is, so the best way is to use scenario-modelling, because we can't put a distribution around it but we can build scenarios."

Haynes appreciates the challenge that the industry faces as a whole:

"Getting an industry-wide position is tricky. The evolving nature of the threat means that insurers are always playing catch-up and the lack of historical data is a concern, but insurers need to get a better understanding of this in order to manage the disruption of cyber threats.

"We need to go back to first principles: assessing exposure, accumulation, concentration and aggregation before putting this together against your risk appetite and pricing at a reasonable level."

One way of "being bolder" is to move away from the insurance model altogether, at least for those areas of a business that have a cyber risk profile. "We're looking at the disaggregation model, where you take the insured entity and break it down into insurable parts," says Davison.

"You'd still have traditional business cover, but the cyber element wouldn't be insured. Instead, we'd look to the assurance model, providing advisory and preventative services up front and remediation where this can't be done.

"We'll provide a framework to assess your security and specialist skills from a procedural perspective and then incident management such as PR agencies and clean-up teams in the event of a breach."

First Central sees such an assurance-based approach helping the insurer avoid the uncertainty that comes with the digital world, but it doesn't need to stop there. By helping businesses prevent cyber attacks before they happen, the industry would fit neatly into the front line role that the UK government would like to see it play as it tries to secure the nation against this new era of cyber threats.

A widening threat landscape

Cyber threats change more quickly than almost any other kind of activity. Businesses can be infiltrated by phishing emails or their own connected devices, they can be taken offline by botnets that span the globe, or could be the victim of a thoughtlessly lost USB drive.

"If you look at the threat landscape as a whole, email is the primary way for attackers to get into an organisation," explains Steven Malone, director of security products at Mimecast.

"Verizon's threat report states that 90% of attacks are via email and this may be because it's easy to use as an attack vector. Currently, the two headline attacks are ransomware, in which a computer or network is locked down until the victim pays a ransom for regaining access, and whaling, which is a socially engineered email attack.

"Ransomware isn't new but really took off last year. It's of particular concern because the attackers end up holding your data, including customer data. You end up with the choice of paying the ransom or losing your data, but, even if you pay, there are no guarantees that the attackers won't return.

"Whaling is an email attack that targets employees by sending emails that look like they come from high-level colleagues. They tend to be aimed at stealing data for resale, which is hugely damaging.

"The range of attacks is interesting and they tend to happen in isolation, but we are seeing a trend in which attackers combine different vectors to make the perfect storm."

Such blended attacks have already combined social engineering that compels an employee to act in a certain way with malicious links that download malware to the network.

Users are part of the answer

Growth in remote working and the internet of things have also created new ways for attackers to target businesses.

"One company enabled access to corporate email by web browsers but hadn't put in sufficient protection and an employee had their home machine held to ransom after clicking on a malicious link sent to their business email. As an event, this raises questions of responsibility, as the firm hadn't provided adequate security.

"Examples like this remind us that technological solutions aren't everything – we need users to be thinking about security. End-users aren't experts, but if they adopt the mentality of caution that's a big win already."

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The history of measuring our lifespans is fascinating, and ongoing discoveries can still surprise us

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Ashok Gupta speaks about why the pensions industry needs a radical rethink and new solutions

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Intergenerational fairness
Young people are facing increased pressure as wealth distribution tends increasingly towards the old

Age-old Question

Our understanding of the limits of life expectancy has come a long way since the 1600s, but history shows that even the most confident assertions can soon be left in the dust

WORDS: NORMA COHEN

When the Government Actuary's Department (GAD) released its review of proposals to raise the planned state pension age (SPA), the basis for the analysis contained an idea that not long ago might have been considered heretical – that human longevity, having risen sharply for the past century, will continue to do so far into the future.

This assumption, embedded in its projections of possible increases in SPA beyond what is currently planned, is that life expectancy will continue to rise by 1.2% per year. The assumption is not its own. Rather, it is based on the Office for National Statistics' 2014 principal population projections, using the average rate of improvement over the past century. At that rate, the report notes, the percentage of the British population reaching the current pension age of 65 will rise from 88% today to over 90% later this century.

Surely, without intending to do so, GAD has raised a question that scientists, theologians and scholars of many sorts have raised through the ages. That is: 'How long can people live, anyway?'

According to David Boyd Haycock, historian of medicine at Oxford University, the ultimate sourcebook on longevity in 17th century Britain was the Bible.

In a research paper, *The Facts of Life and Death: A Case of Exceptional Longevity*, Haycock cites an infamous case of a Thomas Parr of Winnington, Shropshire, who claimed, just before his death, to be aged 152 years.

Such attained ages had credibility after all, Haycock notes, because in *Genesis*, Adam lived until he was 930 years, while Methuselah lived to be 969. The question was not: 'How long humans can live?', but rather: 'Why do we not live now as long as the sages did?'

Such questions gradually became less frequent by the 17th century with the publication of the first actual statistical mortality tables, such as those generated by John Graunt's study of London bills of mortality and Edmond Halley's mortality tables of Breslau. The 18th-century French statistician, Abraham de Moivre, reckoned it was not physically possible for humans to attain an age beyond 86 years. By the 19th century, the British mathematician, Benjamin Gompertz, showed that for large, homogeneous populations, likely age at death was broadly predictable. Odds of death rose with age in a geometric pattern that allowed insurance companies to make reasonable guesses about how long individual lives lasted and charge premiums accordingly.

But what mathematicians' projections could not do was to make accurate forecasts that took account of scientific advances extending human life. By the late 19th century, it was becoming clear that human longevity was indeed rising, even if the science behind

The question was not: 'How long can we live', but rather: 'Why do we not live now as long as the sages did?'

Actuaries and the 'laws of mortality'

The actuarial profession has long sought to understand what were commonly described as the 'laws of mortality'. These were broadly the ages at which people – men, mostly – were likely to die. While human mortality was certainly not fixed, the expectation was that healthy, middle-class British men ought to conform to some pattern of longevity.

That broad pattern was confirmed by two industry-wide analyses of mortality statistics, one in 1847 and the next in 1870, which found little increase in male longevity. But two decades later, amid anecdotal and some statistical evidence of longer lives, the industry decided another mortality review was required.

The results, particularly among female annuitants, proved shocking; mortality by age 60 among women had fallen by over half since the previous industry-wide survey. For men at the same age, the decline in deaths was a far more modest 4.5%. But deaths among men aged 70 had fallen by a fifth. The decline in deaths coincided with the rising popularity of endowment insurance, allowing customers to withdraw their investments well before death. Faced with the loss of investments that provided steady income, the industry began to offer to pay an annual income until the death of the insured. In this way, insurers began to shift from taking mortality risk – the risk of customers dying too early – to taking longevity risk, the risk that customers would live too long.

A new table of mortality was published in 1903 as the OM table, showing longer lives at most ages. In January 1913, the Institute wrote to the insurance industry with unusual bluntness, noting that longevity reviews had been too few, too costly and too scarce. "The delays in getting out the final results have always been a source of regret to the actuarial profession," it wrote, as it proposed what it described as a "continuous mortality investigation".

Although work on that effort did not begin for a full decade, the actuarial profession had largely abandoned the idea that there was a fixed 'law of mortality' in favour of one that changes constantly.

Photography: Getty

For a 21st century perspective, visit
WWW.ACTUARIES.ORG.UK/CMI-MORTALITY-PROJECTIONS

Work at the Max Planck Institute for Demographic Research demonstrated the continued difficulty of understanding life expectancy

that development was poorly understood. At the International Conference of Actuaries in Berlin in 1906, during a discussion on the lives of annuitants, it was pointed out that pricing had to take account of rising longevity. Certainly, it was becoming obvious in Britain (see box, left).

By the start of the 21st century, the steady rise in human longevity was truly global in nature, and posed a challenge to paying pensions until date of death. That 'date of death' was being pushed back, and there was considerable debate about the pace and extent of future improvement. A 2002 paper, by James Oeppen of Cambridge University and James Vaupel of the Max Planck Institute for Demographic Research, showed that every single forecast of the limits of human life over the previous 160 years had been proved false, often within five years of the prediction taking place. Projections of mortality that assume a slowdown in the future rate of improvement, the demographers note, "give politicians a licence to postpone future adjustments to social security and medical care systems", they wrote in the journal *Science*.

In Britain, the actuarial profession realised by the late 1990s that the mortality table it had set only a few years earlier did not take account of the pace of improvement for men particularly. In 2002, it proposed three possible ways to adjust the table; one assumed improvements stopped in 2010, a second assumed these ended by 2020, and a third assumed improvement went on until 2040. By 2008, the Pensions Regulator warned that only the last of these could be deemed 'prudent'.

Edmond Halley's mortality tables in the 1700s were among the first wave of scientific research aimed at understanding the limits of life expectancy

Understanding the science behind the improvements in longevity helps to explain why there are good reasons to expect that life will extend further. Professor Thomas Kirkwood of the Institute for Ageing at Newcastle University, firmly rejects the idea that humans are somehow 'programmed' to die. There is no evidence of this in evolutionary biology. Instead, the ageing process is one that results from cell damage. Cells have the capacity to repair themselves, but successive damage – through illnesses, poor nutrition, accidents – eventually undermines their ability to self-repair. That is what provokes the process of ageing. But as large numbers of people enter old age with far less cellular damage than their parents and grandparents, they are better able to withstand shocks that felled previous generations.

And that is why, in making projections about where Britain's SPA should be set, the ONS's central projection for improvement in longevity is used. In its paper, the GAD notes that the further into the future a forecast must be made, the greater the uncertainty. In looking at how SPA might have to rise in the years 2028-2064, variations are indeed wide, with a pension age rising to 70 beginning anywhere from 2045 to 2054. Martin Clarke, who heads the GAD, notes that long-term projections of SPA are highly sensitive to recent rates of improvement in longevity. Both data from the ONS and from the insurance industry suggest that the pace of improvement in recent years is slowing.

The Actuary was asked to look at increased SPA, assuming individuals lived either 32% or 33.3% of their life in retirement – itself a startling assumption. In 1940, when state pensions were set, those living until age 65 would, on average, live another 12 years. That amounted to about 15% of their lives in retirement, and many would not even see age 65.

"What people have to understand is that these numbers should be regarded as an assumption, not a prediction," Clarke said. Even with the suggested rises in SPA, Britain still faces steep challenges in financing pensions. That is because the old-age dependency ratio (OADR) – the ratio of those of working age to those above it – will continue to rise, even if people retire later. "It doesn't even bring it down to where it was 20 years ago," he said.

The long view
Ashok Gupta

Future tense

Ashok Gupta has spent six months preparing a report for the PLSA Taskforce on the future of defined benefit pension schemes. Now, as the findings are published, he says the need for a radical rethink is even more urgent than ever

A

To see how the IFoA and independent reviewer John Cridland are working on this, visit **WWW.ACTUARIES.ORG.UK/SPA-REVIEW-LAUNCHED**

In March 2017, the Pensions and Lifetime Savings Association (PLSA) issued its latest report on the future of defined benefit (DB) pension schemes. The report was produced by the PLSA's DB Taskforce, and built on an interim report from 2016, which had outlined the ways in which the current system of managing defined benefit schemes was under increasing pressure.

It says that the disruptive forces surrounding DB schemes are unsustainable. If these pressures are not addressed, the system of funding defined benefit schemes as we know it will eventually collapse.

This latest report is headlined *The Case for Consolidation*, and lays out in detail a number of proposals aimed at solving the short-, medium- and long-term problems of the DB market. These proposals, the DB Taskforce has said, are well overdue.

The main recommendations centre on four staggered levels of consolidation, aimed at encouraging DB scheme sponsors to not only pool management and administration functions but also, in suitable cases, create superfunds. This would involve a one-off payment by a DB sponsor to exit their schemes, with assets and liabilities rolled into larger funds made up of a number of smaller schemes. There are more details available at the PLSA site (www.plsa.co.uk).

How these superfunds are to be created and managed is now open to debate, and the proposals are out for consultation. In March, the head of the DB Taskforce, Ashok Gupta, spoke to *Delta* about the report and what the proposals could mean for DB pensions in the coming decades.

Q What's the impetus behind the DB Taskforce's work? Why look at DB schemes now?

A We feel the system isn't fit for the future, that it is draining resources from employers and putting members' benefits at risk. As it stands, the choice facing schemes is to limp on for the next 20-30 years, or pursue an expensive buyout.

For those that do limp on, then members are exposed to a level of risk which they're not aware of and which makes it very difficult for them to make decisions such as 'Should I stay in my pension scheme or should I take advantage of pensions freedom?'. So, all of that means we need to find more efficient solutions than we currently have for the DB sector.

The pressures on the pension industry result from the issues we identified in the report, but also from developments like pensions freedom; the FCA review of asset management; the goings-on at Tata Steel and BHS; and the DWP Select Committee review. All of these contribute to an increasing recognition of the need for change; and the fact that the government has issued its green paper is a recognition of the need for something to change.

Q What about the broader economic picture here – how much does that influence plans to tackle DB schemes in 15 or 20 years' time? Are the problems with the current DB system causing economic damage now?

A Well the first thing to recognise is that DB pension schemes are weighted towards what I describe as 'old world industries': companies that have operated in sectors which today are in less favour than they used to be. Disruption means that a lot of those organisations are struggling to both support the pension scheme and invest in reinventing the businesses – you could look at Tata Steel and BHS as good examples of that.

Now, if those types of organisation were able to free themselves from their pension liability, then it potentially increases their capability to raise capital to invest in their businesses going forward.

In addition, our first report drew upon work done by an economist called Brian Bell, who looked from a micro-economic level at the extent to which there had been potential for wage suppression as a result of

The long view
Ashok Gupta

DB pension scheme costs. Although it's very difficult to prove causation, it was clear to us that, while employment costs had risen in line with GDP, the wage proportion of that had remained flat in the past decade.

Instead, increases in pensions costs and National Insurance had soaked up the increase, with DB pension costs being the dominant component. And that suggested to us that DB pension schemes were contributing to wage suppression.

So not only were there concerns about the level of capital contributions that industry was having to allocate to pension schemes (somewhere around £120bn to plug deficits over the past decade, £13bn in the first nine months of last year), but there were also concerns that pension scheme investment was increasingly being driven towards low risk investments, rather than the kind of investment in the economy that might generate a higher rate of return over the long term. A combination of all of that seemed to suggest a significant economic drag on the economy resulting from pension schemes.

Q The report lays out four staged layers of consolidation that run the gamut from simply sharing some basic admin to the complete hiving off and pooling of schemes to create superfunds. Why is consolidation the preferred remedy?

A A lot of the problems stem from the fragmentation of the industry, and consolidation needs to play a part in the solution. Then, if you look at the various types of consolidation that can actually make a difference, we came to the conclusion that while you can get cost efficiencies from merging functions, the only way that it's going to make a material reduction to member risk is if you go the whole hog and merge assets and liabilities, which is why we are proposing the creation of superfunds. And while we are fully behind the first three stages, I would describe them as necessary and helpful but not sufficient.

But until you put the concept out into the public domain, it's very difficult to understand how attractive it is to capital providers to set up a superfund, or indeed what the regulatory governance of a superfund would look like. Both of those factors are at the heart of affordability and attractiveness, so that's why we felt the need to put the proposal out to the public, and then use the debate over the next period to answer the questions that are sure to be raised.

> **We feel the current system isn't fit for the future, is draining employers' resources and putting schemes at risk**

Q There will inevitably be concerns over the severance of the link between employer and pensioner. How would you address those concerns? Are those risks real?

A Well, that depends to an extent on the covenant risk. From a trustee's view, clearly, if I've got a very strong employer with a very strong covenant, and that's something that I can wholly rely upon, then why would I want to get rid of that?

On the other hand, if I'm in a scheme that belongs to what we could call a 'legacy industry', where the covenant isn't so

Photography: Richard Gleed

“There is big opportunity, both in the advice and provider space for actuaries”

strong and that employer is suffering heavily from digitisation, globalisation, disruption and so on, then it might well be attractive for me to break the link and get some money into the scheme rather than maintain a reliance upon a covenant that I perceive to be at risk.

Q A big part of the rationale behind consolidation is to tackle cost; letting smaller employers in particular shed the admin and management burden they currently face would surely be more efficient and cheap. But will the cost savings promised by consolidation really benefit smaller schemes and employers?

A I think if you look at our report, we consider the barriers to take-up – for example, we show some of the reasons why it can be quite difficult to extract the benefits of models 1, 2 and 3 [that involve partial consolidation of management but not pooling all asset and liabilities]. We felt in models 1, 2 and 3, that currently, without legislative change, the barriers to take-up of those consolidation models were just too high to enable people to extract the benefits. That's not to say that some people wouldn't, but it made it difficult for the majority of people to extract those benefits. Essentially we need legislative change to make consolidation happen.

Q How likely is it that indexation would be applied to superfunds?

A I think the whole issue of indexation is part of the debate on affordability. Are superfunds affordable if they provide 100% of the benefits that have been promised today? Well, we know that will be true for some pension schemes, but for how many?

For others, would a change from RPI to CPI, for example, make a superfund affordable if it hadn't been otherwise? Well, possibly; and our work in the second stage should help identify that. But it's certainly clear that for some pension funds, for whom the current benefits are unaffordable, the earlier that's recognised, the easier it is to manage.

Q Given some of the proposals, which suggest fewer schemes and a concentration of expertise arising from that, where does this disruption leave actuaries?

A Any form of disruption creates massive opportunity and threat – it depends on how you respond to it. But what this creates is a massive demand for advice – and massive commercial opportunity to set up superfunds and be part of that setting up process.

So there is big opportunity both in the advice and in the provider space for those actuaries who wish to take advantage of that opportunity. But, of course, for actuaries who just want to keep turning the handle, there is a threat.

DB IFoA view

The government's Green Paper was launched earlier in 2017, and Pensions Minister Richard Harrington said he was keen to consider the option of a superfund for small schemes "and how they might come together to provide better value to members and, crucially, a greater level of security".

The Green Paper is causing lively debate on some big challenges facing DB pensions in the UK. On the consolidation of small DB schemes, it's fair to say there are a number of alternative views being put forward in addition to those of the PLSA Taskforce.

In respect of consolidation, there are potential savings in scheme running costs that could be made from greater scale but there will also be substantial costs to consolidate so many schemes. Without knowing what simplification will be allowed in legislation, it's not possible to determine how these costs will balance out.

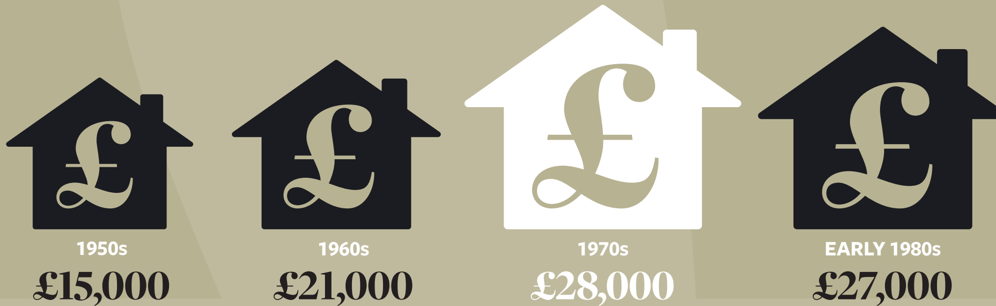
The PLSA solution advocates a one-off payment by sponsors to exit their DB schemes and transfer assets and liabilities to a larger fund to which they have no ongoing responsibility. Any system that allows employers to do so for less than the buy-out cost of securing benefits with an insurance company cost would pass on future risks to members and/or the PPF. Crucially, therefore, any solutions taken forward will need to be judged against how well they protect members' benefits.

For the IFoA's series of bulletins on this subject, visit
WWW.ACTUARIES.ORG.UK/INTERGENERATIONAL-FAIRNESS-SERIES +

Reasons it helps to have rich parents

The issue of intergenerational fairness is rising up the political agenda. From the housing market and education to social care and pension provision, the burden placed on the coming generations is increasingly viewed as unsustainable. To understand the scale and scope of this trend, the Institute For Fiscal Studies recently issued a guide, *Seven Reasons It Helps To Have Rich Parents*. We present the headline figures.

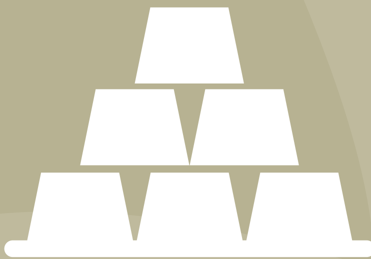
Household income* at the age of 28, by decade of birth



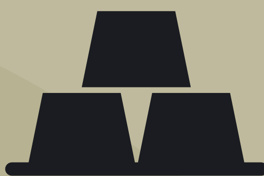
*Median net household 'equivalised' income before housing costs (2014-15 prices)

Wealth of people born in 1970s and 1980s

Personal wealth by the age of 31, including property and pensions



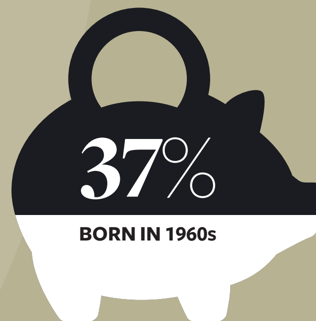
£53,480
BORN IN 1970s

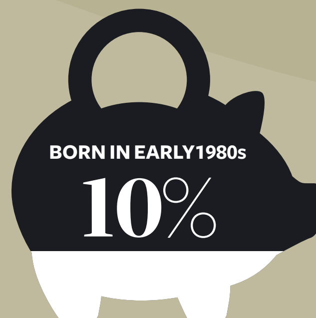


£27,350
BORN IN 1980s

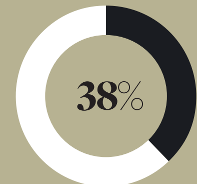
Employees in the private sector with a defined benefit pension

Percentage in a defined benefit scheme at the age of 32

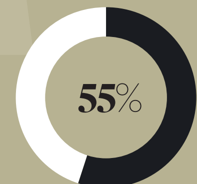




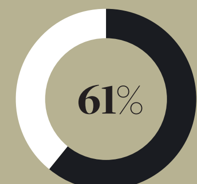
People who have received or expect to receive an inheritance



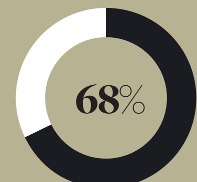
BORN IN 1930s



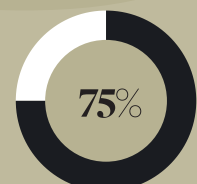
BORN IN 1940s



BORN IN 1950s



BORN IN 1960s



BORN IN 1970s

Institute and Faculty of Actuaries

IFoA Intergenerational Fairness Bulletin:

Retirement Edition

The second of our Intergenerational Fairness series focuses on retirement.

To find out more please visit:

www.actuaries.org.uk/intergenerational-fairness-series

Ageing population

Informing the debate

www.actuaries.org.uk/news-insights

A Resounding Success at the IFoA Asia Conference in Hong Kong

The third IFoA Asia Conference was a huge success and delivered two days of high profile plenaries, cross practice workshops and invaluable networking opportunities which brought together over 200 actuaries to engage with top infl uencers and decision makers in the insurance industry. Programme topics ranged from Big Data to Climate Change solutions to the future of the actuarial profession in Asia. We would like to thank all our participants and supporters who made the conference such a success and look forward to seeing you in Bangkok in 2018.

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Save the date

The IFoA Asia Conference 2018

10-11 May, Bangkok

If you are interested in speaking, sponsoring or attending the conference, please contact Amanda Davey, amanda.davey@actuaries.org.uk for all enquiries.

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