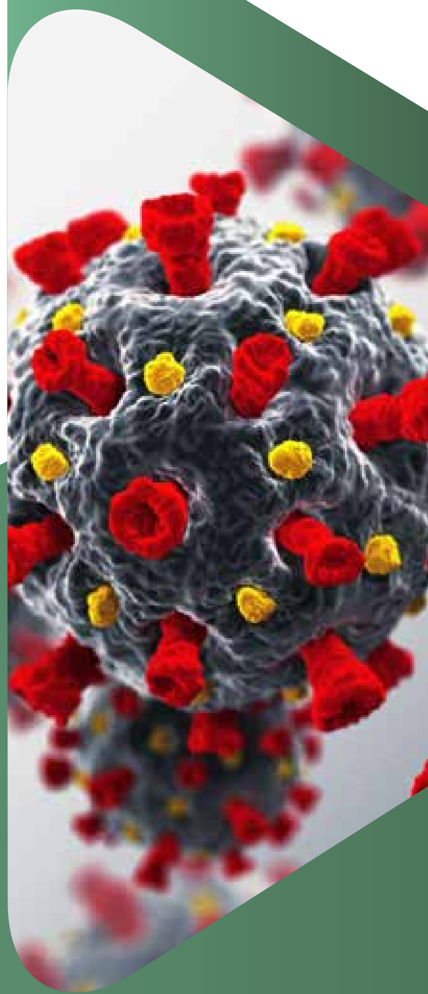
JFAR RISK PERSPECTIVE

2019/2020



JFAR

JOINT FORUM ON ACTUARIAL REGULATION

CONTENTS

ABOUT JFAR

The Joint Forum on Actuarial Regulation

The Joint Forum on Actuarial Regulation (JFAR) was established in 2013 and comprises the Financial Reporting Council, the Institute and Faculty of Actuaries, the Financial Conduct Authority, the Pensions Regulator and the Prudential Regulation Authority. The JFAR is a unique collaboration between regulators to co-ordinate, within the context of its members' objectives, the identification and analysis of public interest risks to which actuarial work is relevant.

2. JFAR RISK PERSPECTIVE

The JFAR sets out its collective view on current risks to high quality actuarial work in its Risk Perspective. The Risk Perspective is intended to raise awareness of the risks to, and the importance of, high quality actuarial work in mitigating the risks to the public interest. This publication will be of most interest to actuaries and to those who are direct users of actuarial work. It focuses on risk to the public interest from areas of work where actuarial involvement is significant. It does not focus on the professional risk to the actuary nor is it limited to areas where the actuary is the sole actor.

In the **Risk Perspective: 2017 Update** the JFAR identified nine "hotspots" where there is a perceived increase in risk to the public interest where actuarial work is central. For each hotspot the risk was described in generic terms and the current influences that cause it to be identified as a hotspot were discussed.

For the **2018 Update** a light touch approach was taken; it was confirmed that these nine hotspots remained relevant and Risk Perspective: 2018 Update considered developments to more accurately reflect the conditions in 2018.

In today's fast changing world where people are living longer, environmental concerns are rising and technology is advancing at an unprecedented pace, it is vital that actuaries focus on the right risks to perform their work to the highest quality

For the **2019/20 Update** we have undertaken a full analysis using the **ARIA** methodology and have reviewed extensive external publications[1].

The result of the analysis is that we have identified 8 hotspots instead of 9. Rather than indicating a change in focus, this has resulted from incremental change . The hotspots were derived before the eruption of the Covid-19 pandemic and this text was constructed by late March/early April before the long-term implications of the current pandemic are clear. We considered the matter, but rather than introduce a further hotspot specific to pandemics we took the view that the actuarial risk associated with pandemics is a subset of "Systemic Risk". In other words, it is the global negative alignment to economic systems and to demographics that have most impact on actuarial work as well as the uncertainty surrounding how the pandemic experience should be reflected in future assumptions. It is still too early to be definitive on what actuarial learnings there may be from the current pandemic.

In common with other commentators we believe that climate related risk may be the defining risk of our times. Actuaries have

1. A list of these publications may be found here.

2. Terrorism & Cyber Crime, Regulatory Uncertainty and Market Performance have been subsumed into Geopolitical, Legislative and Regulatory Risk. Pension Scheme Management and Financial security have been merged into Unfair Outcomes for Individuals. Mortality has been refocused as Ageing Population and Affordability. Technological Change has been broadened to Technological Change & Competence in New Areas.

an important role to play assisting others to mitigate the worst effects of climate change. The long-term catastrophic risk to the world is the anticipated physical damage that will emerge in the future unless efforts are intensified to reach carbon neutrality very quickly. However, even now, the costs and risks to companies of transitioning to a low carbon environment are impacting company results and are becoming subject to disclosure requirements. This is considered within the "Climate Related Risk" page as is the response of the global actuarial profession.

Given the current pandemic we have placed "Systemic Risk" as the second most significant risk. While in the long-term other risks may be more significant there can be no doubt that in the short term pandemics are front of mind. Within "Systemic Risk" we consider some potential impacts of the current pandemic on actuarial work.

The pandemic has both health and economic impact. In both of these aspects the challenge for the actuary is to:

- understand how the current year's experience should be reflected in assumptions about the future
- explain clearly to users of actuarial work what they have assumed and why.

The IFoA has recently published a Risk Alert[3] to prompt actuaries to focus on appropriate issues that may arise from the current pandemic. At an appropriate time in the near future JFAR will consider impact of Covid-19 on the work of the actuary subsequent to the pandemic and decide on an appropriate action.

In the context of actuarial work, the third most significant risk is probably Ageing Population and Affordability. Our write up focuses largely on the longevity/mortality aspects of this issue. However, the old age morbidity costs are expected to become increasingly problematical. This is addressed briefly, and we believe this may be an increasing issue in future years unless changes are made to lifestyle and healthcare availability.

Unfair outcomes for individuals completes the fourth of the "big four" risks. Currently there are many factors which make it difficult for the actuary to ensure that all classes of policyholder or plan member are treated fairly. This is the subject of intensive scrutiny by the FCA and is considered more fully in the hotspot.

It should be noted that the JFAR is not necessarily saying there is current evidence of the risks materialising or of poor quality or insufficient actuarial work. It does not intend to propose additional regulation to mitigate all the identified risks. Any co-ordinated action will be proportionate and selected from a wide 'toolkit'

3. IFoA Risk Alert Covid-19

3. ACTUARIAL RISK IDENTIFICATION ARCHITECTURE (ARIA)

The Actuarial Risk Identification Architecture (ARIA) is used to identify the hotspots in a holistic and dynamic fashion. Hotspots relate to current or emerging risks which, due to their changing nature or level of uncertainty, pose increased risk to the public interest.

The ARIA identifies three sources of risk, each with sub-categories; macro environmental drivers, the inherent risk in actuarial work and market characteristics. It also recognises that the ongoing activities of the JFAR members influence the risk to the public interest of actuarial work. There are dynamic interactions between these sources of risk and influences on risk which may have compounding, offsetting or domino effects.

Macro Environmental Drivers

The blue cog represents the risks to the public interest from actuarial work that are influenced by external drivers: social, technological, economic, environmental, political, legal/ regulatory, ethical, international.

Actuarial Work

There is inherent risk in actuarial work due to its complexity and this is represented in the teal cog. The nature of the risk will be influenced by the practice area, activity and also by the task in hand. By considering both practice area and activity the JFAR aims to reduce the risk of silo thinking.

Market Characteristics

Actuarial risk will be influenced by the structure and culture of the markets and companies in which actuaries work. The navy cog in the centre of the ARIA represents the risks to the public interest which arise from these. The market characteristics include professionalism, culture, group think, embedded processes and incentives, firm/pension fund strategy and business models

JFAR Regulators

The ongoing activities of the JFAR members influence the risk to the public interest of actuarial work. The orange cog represents the ways in which the JFAR regulators reduce the risk to the public interest. Each JFAR regulator has a different focus to their supervision and a different approach to identifying, researching and mitigating risks.

Interactions

There are dynamic interactions between these sources of risk and influences on risk which may have compounding, offsetting or domino effects. These are represented by the grey lines.

4. HOTSPOTS

4. HOTSPOTS

4.1 HOTSPOT: CLIMATE-RELATED RISK

HOTSPOT DESCRIPTION

The risk that actuaries may not take into account appropriately, or communicate clearly, the impact of climate-related risks on decisions of users of actuarial advice.

CURRENT INFLUENCES

Climate-related issues represent a material financial risk to future economic and market conditions. The direct, and indirect consequences, of climate and environmental changes are also likely to impact claims experience and modelling assumptions.

There is increasing political and societal pressure on long-term investors to respond to climate change. This pressure also applies to their advisers. Increasingly this means that users of actuarial work will want to be assured that the impact of their exposures from physical, transition and liability risks related to climate change are fully assessed and incorporated into actuarial work. Actuaries need to help users of their work to understand the degree to which these risks have been incorporated in their assessment, and the uncertainties around their inclusion. Actuaries may also need to help users to understand any residual risks that remain.

Physical risk is associated with the damage caused by changes to the world's weather patterns and systems. Global warming represents a significant (and perhaps existential) threat in the long term. Even in the short term, actuaries need to consider risks of changes to frequency and intensity of natural catastrophes leading to severe losses at the extreme of what might be anticipated. This is particularly an issue for pricing non-life insurance.

Transition risk is the risk to companies arising from the need to transition their business model to one that can be sustained in a low carbon environment. This is a risk that is present in the short term and may have differential effects on different companies and sectors. Actuaries need to be aware of the potential impact of transition risk when advising on which companies to include in equity investment and on the assumptions to be made concerning portfolio performance.

In respect of both of these risks there is a risk of climate-related litigation liability with potential implications for the pricing of D&O and Business Interruption insurances.

Governments, users of actuarial work and society more broadly are increasing their efforts to mitigate climate risks and their impact; as well as developing pathways to, and the implications of, a transition to net zero.

KEY DEVELOPMENTS DURING 2019

Global Actuarial Involvement

Whilst actuaries are not climatologists, they are skilled at:

- Scenario modelling and projections
- Understanding the assumptions that underpin the projections and
- Refining the model methodologies and assumptions to produce alternative end states.

These skills mean that actuaries have a valuable part to play in the efforts to manage behaviours to mitigate the worst effects of climate change.

Climate change is an issue that transcends borders and the International Actuarial Association (IAA) has been approached by supranational bodies (OECD and others) to help develop understanding of how the base risk may evolve.

The IAA is initially considering[4]

- The role of the actuary and actuarial science in relation to climate-related financial risk
- International developments in disclosure obligations
- Selection and analysis of scenarios
- The application of scenarios including
    - Identifying gaps in the data
    - Assessing the methodologies (to be) used

Between 2021 and 2024 the IAA is intending to consider

- A paper on the application of climate-related risk scenarios to asset portfolios and consistency with liabilities
- Advice to supranational organisations
- Effects and costs of transition to a zero-carbon environment
- A paper on the link between climate-related risk scenarios and social security.

The Resource and Environment Working Group of the IAA produced a discussion paper in October 2019[5].

Several actuarial indices have already been developed to allow actuaries, public policy makers and others to assess the current state and effects of climate change[6] and these represent initial educational tools. The IAA initiative is intended to lead to further actuarial tools being developed to assist in combating the impact of climate change.

UK Actions

The following paragraphs consider briefly actions taken by the UK government and JFAR regulators.

UK Declares Climate Emergency and Commits to Net Zero by 2050

On 1 May 2019, the UK Government declared a Climate Emergency. On 27 June 2019, it passed legalisation to require the UK to bring all greenhouse gas emissions to net zero by 2050. This followed the recommendations of Committee on Climate Change within its May 2019 report "Net Zero – The UK's contribution to stopping global warming".

UK Green Finance Strategy[7]

The UK government launched its Green Finance Strategy in July 2019. In the strategy it outlined its expectation that all listed companies and large asset owners disclose in line with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations by 2022. The publication presented an overview of the initiatives undertaken recently by the JFAR members to mitigate climate-related risk. The document also emphasised the importance of TFCD reporting.

Joint Statement on climate change

In July 2019, the PRA, FCA, FRC and TPR issued a Joint Statement[8] welcoming the publication of the Government's Green Finance Strategy. The statement noted that climate change is

4. See the IAA website for further detail
5. Climate Change, Insurance and Vulnerable Populations
6. For example, see the Actuaries Climate Index for North America
7. Green Finance Strategy Report
8. The joint statement is on the websites of the regulators, for example here

one of the defining issues of our time and that it is a core financial risk impacting broadly across business, the economy and markets. It encouraged companies and pension schemes to take action now.

Climate Financial Risk Forum (CFRF)

On March 2019, the PRA and FCA hosted the first meeting of the CFRF. The objective of the CFRF is to build capacity and share best practice across financial regulators and industry to advance financial sector responses to the financial risks from climate change. It brings together senior representatives from across the financial sector, including banks, insurers, and asset managers.

A second meeting took place in July 2019[9].

The CFRF has set up 4 technical working groups on disclosure, scenario analysis, risk management and innovation.

Prudential Regulation Authority

The Prudential Regulation Authority (PRA) published policy statement 11/19 (PS 11/19)[10] on enhancing banks' and insurers' approaches to managing the financial risks from climate change in April 2019. PS 11/19 outlines the PRA's expectations concerning how firms:

- Embed the considerations of the financial risks from climate change in their governance arrangements;
- Incorporate the financial risks from climate change into existing risk management practice;
- Use (long-term) scenario analysis to inform strategy setting, and risk identification and assessment; and
- Develop an approach to disclosure on the financial risks from climate change.

PS 11/19 demonstrates the PRA's recognition that climate change is likely to have a significant impact upon the UK's economic and financial stability.

In May 2019 the PRA published a framework for assessing the financial impact of physical climate change to help general insurers pricing and reserving[11]. The framework was created by a cross industry working group. Modelling for the financial impact of climate change is still relatively early in its development. As such, the development of the framework is an example of how industry-wide engagement can have a positive effect to help recognition of emerging best practice and is to be encouraged.

Financial Conduct Authority

The Financial Conduct Authority (FCA) published Feedback Statement FS 19/6[12] on Climate change and green finance in October 2019 summarising responses to their earlier Discussion Paper 18/8. They comment that "climate change is having a significant and wide-ranging impact on the UK economy and on financial services markets."

The Feedback Statement sets out the actions that the FCA is taking to "enable firms to manage the risks in moving to a low carbon economy".

In the paper, the FCA says that it will focus on three desired outcomes, as follows:

- "Issuers provide markets with readily available, reliable and consistent information on their exposure to material climate change risks and opportunities.
- Regulated financial services firms integrate consideration of material climate change risks and opportunities into their business, risk and investment decisions.
- Consumers have access to green finance products and services, which meet their needs and preferences, and receive appropriate information and advice to support their investment decisions."

The Pensions Regulator

From October 2019, pension trustees are required to state their policies on financially material considerations, including climate change, as part of a scheme's Statement of

9. First and Second meetings of the PRA and FCA's joint Climate Financial Risk Forum

10. PS11/19

11. Bank of England website

12. The Feedback Statement summarises the responses the FCA received from stakeholders to their Discussion Paper (18/8) on Climate Change and Green Finance that it published in October 2018, and sets out the FCA's actions and next steps.

Investment Principles (SIPs). Trustees must consider climate risk when setting out their investment strategy and demonstrate how they are taking this into account over the lifespan of investments.

In June 2019, The Pensions Regulator (TPR) published updated Defined Contribution (DC) Investment Guidance[13] to provide clarity on the new requirements.

Additionally, TPR has set up a pension industry group to produce guidance on how pension trustees can address climate-related financial risks as part of their governance processes[14].

The Department for Work and Pensions (DWP) and the Department for Business, Energy and Industrial Strategy (BEIS) are part of the group alongside trustees, consultants, investment managers, civil society groups and representative bodies – including the Institute and Faculty of Actuaries[15].

The group consulted publicly on draft guidance in March 2020[16].

Financial Reporting Council

In October 2019 the FRC Lab published a report[17]

- assessing the extent to which current reporting on climate-related risk meets investor needs and
- intended to encourage companies to report in line with the TCFD recommendations.
- Further work continues to refine the learnings from the initial study and to create more specific recommendations.

Institute and Faculty of Actuaries

The Climate Change Working Party produced a paper titled "Climate Change for Actuaries: an introduction"[18]. This report provides a useful reference for actuaries considering the impact of climate change. The Resource and Environment Board of the IFoA has published a series of "Practical Guides" to climate change for life actuaries, GI actuaries, actuaries advising DC pension schemes and actuaries advising DB pension schemes[19]. A further guide for investment actuaries is currently in preparation.

There is a cross regulatory task force chaired by HMT and BEIS to implement the government's vision for implementation of TCFD reporting by 2022. Both the IFoA and the FRC sit on this task force.

EU ACTIONS

EU Strategy on Sustainable Finance

The EU strategy on Sustainable Finance is supported by three key legislative proposals[20] [21].

The EU taxonomy project's objective is to encourage capital flows to sustainable activities by creating a common language and understanding of sustainable investments and avoid "greenwashing". The initial focus is on climate-related investments. The EU Technical Expert Group (TEG) reported on the EU taxonomy project on 18 June 2019[22].

The objective of the EU Benchmark Regulation is to create a new category of benchmarks, comprising low-carbon and positive-carbon impact benchmarks, to help investors better understand the relative carbon impact of their investments. The interim report on the benchmarks was published on 18 June 2019 and recommended a list of minimum standards for the methodology of both the EU climate transition and the Paris-aligned benchmarks.

The objective of the EU Disclosures Regulation is to set out what are the duties of financial market participants with regards to integrating ESG and disclosing information on this. On 18 June 2019 the European Commission published new guidelines on corporate climate-related information reporting.

Various tools have been developed to measure the greenness of the investment portfolio and to manage transition[23].

EU Declares Climate Emergency and urges all EU countries to commit to Net Zero by 2050[24]

On 28 November 2019, the European parliament approved a resolution declaring a "climate and environmental emergency" in Europe and globally in advance of the UN COP25. The parliament has also urged the EU to commit to net-zero greenhouse gas emissions by 2050 at the UN Conference.

13. DC guidance on investment decisions and your SIP
14. Sackers announcement
15. The Pensions Climate Risk Industry Group
16. The consultation is open till 2 July 2020
17. Climate-related Corporate Reporting: Where to next?
18. Climate Change for Actuaries: An Introduction
19. IFoA website
20. EU sustainable finance fact sheet
21. Press Release
22. A final report was issued in March 2020
23. E.g. PACTA scenario tool, ORTEC Climate and ESG tools, Aon Climate Change Challenges, Climate Wise Transition Risk Framework, Mercer Investing in a time of climate change: the sequel
24. The European Parliament declares climate emergency

Further Reading

Climate value at risk of global financial assets' Dietz et al, 2016, LSE Research Online

Global Climate Risk Index 2019, Eckstein et al, 2019, Germanwatch

2019 Report: Lancet Countdown on health and Climate Change

The 2021 biennial exploratory scenario on the financial risks from climate change, BoE

4.2 HOTSPOT: SYSTEMIC RISK

Hotspot Description

The risk that actuaries may not allow appropriately for the increasing global interconnectedness of risk or may be inappropriately guided by groupthink.

Current Influences

As global interconnectedness increases so systemic risk increases and past correlations between different economies and countries become uncertain guides to the future.

The Internet of Things also makes wider groups of people exposed to a cyber failure or attack. Groupthink remains an issue particularly as technology changes the world so quickly.

Climate change may lead to nature adaptions that are unpredictable and therefore make pricing of insurance products more uncertain.

The current pandemic introduces uncertainties into the assumptions to be used both for mortality and health future experience as well as the future economic experience to be assumed in the UK once the pandemic has subsided.

Key Developments

Systemic risk poses a threat to the quality of actuarial work since it could lead to future events that lie outside the bounds of the scenarios normally used in actuarial models. This may then lead to the users of actuarial work taking inappropriate decisions and actions which, ultimately, may not be in the public interest.

Insurance and finance pricing and reserving relies on units in the system (either people or things) behaving independently of each other. In this way risks can be reduced by collective sharing. Systemic failure is most likely to occur when this independence breaks down.

There are three main sources of such breakdown.

- An unexpected shock which creates aligned behaviours
- Groupthink leading market participants to align their behaviours
- An increasing interconnectedness (e.g. the Internet of Things)

Unexpected Shocks

External shocks can be moderate, but reactions to them can amplify the effect so that a systemic crisis is created[25]. This was the situation with the 2008 financial crisis. The danger of this source of systemic risk is greatest when people are least attuned to it.

It may be exacerbated by regulatory policies which encourage specific responses to stimuli

25. See the LSE Systemic Risk Centre which splits systemic risk into four phases – Endogenous risk, amplification mechanisms, policy responses and identifying risk.

(for example requirements for prudence and capital adequacy may lead market participants towards behaviours that worsen – rather than alleviate – the crisis)[26].

Groupthink

Groupthink can lead to systemic risk in various ways[27]. A model may be commonly used and yet not have been adapted to changing circumstances. Alternatively entering new fields may create the need to develop new models and the first entrants may create the models and tools which are then routinely adopted by successive entrants.

Groupthink can also arise in an existing field where new practices are introduced. The risk is that new practices may be well founded in general but may be inappropriate for some current (or future) market players.

Interconnectedness

When the relationship between people or things changes so that they are no longer independent (or less independent) the statistics underlying the model predictions may no longer hold true. For example, the failure of a piece of coding may have local repercussions but if that software controls billions of electronic items around the world the cost of the failure may be catastrophic. Another example would be the rapid spread of a pandemic as a result of extensive international travel before the danger is recognised.

The thread that unites the three sources is that behaviours become "magnetised" to run in a common specific direction thus invalidating the concept of reducing risk by collectivisation. The LSE Systemic Risk Centre refers to this as an amplification mechanism.

Epidemic / Pandemic (Coronavirus in 2020)

A pandemic is an epidemic occurring on a scale which crosses international boundaries, usually affecting a large number of people[28]. These occur infrequently but have significant impact.

During the 1918 Spanish Flu outbreaks it is estimated that over 50 million people died[29]. In the US, life expectancy fell by approximately 12 years between 1917 and 1918[30]. The vast bulk of that fall can be attributed to Spanish Flu.

The recent outbreak of Covid-19 coronavirus highlights that the world remains exposed to the risk of further pandemics. At the time of writing it is unclear how severe Covid-19 will be in health terms although the financial impact on the stock markets is already highly significant[31]. In the UK, as the pandemic took hold, it was feared that the National Health Service would be challenged to be able to provide sufficient support to all those anticipated to be affected by the virus. Drastic action was required to prevent this happening.

A severe pandemic has the potential to cause a rebasing of all assumptions. For example, if face to face meetings are substantially replaced by web-based communication during the pandemic this may have the effect of altering travel patterns permanently. It may also act as a boost to technology companies.

The impacts on actuarial work are likely to include:

- Claims development patterns will change as claims are taking longer to settle due to the absences amongst claims handlers.
- The changes in the claims development triangles are likely to feed into the reserve risk element of capital models unless care it taken to allow for this.
- Life expectancy tables will be affected by the increase in mortality at the older age ranges. Actuaries will then need to use judgement to determine how much weight to give this.
- Pricing in the short-term may be affected as actuaries get to grips with the change in the risk landscape.
- Given the systemic nature of economic interconnectedness, there may be a need

26. World Economic Forum Agenda August 2015 "How can we control systemic risk"

27. See for example 2013 article by Andy Hindmoor on LSE British Policy and Politics website and the FT article here: https://www.ft.com/content/59421568-344e-11e0-993f-00144feabdc0

28. Dictionary of Epidemiology. Oxford University Press

29. American journal of Epidemiology

30. University of Berkeley

31. Economist 27 February 2020 or Financial Times 3 March 2020

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to reassess how the employer covenant is considered in the support of DB pensions.

- Yield reversion will need to be thought through for future valuations of DB pensions.

Outside of the mainstream actuarial focus, various observations may be made arising from the Covid-19 pandemic.

- The impact on the global economy would have been felt even if Covid-19 had remained a national epidemic in China due to the potential impact on global supply chains due to disruption to supply from China.
- China is a driver of growth as well as a component of the global supply chain.
- The immediate short-term impact of a pandemic needs to be considered separately from its long-term impact. In the short-term health services may be stretched beyond their ability to cope, human tragedy will be to the fore and business confidence may collapse. In the longer term (after the health effects have passed) there is likely to remain significant economic damage which will take much longer to repair.
- The effect of a pandemic may change behaviours permanently. For example, there may be residual impacts on human mortality and/or morbidity (either positive or negative) or business travellers may switch to more video conference meetings thus reducing business travel in the long term.

Covid-19 has demonstrated that the modern world remains intimately interconnected and therefore fragile to systemic shocks. It is important not to underestimate the degree of interconnectedness.

Prudential Regulation Authority Survey

The Prudential Regulation Authority has continued to conduct their six-monthly Systemic Risk Survey during 2019[32]. The aim of the survey is to track market participants views of risk to, and their confidence in the stability of, the UK financial system. Participants include UK banks, building societies, large foreign banks, asset managers, hedge funds, insurers, pensions funds, large non-financial companies and central counterparties.

The survey results seem to indicate that participants think that the probability of systemic risk crystallising in the UK over the next 3 years has decreased. This is the opposite message to that arising from other anecdotal evidence on a global basis which suggests the situation may be deteriorating[33]. However, these differing views illustrate how difficult it is to identify and quantify systemic risk but may indicate a warning that systemic risk is a potential serious concern.

The global debt burden is significantly higher than before the global financial crisis of 2008 at 225% of GDP. In countries with systemically significant financial sectors the debt burden is even higher at 250% of GDP[34]. This could suggest that a further financial crisis might be looming.

Internet of Things

The number of devices connected to the internet has grown dramatically in a few years so that approximately 26 billion items[35] are anticipated to be connected to the internet by 2020. This creates opportunities for data collection on a massive scale and allows for previously impossible efficiencies. However, this global connectedness also carries risks, both with regard to privacy issues and also with regard to a rogue piece of coding causing disruption on a global scale.

When pricing or reserving, actuaries need to consider how correlations may change in the future as well as understand how they have changed in the past. Interconnectedness may mean that previously collected statistics are inadequate for predicting future costs. This may be a particularly serious issue for reinsurers.

32. https://www.bankofengland.co.uk/systemic-risk-survey/2019/2019-h1

33. For example see the United Nations Office for Disaster Risk Reduction 2019 Global assessment Report

34. IMF Blog 2019

35. Forbes, 2019

Interconnectedness and groupthink

There is a risk of group think and systemic risk where actuaries collaborate to build new models to take account of real-world developments, such as climate-related events or the Internet of Things. This may result in the widespread use of models which may be flawed. Actuaries could mitigate this risk by collaborating with professionals from other disciplines, encouraging robust independent challenge and ongoing reviews.

In addition to global interconnectedness, when one factor changes this can have consequences which are not immediately obvious. An example of this is that disease may spread more quickly as the temperature increases[36]. Further as water levels rise this could result in populations becoming more concentrated in towns which themselves could be at risk of flooding[37], which could also contribute to diseases spreading more quickly. In addition, the increased population concentration may lead to the motor claims experience deteriorating. On the other hand, autonomous vehicles may act to lower this risk[38].

A further example is the trend to outsource the management of IT to external parties using the cloud[39]. Failures or corruption of the IT environment (or of shared processes) may create a systemic failure. Actuaries modelling using cloud computing may need to consider the risks of failure or corruption in their IT environment.

These examples serve to illustrate how statistics and models previously derived may require critical scrutiny. When actuaries receive inputs to models from expert external sources, they should be aware that these inputs themselves could be subject to groupthink.

They should seek to satisfy themselves that these inputs have been

- subject to a robust challenge process,
- involving people with diverse backgrounds where appropriate, and that they remain appropriate to project the future.

Regulatory Impact

As stated earlier, regulatory requirements may act to worsen rather than ease systemic risk. This occurs when regulators act at the micro prudential level focussing solely on a subset of the whole system and where unintended consequences are a danger. JFAR brings together a range of regulators with responsibility for the work of actuaries and this should have the effect of reducing the regulatory input to systemic risk. During 2019 there has also been a growing trend for regulators to work jointly[40] and this also acts to reduce the risk of systemic unintended consequences.

Since 2013, the International Association of Insurance Supervisors' (IAIS) approach to assessing and mitigating systemic risk in the insurance sector has evolved, recognising that systemic risk may arise not only from the distress or disorderly failure of individual insurers but also from the collective exposures of insurers at a sector-wide level.

In November 2019 the IAIS adopted the Holistic Framework[41] for the assessment and mitigation of systemic risk in the insurance sector, for implementation from the beginning of 2020. This framework recognises that systemic risk can arise both from sector-wide trends with regard to specific activities and exposures, as well as from a concentration of these activities and exposures in individual insurers[42].

The Holistic Framework consists of

- an enhanced set of supervisory policy measures and powers of intervention;
- an annual IAIS global monitoring exercise;
- collective discussion on the outcomes and appropriate supervisory responses, and
- a robust implementation assessment.

36. Stanford Earth, 2019
37. C40 "Staying Afloat: The Urban Response to Sea Level rise", 2019
38. NHTSA website
39. Systemic consequences of outsourcing to the cloud, Danielsson and Macrae, 2019
40. For example, the joint strategy of the FCA and the TPR
41. IAIS Website: Holistic Framework
42. Press Release

The policy measures include, but are not limited to:

- ongoing supervisory requirements applied to insurers, targeted at key potential systemic exposures: liquidity risk, macroeconomic exposure and counterparty exposure;
- macroprudential supervision, aimed at identifying vulnerabilities and addressing the build-up of systemic risk at the individual insurer and sector-wide levels;
- crisis management and planning, which includes requirements on recovery and resolution planning, as well as the establishment of crisis management groups.

In terms of powers of intervention, supervisors are required to have a sufficiently broad set of preventative and corrective measures in place to enable a prompt and appropriate response when a potential systemic risk is detected. It is important that actuaries familiarise themselves with the Holistic Framework to assist them in incorporating systemic risk appropriately into their work.

Further Reading

https://www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-march-2019-briefing-no-124/

https://safeatlast.co/blog/iot-statistics/#gref

https://www.fca.org.uk/news/speeches/importance-diversity - groupthink - "Diversity and inclusion help to mitigate the risk of groupthink, and I believe they provide an opportunity for competitive advantage to organisations by helping them to make better decisions and to think in the long-term

https://www.fca.org.uk/publication/occasional-papers/occasional-paper-18.pdf - Paper on market based finance, touching on potential risks surrounding global interconnectedness (Large file size)

https://www.fca.org.uk/news/speeches/going-green-fca-developing-approach – FCA's role and aim for firms regarding climate change

https://www.fca.org.uk/publication/discussion/dp18-08.pdf - climate change discussion paper

4.3 HOTSPOT: AGEING POPULATION AND AFFORDABILITY

Hotspot Description

The risk of failure to allow appropriately for changing costs of mortality, morbidity and family support systems due to future experience deviating from projections.

Current Influences

There is uncertainty concerning the long-term mortality trend. Also, as people live longer, they are not necessarily in good health and therefore population ageing leads to increased healthcare costs. Modelling future costs based on projected past statistics leads to uncertain results.

Changes in structures of families and in the nature of work may also lead to different future healthcare and social security costs in ways that are difficult to predict.

Technological advances and pandemic shocks may also be a disruptor for these costs and for life expectancy.

The trend from DB to DC pensions also means that more people will be responsible for managing their retirement savings throughout old age, and at a time where they may be subject to cognitive decline. The risks of consumers making poor decisions and running out of money in retirement is therefore increasing.

Key Developments During 2019

After several years of slowing mortality improvements, the mortality experience for the first three quarters of 2019 has been considerably lighter than expected based on the recent trend. The Continuous Mortality Investigation Bureau (CMI) have noted in their recent update[43] that winter mortality in 2018/19 was relatively light, particularly compared to 2017/18, and continued the trend of relatively light mortality that was seen in the second half of 2018.

Recent years had seen a marked increase in deaths at a national population level[44]. This has sparked debate with various commentators suggesting factors such as the cumulative effects of heavy winters and more virulent flu were driving the deterioration. Other factors mentioned were an increased impact from Alzheimer's disease as the population ages, improvements in circulatory disease having run their course, or the impact of austerity-based squeezes on health and social care budgets. Against this, it was noted that the reduction in the prevalence of smoking should act to improve longevity[45].

This heavier than anticipated mortality experience of recent years has also had an impact on the assumptions actuaries make in their projections for future improvements in mortality rates. Further the main mortality projection model, developed by the CMI, has

43. Mortality Monitor Q3 2019
44. See for example "A review of recent trends in mortality in England", Public Health England, 2018
45. "Statistics on smoking – England 2018", NHS Digital, 2018

factored in this recent heavier experience which also has a subtle effect on future mortality forecasts. As a result, successive model updates had produced modest reductions in the assumed rates of improvement thus driving lower liability valuations for annuities (although higher costs of life protection products). Several life companies with significant books of annuity business have thus announced some material reductions in reserves in recent years[46]. Anecdotal evidence suggests that similar trends have been noticed in technical provisions for some pension schemes.

There has been considerable uncertainty about the causes of this slowdown in mortality improvements in recent years, whether lower improvements will persist and for how long. According to the CMI Bureau the latest data provides increasing evidence that the low level of recent mortality improvements may be due to medium- or long-term influences, rather than just short-term events such as flu in early 2015[47]. However almost all users of the CMI Model expect that mortality will continue to improve, even if this is at a slower rate than in the first decade of this century. As noted above, the signs are that 2019 will exhibit improved experience compared to recent years. Again there will be debate about whether the key factors were the very mild winter, or the impact of flu being more modest. Or whether the trend is reversing.

The gap between life expectancy and healthy life expectancy

However, even though life expectancy is expected to continue to increase, healthy life expectancy is not keeping pace with the overall increase to life expectancy[48]. As observed by the ONS, what this means is that both men and women are spending more years in later life in poor health[49]. This has implications for the future cost of healthcare insurance[50]. If life expectancy continues to increase faster than healthy life expectancy there is a risk of a gearing effect on the cost of healthcare and of the strain on NHS finances[51]. If actuaries do not sufficiently anticipate this gearing, they may understate future cost increases. Similarly, cost projections for the NHS need to anticipate this gearing.

Pensions before and during retirement

Auto-enrolment has increased the number of people saving for retirement[52] and the "pensions freedoms" introduced in 2015 have allowed those reaching retirement to have greater flexibility in how they choose to receive their retirement proceeds[53]. Annuity purchases have fallen, and more retirees are choosing to access their retirement proceeds through a drawdown facility. In effect this means that more retirees are having to take a view on their future longevity and to manage the process of choosing a suitable future time to annuitise. Given the complex interaction between investment returns and mortality increases with age, actuarial analysis is needed to help retirees optimise their choices.

Similarly, before retirement, people are more likely to need to consider this complex dynamic and the Pensions and Lifetime Savings Association (PLSA) has issued suggested income levels required to support various target standards of living in retirement[54]. In a complementary piece of work, the IFoA has produced some "rules of thumb" for how much needs to be saved to achieve those levels of income in retirement[55]. However, it must be noted that the assumptions adopted by the IFoA differ from those used by the PLSA in their follow up calculations. As such there is a risk that that IFAs and the public may be confused by the two sets of recommended funding rates required and lose faith in what is otherwise a very worthwhile initiative.

Following the Retirement Outcome Review the FCA have signalled their intention to consider other aspects of retirement[56]. This may include consideration of

- changes required to default retirement investment pathways for drawdown products and
- how to promote greater engagement by consumers with their non-workplace pensions.

46. "Insurers gain £1.5bn as customers die earlier than expected", FT, 2019
47. CMI_2018: the latest version of the CMI mortality projections tool
48. Health state life expectancies, UK: 2015 - 2017
49. Ageing and health expenditure, Public Health Matters, 2019
50. Ageing and health expenditure, Public Health Matters, 2019
51. For example, if life expectancy is 80 years and healthy life expectancy is 76 years, we expect people to live for 4 years in poor health. If LE increases by 4 years but HLE increases by only 2 years, then we expect people to live for 6 years in poor health. This represents a 50% increase to the number of years in poor health with a corresponding increase to cost.
52. See the Pensions Regulator website
53. Retirement Income Market Data 2018/9, FCA
54. Hitting the target: A vision for retirement income adequacy
55. See IFoA press release.
56. See FCA website

Future mortality trends

Looking ahead there are drivers of change that may suggest mortality change might possibly even move to deterioration. For example, increasing obesity levels (including in childhood)[57], increasing concern over sleep deprivation with proven links to Alzheimer's, heart attacks and strokes[58], worries over antibiotic resistance[59] and the spread of opioid addiction[60].

In contrast, advances in medical technology in relation to

- medical procedures;
- artificial organ transplants;
- the use of genetic data to personalise medicine; and
- the increasing use of health-tech to support healthy lifestyle choices may reverse the recent trends[61].

Technological advances can also result in improved health through

- improved monitoring and management of disease; and
- earlier and more accurate diagnosis (although the management of the significantly higher levels of personal data used to underpin these advances can create a data privacy risk that needs to be managed).

Another technological development affecting mortality is the introduction of e-cigarettes to replace traditional tobacco-based cigarettes. While the risk of e-cigarettes is claimed to be significantly lower than tobacco cigarettes[62], their effect on long-term health is still unknown and recent studies in the US have raised concerns about links to lung disease. It is still not known whether e-cigarettes may attract people who have previously not smoked and therefore may have an adverse impact on future longevity.

Impact on affordability

The issues outlined above will all have an impact on how individuals are able to adequately fund what is likely to be a longer lifetime, with some of the later stages spent in poorer health. Actuaries play a central role in some of these considerations.

Actuarial considerations

Actuaries should ensure that mortality assumptions to reflect emerging trends are appropriate for the portfolio that they are valuing as well as reflecting general population projected changes.

The latest version of the CMI model table is CMI_2018. The new model projects lower future mortality improvements as it relies more heavily on current data. However, within the Core Model a new extended parameter, the "initial addition to mortality improvements" has been added, that allows users to adjust initial mortality improvements more easily. This introduces the risk that pressure could be brought to bear on actuaries to adopt the most recent favourable trends.

The issues around improving/uncertain mortality could lead to wider opportunities for the actuarial profession in terms of helping to advise and educate consumers. Wider work could involve designing products to address the various issues. These could be products to fund long-term care costs as well as equity-release products.

Ageing Population Issues

Apart from the impact of mortality on retirement income, there will be issues arising from providing care to those in later life. As life expectancy increases, the time spent in poor health will also increase. This will place growing burdens on the state and individuals to fund the cost of providing medical support and ongoing care to those who need it. At a macro level, the actuarial profession can provide input to the wider policy debate on how to fund increasing care costs. At a micro level, the profession would also be expected to be involved in developing appropriate "third age" products that allow individuals to supplement any care they may be entitled to from the state.

57. NHS Digital
58. NHS
59. Antibiotic Research UK
60. See PHE statistics
61. For examples see The Medical Futurist website
62. NHS: Using e-cigarettes to stop smoking

Further Reading

https://www.wearejust.co.uk/your-money/planning-for-care/costs-of-care/

https://www.theguardian.com/society/2018/aug/30/social-care-needs-for-over-85s-predicted-to-double-in-next-20-years

https://www.bbc.co.uk/news/health-45354846

https://www.ukri.org/innovation/industrial-strategy-challenge-fund/healthy-ageing/

https://www.bankofengland.co.uk/research/future-finance

4.4 HOTSPOT: UNFAIR OUTCOMES FOR INDIVIDUALS

Hotspot Description

The risk of actuaries not acting in the best interests of customers, either intentionally or unintentionally, which may result in unfair treatment of some subgroups in favour other subgroups that are financially more profitable.

Current Influences

There are risks associated with the increasing access to Big Data as well as the need for the actuary to consider the rights of competing groups of people

The increasing power of technology and access to more data than ever before mean that actuaries can identify ever smaller homogeneous groups. This has led to a greater focus on pricing factors and the trade-off between risk-based pricing and risk pooling.

The risks are that:

- Insurers may cherry pick the good risks leaving some people effectively uninsurable;
- The statistics may prove to be unreliable; and/or
- Certain groups are known to have a higher propensity to pay and may therefore be charged excessively.

Additionally, telematics[63] (in General Insurance) create ethical problems of disclosure to third parties and privacy issues.

With regard to pensions the issues are more to do with competing rights, and even though the primary duty of the actuary is to their client, in advising the client the actuary may need to bring to the attention of their client any impact on the wider stakeholders[64].

The new Collective Defined Contribution structure requires the actuary to calculate benefit amendments in response to underperformance and therefore risks intergenerational unfairness. DB to DC transfers also requires balancing the rights of competing groups (the leavers and the stayers) and are therefore a further source of potential unfairness. Addressing deficits in DB pension schemes requires balancing the demands on employers against the needs of the pension scheme, at a time when Brexit-related uncertainty may be of concern to many employers while the rapidly maturing liabilities of their pension schemes leave reduced timescales to rectify deficits. Investment strategies in DB schemes require a balance between the employer's ability to support the underlying risks over time and potential losses to savers. All these areas may impose pressure on the actuary to balance the commercial and professional aspects of their role.

Actuaries may also be forced to confront such competing rights when Pension Superfunds are launched, needing to balance the needs of investors in the superfunds with outcomes for pension scheme members and the Pension Protection Fund. While these requirements are

63. "...the basis of modern fleet management practices.... telematics is a system that marries information technology with telecommunications. Also, you could define it as the long-distance transmission of computerized information. It has evolved over the years and narrowly associates with GPS tracking or fleet management." GPSInsight website

64. The Actuaries Code paragraphs 3 and 3.1 state "Members must ensure that their professional judgement is not compromised, and cannot reasonably be seen to be compromised, by bias, conflict of interest, or the undue influence of others. Members must take reasonable steps to ensure that they are aware of any relevant interests that might create a conflict."

not new in principle the new Superfunds may introduce sharper polarisation of needs. Actuaries may need to confront an increased dilemma of satisfying client demands against a background of wider stakeholder detriment.

There are also competing rights between companies, their shareholders and members of the pension schemes that they sponsor. Emerging economic difficulties may lead companies to manage their dividend policy favouring the shareholders in such a way as to create unfairness.

Key Developments During 2019

Insurance Related Developments

Fair treatment of With-Profits customers

With-profits is a key area of focus in the supervision of life insurers. The potential for conflicts of interest to arise in the management of with-profits funds, the inherent complexity of this business and the lack of strong demand-side pressure from long-standing customers, mean that there may be increased risk of customer financial harm.

The FCA published its findings on the review of fair treatment of with-profits customers in Q2 2019[65]. These findings give examples of good and poor practice. Most firms assessed are taking reasonable care to manage the risk of customer harm. There are though some areas of poor practice that may lead to customer harm.

Fairness in pricing and product value

Fairness in pricing is an issue when long-standing loyal customers are charged higher prices than offered to potential new customers because the existing customers are seen to be less price sensitive. This is particularly acute in the Personal Lines General Insurance market. The actuary needs to ensure they are balancing the commercial and professional aspects of their role if they are involved in the pricing of these products.

The FCA published an evaluation paper 19/1 on general insurance transparency intervention in Q4 2019[66]. This initiative required firms to show both the renewal premium and the previous year's premium on the renewal notice. A summary of the main findings demonstrates that its intervention in the home, motor and pet insurance markets appears to have had a positive impact on customers in the areas of firm's renewal practices.

Part VII transfers involve the transfer of a book of business between insurers. In 2019 the courts intervened in the Prudential to Rothesay Life transfer on the basis of reputation, thus widening the areas of customer detriment to be considered.

In Oct 2019, the FCA published an interim report MS18/1.2 looking at General Insurance pricing practices in home and motor insurance to understand if the practices support effective competition and lead to good customer outcomes[67]. The FCA found that these markets are not working well for customers.

Access and exclusion in insurance

Certain groups can struggle with access to insurance if they are perceived as less profitable risks to the insurer. This is often as a result of the data being divided into smaller and smaller homogenous groups for pricing purposes, and if taken too far could lead to a breakdown of the risk-pooling principle[68].

In Q3 2019 the FCA launched a consultation proposing new rules to help customers with pre-existing medical conditions to access suitable travel insurance[69]. The consultation is seeking views on introducing a new 'signposting' rule, to provide customers with details of a directory of travel insurance firms that have the appetite and capability to cover customers with more serious pre-existing medical conditions.

Equity Release Mortgages

Equity Release mortgages are increasing in popularity, but borrowers may not appreciate the potential impact of compound interest. If monthly repayments of interest are not made regularly the loan outstanding can quickly increase dramatically. There is a risk that actuaries developing these products may not do enough to ensure that customer communications bring this risk to the fore.

65. FCA Thematic Review 19/3: Review of the fair treatment of with-profits customers
66. FCA Evaluation Paper 19/1: An evaluation of our general insurance renewal transparency intervention
67. FCA Market Study 18/1.2: General insurance pricing practices Interim Report
68. According to a 2019 thematic study by EIOPA there is no evidence of this danger yet materialising but the potential risk remains.
69. FCA proposes new rules to help customers with pre-existing medical conditions access suitable travel insurance

Pensions Related Developments

DB transfers

Transfers from defined benefit (DB) schemes to defined contribution (DC) schemes are considered generally unlikely to be in the best interests of most members, although there are certain circumstances where they may be appropriate. TPR has been working closely with the FCA and other relevant industry bodies to address their primary concern that DB scheme members and their advisers have all the information they need to make an informed decision about what is in the members' best interests. An example of this is the launch of the PASA[70] good practice guide for DB transfers, including the standardised data template which was initially developed by TPR and the FCA[71].

DB superfunds

Superfunds provide new risks and opportunities as vehicles for delivering pension promises to members. Pension scheme members need the confidence that these new schemes are well-governed, run by fit and proper people and are backed by adequate capital. TPR has issued clear guidance setting out its expectations for both superfunds and trustees as well as employers considering transferring to a superfund[72]. However, as the legislation on Superfunds was not included in the Pensions Schemes Bill 2019-20[73] there is a risk that potential providers may issue consolidation plans using existing legislation. This may create risks of conflict of interest for actuaries which are more difficult to predict as the exact models may not be known in advance.

Annual guidance on actuarial valuations

TPR's 2019 Annual Funding Statement[74] (AFS) provided clearer guidance than previously issued on actuarial valuations, emphasising the need for trustees and employers to agree a clear strategy for achieving their long-term goals, recognising how the balance between investment risk, contributions and covenant support may change over time, particularly as schemes become more mature and potentially better funded. Trustees are expected to negotiate robustly with their employer to secure a fair deal for the pension scheme. The statement also set out expectations for investment strategies to be set with a clear understanding of the employer's ability to support potential downside risks. An integrated approach to risk management should allow schemes to manage risks appropriately. Actuaries can play a key role in advising trustees and employers on these complex issues.

A new code for funding pension benefits

TPR is working to revise its code of practice on DB funding to provide better security for members through greater clarity on the standards of funding expected from pension schemes and to embed good practice in the management of long-term risks. Among other things it will provide greater clarity to ensure the flexibilities in the regime are used appropriately and set out a framework within which schemes can determine prudent technical provisions, appropriate recovery plans and investment strategies which can be supported by the employer's covenant. A consultation paper seeking views on aspects of the new framework has been published in March 2020.

Value for members in DC schemes

Value for members is an assessment of the extent to which charges and transaction costs represent good value for savers. This is at the heart of TPR's approach to DC governance, and they work closely with FCA in this area.

In September 2018 TPR published the findings of a thematic review on whether small and micro schemes are adequately assessing costs and charges paid by members. Most chair statements reviewed provided inadequate or incomplete explanations of how the scheme's costs and charges represent good value for members. To address the issues highlighted, TPR is reviewing its guidance to be clearer about its expectations of chair statements, including value for member assessments.

Improving investment management

It is crucial to have an appropriate strategy for investing to fund for DB benefits to deliver good member outcomes. In 2019 TPR updated its good

70. The Pensions Administration Standards Association
71. PASA Guidance on DB transfers
72. The Pensions Regulator: Transfer to a DB superfund
73. House of Commons Library: Pension Schemes Bill 2019-20
74. The Pensions Regulator: Annual Funding Statement 2019

practice guidance to trustees on establishing and maintaining an effectively governed investment strategy, including examples of approaches and factors to consider[75].

Investment consultants and fiduciary managers perform an important role for trustee boards and have a significant influence over investment matters that affect member outcomes. Following an investigation into the investment consultancy and fiduciary management market, the Competition and Markets Authority (CMA) introduced new duties for occupational pension scheme trustees[76] to address some underlying issues, taking effect from December 2019. In support of these recommendations, TPR consulted on a suite of guidance aimed to support trustees in meeting their new duties and engaging with their providers of investment consultancy and fiduciary management services. This included draft guides to choosing an investment governance model, to tendering for fiduciary management and investment consultancy services, and to setting objectives for providers of investment consultancy services. Final guidance is expected shortly[77].

Unfair outcomes due to poor governance

Good governance is key to pension schemes achieving good outcomes for their members. This requires motivated, knowledgeable and skilled trustees and the right structures and processes to enable effective and timely decisions and risk management. While the majority of schemes are meeting expected governance standards, there are some who are not performing as they should and thereby putting member benefits in jeopardy. TPR outlined its proposals for closing this quality gap in its Future of Trusteeship and Governance consultation[78] in July 2019 and is now working on the outcome of this consultation.

Helping customers make better choices

In a recent study, the FCA found that in the non-workplace pensions market the complexity of products and charges exacerbates the lack of customer engagement. The feedback statement asked for views on a range of possible initiatives from mandating the way charges can be levied, to reduce the complexity, to intervening on charges perhaps by way of a cap.

A further example of complexity and lack of clarity can be seen in the FCA's published review findings in Q1 2019 of MIFID II costs and charges disclosures. The FCA looked at the costs and charges disclosures of a sample of 50 firms authorised as MiFID investment firms in the retail investments sector.

The FCA found that these firms knew about their obligations for disclosing costs and charges but interpreted the rules in a variety of ways. They were better at disclosing the costs of their own services than at disclosing relevant third-party costs and charges. The FCA found evidence that firms were not sharing their costs and charges with each other to meet their obligations to provide aggregated figures to clients.

Commutation of pension at retirement within DB schemes is another area of potential detriment to individuals. In some pension schemes the commutation rate is specified in the scheme rules. Where this is so, the actuary should consider whether to be active in alerting retirees to the poor value for money represented by the commuted lump sum where the commutation rates are penal under current conditions.

In another example of the weakness of competition in certain areas, the FCA published the findings of an additional review of unit-linked funds' governance practices in Q3 2019. The findings demonstrated, amongst others, that firms check their competitor's prices but not apparently with the aim of competing on price. Firms also complied on regulatory interventions but tend not to go further.

75. The Pensions Regulator: Detailed guidance for trustees
76. The Investment Consultancy and Fiduciary Management Market Investigation Order 2019
77. The Pensions Regulator: Draft guidance consultation (in response to CMA recommendation)
78. The Pensions Regulator: Future of trusteeship and governance consultation

4.5 HOTSPOT: GEO-POLITICAL, LEGISLATIVE, AND REGULATORY RISK

Hotspot Description

The risk that actuaries are unable to consider, or plan, for the potential for political, legislative or regulatory change (at an international or national level), and as such over or under react to these uncertainties to the extent that it involves their work, resulting in poor outcomes for users.

Current influences

There is significant uncertainty created by Brexit, which is likely to impact the work of actuaries, directly or indirectly, in several areas, for example economic impacts, regulatory uncertainty and legal contract validity. There is also uncertainty surrounding developments of UK domestic policy in areas such as monetary policy, pension legislation, health and social care spending and data privacy.

Around the world there are dangers of continuing societal polarisation, income inequality and the inward orientation of countries[79], with the potential to impact national and international government policy in unexpected ways (for example the propensity towards disadvantaging minority groups, erecting trade barriers or lack of cooperation on global issues).

Similarly, global supply chains may be subject to disruption and this may impact business costs, highlighting the need for resilience planning. Recent examples have been events in Iranian territorial waters and piracy off the coast of Africa. Typically, these events bring immediate human tragedy but can also generate longer term financial instability.

The reduction in global cohesiveness may also lead to differential responses to climate change which may undermine the actions taken by those governments that are moving to a carbon neutral position. Again, this may make it more difficult to price risks appropriately and increase the cost of transition to a net zero carbon economy. This is likely to impact the most vulnerable segments of the population, both nationally and internationally; who are also likely to be lower creators of carbon emissions.

Given the highly integrated nature of global business chains, the consequences of geo-political uncertainty, terrorism and cyber-crime have the potential to affect domestic as well as international economies and financial markets.

Post-exit from the EU, there will be a need to manage the situation to avoid an increased risk of UK regulators losing engagement with international bodies if they become more domestically focused. The bilateral relationships with key regulatory partners and international standard-setters risks weakening resulting in the UK not being able to shape the global

79. See, for example, report from ABC News

regulatory agenda, and thus protect consumers and the integrity of markets. Firms may not be adequately prepared for EU withdrawal, with the regulation of markets potentially being subject to rapid change, and consumers may lose access to services.

In general, changes to geopolitical environments or to legislation are multi-layered and complex. When legislation is introduced or changed, regulators are concerned to address as many potential "unintended consequences" as possible. However, it is inevitable that not all scenarios and possibilities can be recognised before the change is made. This means that actuaries must remain alert to the risk of apparently small impacts that may turn out to become quite significant.

Key events and JFAR actions during 2019

Geo-Political Risk

The Cambridge Dictionary defines geopolitical as "connected with political activity as influenced by the physical features of a country or area, or with the study of the way a country's size, position, etc. influence its power and its relationships with other countries:"

There are various indices that measure geopolitical risk. Generally, they do this by monitoring the occurrence of key words and topics in selected sources. In this way they measure the relative level of concern as a proxy for the underlying risks[80].

Consistently these indices show that geopolitical risk is currently very high in comparison with historical norms. The BlackRock Dashboard deconstructs the overall measurement and attributes the high-risk assessment primarily to global trade tensions (driven by US imposed tariffs) and to the risk of European fragmentation (which includes the impact of Brexit uncertainty but also wider phenomena).

What is concerning about the indices' high-risk assessment is that geopolitical risk is not just historically elevated, but also increasing. The implication is that cross border cooperation and movement may become less efficient and predictable in the foreseeable future. More concerning is that past statistics may not be a good guide to what we should expect in the future.

This will impact domestic insurance markets as supply chains are global. Claims costs on personal lines motor insurance could increase as supply chains are heavily dependent on efficient movement of goods; claims costs on property insurance could increase as labour could become more difficult to source. This means short to medium term modelling (pricing, reserving, and capital modelling) could become more difficult due to the increased uncertainty. Care is needed to anticipate potential worsening of supply chain disruption, costs of production and movement, and the risks of unanticipated loss (e.g. due to terror attacks, nationalisation or infrastructure failure in remote territories).

Actuaries may also need to consider the possible impact on equity prices and volatility when matching assets to liabilities or selecting asset portfolios for investors as the impact on the asset side of the balance sheet could be significant.

Models need to be understood carefully to ensure that they include allowance for a suitable level of the risk of geopolitical impacts.

Brexit

The UK formally left the EU on 31 January 2020. At the date of publication, the terms of exit (and the subsequent trade deal) remain uncertain. The transition period is, by definition, a time of uncertainty and a longer transition period would extend that uncertainty. This may have potential impact on DB pension scheme sponsors planning to manage timing and progress to buy out.

The transition may also be a period of uncertainty for the commercial strength of some sponsors of DB pension schemes. This may mean that the implied covenant of such sponsors could be subject to change and during

80. Examples are: Boston College GPR Index and BlackRock GPR Dashboard

the transition period this may be subject to a degree of uncertainty. Actuaries need to anticipate such potential volatility and change in the Integrated Risk Management framework that they apply.

Actuarial Monitoring Scheme

The IFoA launched of a series of thematic reviews in September 2019, as part of the Actuarial Monitoring Scheme[81]. This will examine how work is being carried out in practice by actuaries, including review of the work itself, which will allow the useful sharing of learning and good practice. Themes will be related to areas where there is a risk to the public interest relating to the work done by actuaries. The first two themes (for completion in 2020) will be the role of actuarial advice in pricing of General Insurance products and actuarial factors used to calculate member benefits in pension schemes.

Revised Actuaries' Code

The revised Actuaries' Code, which is the ethical Code of Conduct to which all members of the IFoA are required to adhere[82], came into force in May 2019. It contains six key principles including 'Speaking up' as a stand-alone principle. The IFoA additionally published guidance to support actuaries in understanding their obligations and applying the Code in practice.

Risk Alert: Disclosure of information relating to models

In May 2019, the IFoA issued a risk alert around the disclosure of information relating to actuarial models which states that 'Members must disclose to their own client and, in some circumstances, fellow actuaries, an appropriate level of information in relation to the model they are relying on'[83]. This was in response to specific concerns arising from a disagreement on the appropriate level of disclosure of a model used in pension scheme funding investigations. A Mortality Assumptions in Pensions Working Party identified a risk around the level of disclosure required for two actuaries to reach a consensus or mutual understanding of each other's position.

IFRS 17 Insurance Contracts

In November 2018, the International Accounting Standards Board (IASB) proposed a one-year deferral of the effective date of IFRS 17, the new standard for insurance contracts, to 2022. It is proposed extending to 2022 the temporary exemption for insurers to apply IFRS 9 Financial Instruments, so that both IFRS 9 and IFRS 17 can be applied at the same time. The decision to propose a one-year deferral acknowledges the uncertainty that arises from the IASB's continuing discussions while being responsive to comments from stakeholders that implementation should not be unduly disrupted. The IASB published a second exposure draft with proposed amendments in June 2019[84].

The adoption and implementation of IFRS 17 will have an impact on the work of actuaries. The IASB's objectives for this standard are to improve the consistency, transparency and comparability of financial reporting for insurance contracts globally. The implementation is an opportunity for actuaries to work with other functions to support a smooth transition to the new financial reporting basis. Challenges for actuaries may arise from implementation, interpretation and communication of the changes in actuarial work supporting financial reporting.

Part VII Insurance Transfers

Prudential reached agreement with Rothesay Life to transfer a closed book of business. Neither the FCA nor the PRA objected to the transfer. An independent expert opined that the transferring policyholders would be at least as well protected as previously, based on the solvency capital of Rothesay Life. Nevertheless, such a transfer is subject to Court consent. Following objections by some policyholders the judge decided not to allow the transfer citing the reputational advantage of Prudential over Rothesay. Prudential and Rothesay are appealing the ruling but if it is upheld the judgement will have profound implications for Part VII transfers[85].

81. Details of the Actuarial Monitoring Scheme may be found here
82. Actuaries Code
83. Risk Alert: Disclosure of information relating to models
84. IFRS Exposure Draft ED/2019/4
85. See here for the judgement and here for an analysis

Equity Release Mortgages

The PRA previously published a consultation on Equity Release Mortgages CP13/18 'Solvency II Equity Release Mortgages', a policy statement (PS31/18) and an updated supervisory statement (SS3/17) in December 2018, with an implementation date of 31 December 2019[86]. This sets out expectations for equity release lenders to address the risks surrounding the existence of a 'no negative equity' guarantee[87]. To inform this work, the IFoA's Actuarial Research Centre, in partnership with the Association of British Insurers, has run a research project on valuing the No Negative Equity Guarantee. This research was formally published on the IFoA website in February 2019.

Funeral Plan Trusts

The funeral plan market continues to grow and to evolve. In response to perceived risk of customer detriment, HM Treasury have conducted a review and concluded that all funeral plan trusts should be regulated by the Financial Conduct Authority (FCA). This will take effect within the next few years. In the meantime, the Funeral Planning Authority (FPA)[88] have amended their Rules and have introduced the requirement for an Annual Asset Adequacy Report. This requires the funeral plan provider to assess the security of the Funeral Plan Trust[89].

There is a transition period before Funeral Plan Trusts will be required to register with the FCA. As the end of this period approaches such trusts will need to take the view as to whether they will submit to FCA authorisation or whether they cease to trade independently. For some trusts there may be the risk of detriment to plan holders if trusts choose to extract monies before winding up. While actuaries may not be involved in the decision process there could be a reputational risk as actuaries value the trust.

Retail Price Index

In September 2019 the government announced its intention to merge the Retail Price Index (RPI) into the Consumer Price Index (CPIH). Historically RPI has increased at somewhere around 1%pa higher than CPI and CPIH. The change is expected to occur between 2025 and 2030[90].

For defined benefit pension schemes with pension increases hard coded to reflect RPI this will improve scheme solvency levels but will be anticipated to reduce the pension benefits. Actuaries conducting valuations before 2025 will need to take a view on what impact the change should make to their assessment of inflation and pension increases given the long-term nature of the liabilities.

There is also a risk in the period before the change occurs. The market assessment of RPI may be expected to move closer to CPIH as time periods shorten to the transition. This means that the past relationship between RPI and CPIH may become increasingly unreliable and judgement will be required to assess a best estimate for current calculations. This is likely to be a particular issue as regards IAS19 calculations.

Risk Free Rates for financial transactions

LIBOR[91] is expected to cease as from the end of 2021. It is used to determine interest payments on a wide range of financial products and transactions. The recommendation is that LIBOR is replaced by SONIA[92]. This will create costs of transition that must be apportioned and may also require actuaries to review how they will reference risk free rates in product design[93]. There may also be an impact on the Solvency II Balance Sheet of insurance companies.

Pension Schemes Bill 2019

The Pension Schemes Bill was published in October 2019[94] and made provision for Collective Defined Contribution (CDC) pension schemes or "Collective Money Purchase Benefit"[95]. This will be a new area of work for actuaries, who will have responsibilities in helping design the schemes and acting in the capacity as Scheme actuaries.

The Bill also grants further powers to The

86. See Bank of England website

87. Unpublished information presented to JFAR indicated that there is now £20bn Equity Release on insurers' balance sheets, and last year there was £4bn new issues. This compares to the annuity market of £30bn (bulk annuities transferred from pension schemes plus immediate annuities).

88. Funeral Plan Trusts are exempt from FCA authorisation and supervision but 95% of FPTs have agreed to voluntary supervision by the Funeral Planning Authority.

89. See the FRC Consultation on TAS 400 changes for more details and background information.

90. Money and Pensions website

91. London Inter Bank Overnight Rate

92. Sterling Overnight Index Average rate.

93. See FCA website on conduct risk during LIBOR transition

94. The Bill did not survive the general election in December 2019 but was reintroduced in January 2020.

95. https://publications.parliament.uk/pa/bills/lbill/2019-2019/0005/20005.pdf

Pensions Regulator and allows for the setting up of the Pensions Dashboard.

Competition and Markets Authority Investigation in Investment Consulting

The final order bringing into effect a number of remedies from the report into the Competition and Markets Authority (CMA) investigation was published in June 2019[96]. The order set out, amongst other things, new duties for trustees and managers of occupational pension schemes to agree strategic objectives for investment advice.

The report also recommended that the regulatory perimeter of the Financial Conduct Authority (FCA) be extended, classifying more investment consultant services as regulated activities. Some actuarial firms that offer regulated services are authorised to do so by the IFoA under the Designated Professional Body (DPB) regime. There is a risk that some firms will not be able to continue with a DPB licence when the legislation extending the perimeter takes effect as the volume of regulated activity will no longer be incidental to their core business, which is a requirement of the licence.

Further Reading

UK Government information on Brexit: https://www.gov.uk/brexit

Sir John Kingman: Independent Review of the Financial Reporting Council (Dec 18): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/767387/frc-independent-review-final-report.pdf

IFoA Actuarial Monitoring Scheme: https://www.actuaries.org.uk/upholding-standards/actuarial-monitoring-scheme

IFoA Actuaries' Code: www.actuaries.org.uk/upholding-standards/standards-and-guidance/actuaries-code

IFoA Risk Alert: https://www.actuaries.org.uk/documents/risk-alert-disclosure-information-relating-models

IFRS 17 Insurance Contracts: https://www.ifrs.org/supporting-implementation/supporting-materials-by-ifrs-standard/ifrs-17/

PRA: Solvency II: Equity release mortgages Consultation Paper 13/18 (Dec 18): https://www.bankofengland.co.uk/prudential-regulation/publication/2018/solvencyii-equity-release-mortgages

IFoA: Equity Release Mortgages: No Negative Equity Guarantee (Sept 18) www.actuaries.org.uk/learn-and-develop/research-and-knowledge/actuarialresearch-centre-arc/research-programmes/equity-release-mortgages-no-negativeequity-guarantee

IFoA UK Equity Release Mortgages: a review of the No Negative Equity Guarantee: https://www.actuaries.org.uk/system/files/field/document/ARC%20Final%20Research%20Report_ERM%20NNEG_19022019.pdf

IFoA ARC ERM Launch Event dated 28 February 2019: https://www.youtube.com/watch?v=DdLRqcIvR20

Pension Schemes Bill 2019: https://services.parliament.uk/bills/2019-20/pensionschemes.html

Competition and Markets Authority Investment consultants market investigation: https://www.gov.uk/cma-cases/investment-consultants-market-investigation

FCA information on Brexit: https://www.fca.org.uk/news/press-releases/fca-sets-out-latest-expectations-firms-brexit

FCA Strong Customer Authentication (SCA): https://www.fca.org.uk/consumers/strong-customer-authentication

96. https://www.gov.uk/cma-cases/investment-consultants-market-investigation#final-order

4.6 HOTSPOT: TECHNOLOGICAL CHANGE AND COMPETENCE IN NEW AREAS

Hotspot Description

The risk that actuaries entering new fields may not have a deep enough understanding of the statistics or that they may not adequately understand Artificial Intelligence (Ai) models or other disruptive advances.

Current Influences

Generally, there are risks when the available statistics are inadequate to estimate the cost of future risks. This may occur when actuaries enter new areas (such as banking) or issue new covers such as cyber risk. Also, there are risks of actuaries acting where they do not understand the model processes (e.g. AI models).

Context and Key Developments

In order to try to understand a particular aspect of the world an actuary will build a model, which is a simplified representation of the aspect in question. This model will usually rely on assumptions in order to produce results of possible future outcomes. In order for the model to be robust, the actuary needs to:

- Understand that which is being modelled (although in practice this often means they rely on experts in the relevant subject matter).
- Understand the inner workings of the model itself.
- Be in a position to form sensible assumptions.

A 2018 survey by Deloitte put Cyber Risk as the leading AI related concern amongst executives[97]. It is also worth noting that as datasets get richer and larger and as technology becomes ever more connected, the Cyber Risk associated with this becomes ever more important to manage[98].

The pace of development

Technology is advancing quickly, and this means new modelling techniques are becoming available to the actuary. These new techniques are significantly different to the existing techniques and therefore there is a risk that some actuaries won't have the necessary understanding or familiarity to be able to use them effectively. The IFoA recognise that the educational curriculum of the actuarial profession needs to remain current. They have increased the computer programming content of the latest iteration of the curriculum[99], as well as offering opportunities to more experienced actuaries; for example, the soon to be launched Certificate in Data Science[100].

They have also held virtual data science conferences to include education aimed at actuaries[101].

Another issue is how actuarial regulation will keep pace with these developments. The FRC

97. State of AI in the Enterprise, Deloitte US

98. There are different views on whether Big Data compounds the problems or is part of the cure. General consensus points to the need for a structured and considered approach before a cyber-attack occurs.

99. See here

100. https://www.actuaries.org.uk/news-and-insights/news/actuarial-impact-data-science

101. See IFoA website

produces the Technical Actuarial Standards ("TASs") and they are reviewed and refreshed every five years, but if the pace of change is rapid there may be a need for more frequent guidance to be issued between formal reviews of the TASs. This is an issue that the FRC is considering as part of the Post Implementation Review presently being conducted on the current TASs.

Big Data

Big Data is the term used to describe the situation where the datasets are large, created and collected quickly, and often very diverse in terms of content. The format of the data tends to vary. The data can be gathered from social networks, websites, apps on mobile phones, questionnaires, product purchases, and many other areas. The data is usually stored in a computer database specifically designed for the purpose and is analysed using software, again specifically designed for the purpose.

The advantages offered by Big Data are that new insights are possible given the larger volume of data, and these may lead to new and innovative products or services being developed in response to perceived customer needs. However, there are risks including the fact that it is easy to find spurious correlations[102], and these could potentially lead to conclusions that are suspect. Financial products may be developed which, in fact are not needed by customers. This could then lead to wasted product development costs and possible mis-selling of the newly developed products. This may be compounded by the introduction of a new product changing behaviours and therefore invalidating past statistics.

The other key risk is that the quality of the Big Data may be lower than the quality of data from more traditional sources. The reason for this is that the data tends to come from less structured sources and the validation the data goes through is often less robust[103]. This may in the extreme case lead to inappropriate conclusions being drawn from the data[104], if the actuary fails to take account of this.

Artificial Intelligence and Machine Learning

Artificial intelligence (AI) is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings[105].

Areas where Artificial Intelligence is overlapping with the work of the actuary include autonomous vehicles and Robotic Process Automation.

Autonomous vehicles are those which have some form of assistance to the driving; ranging from cases where the human remains in overall control to where the vehicle drives itself and the human has no input[106]. As the control of the vehicle is ceded from the human intelligence to the AI, there are issues raised about what happens when things go wrong. For example, if an accident happens when the AI is in control where does the blame lie? This is important in questions of which insurer is liable.

Robotic Process Automation (RPA) is where software robots are used to automate certain tasks. This ability is not new, there have been limited versions of this for several years. However, the breadth and depth of the tasks that can now be automated has reached a threshold where it is possible to use this technique for significant operations within a company. An example that is relevant to the actuary is within GI Claims Reserving. Robotic Process Automation can collect the data, format the data, upload the data into the actuarial reserving software, perform the initial modelling following rules, and output the data in a meaningful way for an actuary to review. This is much more efficient than getting a human to do these tasks and can potentially reduce operational risks if the process is robust. However, there are downsides with RPA[107]. For example:

- When timescales are tight there is a danger that the RPA output may be used without critical human consideration
- RPA is usually unable to adapt to any changes to the data sets.

102. Correlation is not the same as causation and the differences may be important when predicting. See, for example "Correlation is not Causation", towardscience.com, 2019

103. "Big Data Quality: A Survey", paper presented to Big Data Conference 2018, San Francisco; Taleb et al

104. See for example the article "Three big mistakes in big data you never knew were mistakes", Innovation Enterprise, 2019

105. Encyclopaedia Britannica online

106. These are described as levels 1 – 5 (where 1 represents assistance to the driver – e.g. adaptive cruise control – to 5 where the vehicle does not require a driver to be present at any stage of the journey). In practice in all developments to date the human has the power to retake control in an emergency (in most cases the autonomous vehicle insists on this)

107. "Why you should think twice about Robotic Process Automation", Forbes, 2018

Machine Learning, which is a subset of Artificial Intelligence, is an approach to modelling that is becoming much more popular.

The approach is to build a mathematical model that is developed based on a sample of data without any explicit programming[108] or instructions relying on patterns and inference instead. The model is then used to make predictions on a different sample of data. As more data is fed into the model, it gets better at predicting, and is therefore said to learn.

One potential issue with Machine Learning is bias. The chosen mathematical model is based on a set of initial data and any bias in this data will be replicated in the model. For example, if a model is fed with data about all successful applicants for jobs in an organisation with a view to using it to help screen candidates, then any historical biases will be replicated.

Another potential issue is that the chosen model can perform very well at prediction but can be difficult to explain. This is an important issue for an actuary to consider, as the need to be able to explain the results can be critically important.

It is worth noting that the FCA are increasingly employing machine learning techniques to identify firms or individuals that could pose a risk to their objectives[109]. They are trying to explore how technology can drive new products, services and firms in consumers' interests and also what it can do to reduce the compliance burden of existing ones and make them more effective.

Ethical Implications

These new techniques also give rise to ethical implications as they allow actuaries to take more information about the risks into account when doing the modelling. This can be a double-edged sword, as on the one hand it can allow the pricing of risks to be more accurate whereas on the other hand it can disadvantage some groups of individuals. There is also the risk that if taken to extremes it can start to undermine the pooling of risk principle which underlies insurance, as well as making insurance potentially unaffordable for certain members of society.

When the roles of the actuary and the data scientist are compared, one of the key differences are the ethical and professional skills and training needed for the role of the actuary. This enhances the value the actuary brings when the output of complex models is presented to decision makers, and this will get more important as the models get more complex.

Conclusions

As the pace of technological change quickens it is critical for the actuary to keep their skillset up to date. For student actuaries, this means having access to an up to date curriculum, and for experienced actuaries that means having access to up to date CPD material. Some of this (especially in the case of student actuaries) can be provided by the IFoA, but there will always be a need for the actuary to take personal responsibility for keeping their knowledge up to date and making use of the available material.

There is a danger that at some point in the future AI replaces some of the roles currently performed by humans. The role of a senior actuary is probably less at risk than some other roles, but the role of a student actuary or junior actuary may be more at risk. The issue this poses is if AI replaces the more junior actuarial roles, without junior actuaries still performing the technical roles it is not clear where the next generation of senior actuaries will come from.

108. Arthur Samuels of IBM is credited with this definition. Widely taken to be in a 1959 paper but probably first appears in a subsequent paper in 1967.

109. https://www.fca.org.uk/news/speeches/financial-conduct-regulation-restless-world

Further Reading

Autonomous Vehicles:

https://www.theguardian.com/technology/2019/oct/03/driverless-cars-in-new-london-trial-in-complex-urban-environment

https://www.bbc.co.uk/news/av/uk-scotland-50409991/uk-s-first-full-size-driverless-bus-tested-in-glasgow

https://www.bbc.co.uk/news/technology-50713716

https://www.techworld.com/tech-innovation/fully-autonomous-ship-cross-atlantic-400-years-after-mayflower-3776663/

Communicating AI Models

https://ico.org.uk/about-the-ico/ico-and-stakeholder-consultations/ico-and-the-turing-consultation-on-explaining-ai-decisions-guidance/

4.7 HOTSPOT: IMPACT OF UNDUE COMMERCIAL PRESSURE

Hotspot description

The risk that actuaries may be placed under significant pressure to adopt inappropriate assumptions or models to achieve desired commercial outcomes.

Current influences

Commercial pressures resulting from any further uncertainty around the impact of Brexit and the continuation of the low interest rate environment may result in businesses, such as insurance companies and pension schemes, looking for new ways of generating profits. These may, in turn, potentially come at the expense of objective and reasoned actuarial judgement.

Key developments during 2019

A significant proportion of actuaries tend to work in commercial environments and are therefore under commercial pressure of one form or another. However, there have been recent developments in the following areas that are worth a specific mention.

Reserving

In some instances, commercial pressure from the management of non-life insurance companies to deliver improved results may translate into actuarial judgements being challenged disproportionately where there may be areas of potential prudence, with less focus on areas where there may be potential reserve inadequacy. The PRA expects management and boards to be especially vigilant on these issues as they consider the appropriateness of their reserves and solvency positions[110].

Pricing

Whilst actuaries are not the only individuals involved in the pricing process, they do play an important role in setting the final price.

The FCA have recently published a market study on General Insurance pricing practices[111] showing that the markets in personal lines products are not working well for certain customers. Certain groups of policyholders are being charged a higher price relative to other groups for a similar product. The final price charged is the result of actuarial modelling and commercial considerations, and it isn't always clear what the balance is between the two. The IFoA will be conducting some research into this area in 2020 as part of its monitoring programme.

Pension transfers

Trustees are required, by law, to quote cash equivalent transfer values and, before they can calculate them, must have taken advice from their actuary as to the appropriate assumptions to use[112].

110. https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2019/letter-from-gareth-truran-pra-current-areas-of-focus-for-general-insurance-firms.pdf

111. https://www.fca.org.uk/publication/market-studies/ms18-1-2-interim-report.pdf

112. The Occupational Pension Schemes (Transfer Values) Regulations 1996

When advising on aspects of defined benefit transfers actuaries need to remember that different parties have different needs. The transferee is likely to want the transfer value to be as high as possible. The employer may desire that a transfer occurs. The trustees need to protect the position of the scheme members who remain behind. Although the actuary has a main user to who they provide advice, nevertheless there are wider public interest issues that need to be considered overall. This may cause the actuary to consider their position with respect to the "Impartiality" principle of the Actuaries Code and in advising the client the actuary may need to bring to the attention of their client any impact on the wider stakeholders.

Commercial pressures may mean that communication material may over-play the merits of a transfer or under-play the benefits of guaranteed lifetime income.

The scope for harm arising from an unsuitable decision to transfer a defined benefit pension is significant. This has led to various initiatives by industry and by the FCA to ensure that the advice given is unbiassed[113].

The JFAR has considered the roles that actuaries fill with respect to pension transfers to ensure that all the JFAR member regulators are acting consistently and in full knowledge of the actions of other regulators.

Accountability of Senior Managers

The SM&CR regime was introduced in 2019 by the FCA and PRA[114] and means there is a single regime for identifying the most senior decision-makers in all regulated financial services firms including banks, insurers and major investment firms, and setting requirements on them. This clearly establishes the link between seniority and accountability. It both strengthens individual accountability and reinforces collective responsibility among boards.

Actuaries hold some of these senior roles and so may sometimes need to consider their responsibilities within the regime. This makes it even more important to not focus solely on the commercial outcome above everything else.

The IFoA operates a Practising Certificates Regime[115] for its Members that hold some of those senior actuarial insurance roles. The regime is designed to ensure that they are carried out by suitable individuals who have the skills and experience to allow them, amongst other things, to withstand different pressures.

Life insurance capital models

Actuaries at life insurance firms may face internal pressure to calculate lower capital requirements, whilst still appropriately reflecting the company's risk profile.

One such example is where firms target a higher matching adjustment for the valuation of annuity-like business (thus increasing the discount rate applied to the valuation of the corresponding liability cashflows). Firms are increasing allocations to illiquid assets, such as equity release mortgages, in these matching adjustment portfolios. Actuaries may therefore be under pressure to reflect the higher matching adjustment in their calculations underlying the valuation and rating of these assets.

The PRA has recently noted concerns over the amount of matching adjustment arising from such illiquid assets, particularly equity release mortgages, and it has introduced the Effective Value Test to ensure that excessive matching adjustment benefit does not arise from these assets[116].

Actuaries 'speaking up'

Actuaries face a challenging environment for experts and are reminded of the standards expected of professionals acting in the public interest. A revised Actuaries' Code came into force on 18 May 2019 and introduces 'Speaking Up' as a stand-alone principle, in order to emphasise its importance . The FCA has also called for cultural change within some organisations, to deliver good consumer outcomes[118].

113. See FCA website

114. It replaced the Approved Persons Regime of the FCA and the Senior Insurance Managers Regime of the PRA. The SM&CR already applied from 2016 to UK banks, building societies, credit unions, branches of foreign banks operating in the UK and the largest investment firms regulated by the PRA and the FCA. The 2019 change created a single regime to apply across the financial sector.

115. https://www.actuaries.org.uk/upholding-standards/practising-certificates

116. See BoE website: Solvency II Effective Value Test parameters

117. https://www.actuaries.org.uk/upholding-standards/standards-and-guidance/actuaries-code

118. https://www.fca.org.uk/news/speeches/leading-way-regulation

The IFoA provides a Professional Support Service[119] to its Members, providing assistance with ethical or technical professional issues that they are facing, including matters that may require them to 'speak up'.

Further Reading

FCA requirements for firms' remuneration: https://www.fca.org.uk/firms/remuneration

Implementation of SM&CR moving forward, with links to larger papers: https://www.fca.org.uk/news/statements/senior-managers-and-certification-regime-finalising-fca-rules

PRA annual report: https://www.bankofengland.co.uk/-/media/boe/files/annual-report/2019/pra-2019.pdf

JFAR pensions paper on DB to DC transfers

119. https://www.actuaries.org.uk/upholding-standards/professional-support-service

4.8 HOTSPOT: HOTSPOT: EFFECTIVE COMMUNICATION

Hotspot Description

The risk of actuaries failing to adequately explain the risks and potential adverse outcomes to decision makers or to others impacted by the actuarial work.

Current Influences

In general, as actuaries work more and more frequently as part of multidisciplinary teams there is a risk that their voice may not be heard or may be heard and interpreted incorrectly.

Some current examples are:

- Pensions Dashboard where actuaries need to ensure that commercial dashboards appropriately and consistently project the various forms of pension provision.
- Actuaries supporting audits need to ensure that they not only display appropriate professional scepticism but also that the main audit team understand and act on their input.
- As the world becomes ever more complex and interconnected, actuaries may need to ensure that they understand and appropriately reflect differing opinions and present their conclusions in ways that decision makers and the public can understand.

All the above examples contain technical challenges, but they also contain communication challenges for actuaries to ensure that their analyses and advice is communicated effectively and fairly to the non-technical public.

Key Developments

The essence of actuarial work involves building models to project an uncertain future based on what we know of the past and how we anticipate changes[120]. These models generally provide a financial picture of the projected future to enable people today who are managing the issues to take the best decisions they can.

However, by definition, these models project an uncertain future, and this creates a challenge to the actuary to ensure that the user of the work understands the nuances and the range of probable (or possible) future outcomes. Effective communication of the reasonable range of outcomes is at the heart of the value that the Actuary can bring to society.

The challenge is particularly acute where the actuary is encountering new situations and the current environment is one of profound and fundamental change. Many consumers have low levels of knowledge regarding financial matters[121] or longevity for instance, and it is essential that such concepts are clearly explained to them so that they can make informed decisions.

120. Principles for Technical Actuarial Work, section 4.9, IFoA website
121. See for example UCL Institute of Education study

To qualify, actuaries must pass an examination[122] designed to test their ability to communicate actuarial concepts to non-actuaries. It is important that actuaries maintain and continue to hone these skills post qualification.

Most of the hotspots covered in other sections contain within them the need for effective communication and the risks that may crystallise when communication is ineffective. In the paragraphs below we pick up on a few current major considerations.

Climate Related Risk

It is widely accepted that one of the most serious risk currently facing the world is that due to climate change. While actuaries may not be at the cutting edge of the science of climate change, they bring a valuable capability. Actuaries are trained to understand and communicate the financial and human costs implied by changes to models of the future.

A report published by the IFoA Climate Change Working Group in March 2019[123] considered the challenges to communicating the impact of climate change. Section 6 of that report states:

"There are particular aspects of climate change that make the communication of its risks particularly difficult. Communicating risk is simple if you understand what the risk is. However, climate change is a "wicked problem".

A wicked problem[124] "is a problem that is difficult or impossible to solve because of incomplete, contradictory and changing requirements that are often difficult to recognise. Moreover, because of interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems."

The report details suggestions for how actuaries can engage people in taking action to mitigate the impacts of climate change and also on how to communicate the uncertainty around the projected effects.

As noted in the section on Climate Related Risk, although the major physical risks belong to the future, the financial costs of transition and the idiosyncratic[125] risks are anticipated to emerge in the short term.

Modelling

Solvency II introduced the concept of reserving for the "1 in 200 year" event[126]. In the next few years IFRS 17 will take the reporting requirements for reserves to new levels of complexity[127]. The numbers produced are well defined, but it can be challenging to communicate what they represent.

We are at a time when modelling is about to become much more complex. Artificial Intelligence (AI) and Big Data are beginning to enable modelling in new and more granular ways. AI poses considerable challenges, both as regards understanding the model and also to communicate what the model is assuming. There is a risk that actuaries may not understand how the models arrive at the answers. In this circumstance the actuary will find it more challenging to communicate the inherent uncertainty in the results[128].

Sterling LIBOR will cease to exist at the end of 2021, and any models which make use of this will need to use SONIA instead. The PRA and FCA have jointly published a recent letter[129] which makes clear what the expectations are in the transition period. Actuaries will have a key part to play in communicating the effect of this transition to the various stakeholders.

Commercial Pressures in General Insurance

This risk is considered more fully within another hotspot. However, effective communication is at the heart of the issue along with robustness. When the actuary is challenged to reduce reserves below a reasonable level, responding requires the ability to communicate the nature of uncertainty in a way that is acknowledged and understood by the entity's decision makers.

There has been concern about the level of commercial pressure applied on some actuaries in the Lloyd's market. The PRA has issued

122. Examination CP3

123. Climate Change for Actuaries: An Introduction

124. See here for a fuller discussion on wicked problems

125. The risk that specific companies may be adversely impacted by a specific occurrence that does not affect the entire market systemically.

126. UK Parliament Treasury Select Committee

127. IFRS website

128. Paragraph 5.5 of TAS 100 requires communicating material uncertainty to the user.

129. https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2020/initial-expectations-fca-pra-of-firms-libor-transition-progress-during-2020.pdf?la=en&hash=240F859F88E6E9855449EFCCB5B89D4C3DEC12E6

communications to syndicates to warn of the need for adequate reserving. Further, during the course of the last year JFAR collectively ran a series of events connecting syndicate actuaries and Non-Executive Directors to explore the issues and to reach common understanding.

There have been two recent letters from the PRA[130 131], which demonstrate the need for actuaries to ensure they are giving appropriate consideration to the uncertainty of model output and communicating that effectively.

Pension Projections

Historically, engagement with annual pension update statements and projections has been very low. Over the last year simplified statements have been developed to encourage recipients to be able to read and understand the current and projected values of their defined contribution (DC) pension plans[132]. This is particularly important with the advent of automatic enrolment and millions more individuals receiving and largely dependent on their DC pensions for their retirement income.

This is a welcome development, but it carries risks. Individuals may see projected numbers and assume that these represent an outcome upon which they can rely. A challenge to actuaries is to present the projections in consistent ways that can help individuals understand that the current values and projections are merely a point along a journey and that they need to understand the figures in the context of that journey, including a better understanding of how much more they might need to save for their retirement.

The emergence of the Pensions Dashboard has the power to transform the situation. Once dashboards project a person's comprehensive pension values and allow the person to ask "what if" questions, individuals will gradually assume more control over their pension savings and be able to make more informed decisions. In this environment communicating the nature of the uncertainty and the range of options available to the individual become critical.

It is important for actuaries to work closely with government and pension providers to ensure that their professional skills in projecting financial and demographic factors are used to help clearly communicate the key issues to consumers.

A working party of the IFoA has produced a paper[133] considering actuarial aspects of the pensions dashboard and the chair of that working party is included in the MaPS Implementation Steering Group for the Dashboard.

Defined Benefit to Defined Contribution transfers

With a low interest rate environment transfer values are at historical highs. However, whether these high transfer values will be able to produce a higher retirement income depends on many factors and requires communications that help the transferee to appreciate the assumptions that are being made and what they mean for the future.

The FCA has published a number of consultations[134] aimed at improving the quality of the (mainly mandatory) advice needed when transferring a DB pension. However, the consumer journey starts at their original DB scheme. It is important that actuaries who work for trustees or employers develop effective communication strategies so that scheme members do not give up valuable benefits which may not be in their best interests.

A connecting theme

The theme that connects these examples is not just the communication of uncertain futures. In all the above examples the role of the actuary is to communicate the uncertainties in the model projections taking account of the needs of all stakeholders. The actuary interprets what the alternative projections mean in the real-world future and therefore recommends a course of action designed to produce a desired outcome while mitigating the adverse impact of potential future risk.

130. https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2019/letter-from-gareth-truran-pra-current-areas-of-focus-for-general-insurance-firms.pdf?la=en&hash=8E5ED1FB3B6AD154D8E76504C4C6579A42015396

131. https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2019/letter-from-james-orr-feedback-from-recent-pra-reserving-reviews.pdf?la=en&hash=D05899383E442A16BF03EB59539AE392F298E675

132. DWP Consultation: Simpler annual statements for workplace pensions, 2019

133. The Pensions Dashboard – An actuarial perspective, 2019

134. For example, CP19/25: Pension transfer advice: contingent charging and other proposed changes ch sets out FCA proposed measures to change how advisers manage and deliver pension transfer advice, particularly for defined benefit (DB) to defined contribution (DC) transfers.

5. APPENDICES

5 APPENDIX 1: TOPICAL DISCUSSIONS

5.1 MARCH 2019 (PENSIONS)

5.1.1 The Pensions Regulator

Annual Funding Statement

David Fairs (Executive Director, Regulatory Policy, Analysis and Advice, The Pensions Regulator) spoke to JFAR.

The Annual Funding Statement was published on Tuesday 5th March 2019. It sets clear expectations for pension scheme trustees. In line with TPR's aim to be clearer, quicker and tougher, the Funding Statement was published two months earlier than normal. In the past the focus was on technical actuarial areas but this year TPR has also included commentary on both covenant and investment.

It includes discussion of the need for a Long-Term Funding Target (e.g. does the scheme intend to undertake a buy-out and when). TPR has found that schemes with Long-Term Funding Targets have better risk management.

Many schemes are closed to new entrants and so maturity considerations are becoming more important. A mature scheme will have reduced ability to close the funding gap from investments and new contributions in a reasonable timeframe.

The Funding Statement includes tables that set out (for schemes with varying characteristics) the key risks and actions which TPR expects the scheme to take. Maturity is one of the characteristics considered. The tables set out clear expectations for trustees and employers in relation to covenant, investment and funding. TPR wants schemes to use the Integrated Risk Management approach to set provisions considering covenant, funding and investment together.

TPR is concerned about inequitable treatment between shareholders and scheme members and has written to 50 schemes where the employer paid out large dividends when there was a deficit in the pension fund.

Revised Funding Code

The DB White Paper, "Security and sustainability of DB pension schemes" described a balance between protecting Occupational Pensions, Consolidation and Scheme Funding and regulatory activities that could change the balance. TPR is now working on a Revised Funding Code with greater clarity on expectations.

TPR has been working on a proposal for revising the Funding Code which will be based on a comply or explain model. It has been advised by a panel of 9 experts (including actuaries, investment.

The JFAR members discussed:

- How will the new code impact the role of the actuary? The work in the central core may require less actuarial input. There could be increased work in advising trustees around the long-term objective of the scheme. This could lead to a challenge around self-interest e.g. schemes which continue to run would continue to need the advice of the actuary, if the actuary advises a "buyout" or "superfund consolidation" they would lose out on future advice income.

- What will schemes following the Bespoke approach need to do to explain their rationale to TPR? They will need to quantify risk and explain their mitigations. If TPR is not satisfied, then schemes will be moved back into the Fast Track approach.

- Is it intended to be a hard boundary between Fast Track and Bespoke approaches? TPR said they will try to define as tightly as possible the conditions for inclusion in the Fast track.

- The model appears to be similar to the standard formula vs internal model split for insurers. For insurers in the standard formula there is still quite a lot of room for interpretation and PRA does still review these firms. Areas which would influence how much checking would be required include the room for judgement available to the actuary (e.g. on mortality). JFAR discussed whether there could be systemic risk or blind spots for schemes using the standardised model when it did not really "fit". It also considered the impact of changing rules in the Fast track over time which may mean previous actuarial advice was not appropriate.

- TPR's purpose for the Fast track regime is to funnel schemes to a lower risk position as schemes mature. It noted that there are currently over 2000 schemes with less than 100 people and the Fast Track regime may help these schemes to reduce fees and maintain a suitable risk level.

- JFAR noted that changes may be needed to TAS 300. The IFoA/FRC agreed to discuss this further. JFAR also agreed to keep developments relating to the new regime under review in order to identify what other JFAR members need to do to support it

5.1.2 Actuarial Council input on GMP Equalisation

Bob Scott (Partner Lane, Clark and Peacock and member of the FRC Actuarial Council) and David Everett (Partner Lane, Clark and Peacock) spoke to JFAR.

The High Court ruled on the 26th October 2018 that Lloyds Bank pension scheme must equalise GMPs paid to members for service between 1990 and 1997. Bob Scott and David Everett presented a summary of the issues surrounding GMPs

The key points discussed included:

- It is not that simple to equalise because of the complexity of the decision and the variation in deductions over time. Therefore, the process of estimating and calculating GMP conversion requires significant time and effort on behalf of pension schemes but with relatively modest changes in benefits to individuals. However, for some individuals there could be significant tax implications which would outweigh any benefit increases.
- The current uncertainty is leading to day-to-day inconveniences (e.g. data and administration issues, delays to transfer values, difficulties in providing advice) as well as problems defining and planning for long-term methods for conversion.
- Legal advice to the schemes is not consistent with some lawyers advising schemes to press ahead with conversion and others advising schemes to wait.
- The time delay is leading to increased administration, uncertainty and cost for schemes.

DWP, HMRC and TPR are aware of the issues and are facilitating three working groups looking into potential ways that conversion could take place and their impacts. The "GMP conversion working group" (DWP instigated) is well established, the HMRC-facing "GMP inequalities pensions tax group" is newer. The third "GMP equalisation working group" (TPR instigated) is an industry group that is working on increasing a common understanding of the issues and potential best practice guides. There are expected to be five guides and a press release is expected shortly. This guidance would not represent TPR guidance.

After the Lloyds case there was a flurry of activity to estimate the accounting impact before year-end, with actuaries involved advising employers and auditors. Whilst the figures are not significant to individuals, they may be material to pension schemes in the context of the impact on the sponsor's corporate accounts. The estimates are highly judgemental, being based on a lack of data and are sensitive to small changes in assumptions. Most companies are expected to report the change through the income statement.

The JFAR noted the problems caused by the current uncertainty.

5.2 JUNE 2019 (COMMERCIAL PRESSURE)

5.2.1 Commercial Pressure on Actuaries in the Lloyds market

Low interest rates, underwriting losses and high expenses were leading to more pressure from shareholders on the management teams including on actuaries. Solvency II has led to an expansion of the number of actuaries across the market. However, despite their technical ability and experience some may not have developed the "backbone/battle scars" to deal with difficult commercial situations.

The importance of culture was noted and that the management team (underwriters, CFOs and CEOs) could "bully" or wear down an actuary's opinion. For example, by challenging each assumption ("Are you sure? Looks a little conservative") which while individually could be justified in the collective could lead to an inappropriate answer.

RR also noted the need for actuaries across organisations to question the purpose and influence on assumptions of each basis e.g. individual pricing, business planning, reserving and capital adequacy. The JFAR noted that Signing Actuaries provide a check and balance but that they can find it difficult to be "independent enough". The importance of scepticism throughout the process was noted.

The JFAR asked if the pressure had always existed. It was felt that pressure was increasing with shareholders' continued expectations of high returns in challenging times and the perceived threat to actuaries' employment where there are disagreements. The JFAR noted that pressure is also likely to increase where executive pay is linked directly to short term underwriting results.

The JFAR asked if there is sufficient professional support available to actuaries facing commercial pressure. The presenter did not think so. He noted that there is professionalism training available but that this was too generic, that the Professional Support Service (PSS) would likely be too slow and/or remote to help an actuary who needed support. He reflected that what was needed may be more like a coaching or mentoring style support service.

It was noted that actuaries in the market have said that the letters from PRA/Lloyd's setting out expectations and areas of concern have been helpful because they provided either a defence or pointers for discussion with management. The importance of support from NEDs was also noted.

The JFAR considered whether the commercial challenge being faced was considered a "challenge between equals". Reasons why this may not be so include:

- the management team may have more power e.g. team vs individual, influence over actuary's role/remuneration;
- the actuary is held to higher/different professional standards (TAS, Practicing Certificates) than non-actuaries.

The JFAR noted that the expansion of the SM&CR could help support the actuary as more senior managers will be held personally responsible for results. It was felt that the regime could help if it flows further through the organisation i.e. to lower level of employee and if its consequences are really understood by employees.

The IFoA Monitoring Scheme could also be seen as a way of supporting the actuary. If members know and can explain to their employers that their work needs to meet professional standards and may be subject to review it could give a lever against commercial pressure.

The JFAR noted though that actuaries shouldn't be immune from challenge. Fair and proportionate challenge and discussion of methods and assumptions should be encouraged so that a better understanding between actuary and management can be reached.

It was noted that actuaries need to be aware of and be supported against the long-term creep as well as one-off pressure situations. The JFAR discussed how they could provide support for both situations:

- Ensure high calibre individuals: e.g. through the Practising Certificate Regime ensure individuals have enough experience and provide high levels of training to PC holders
- Provide technical support e.g. increase the profile and level of support available from PSS helpline,
- Provide professional support/education e.g. think about ways of providing longer term support such as mentoring or training in small groups to help actuaries deal with difficult situations
- Set expectations appropriately e.g. the actuary is part of team making decisions and experts in the business (underwriters, claims) and independent advisors (NEDs) have key roles too.

It was noted that the commercial pressure being felt by actuaries could be an early warning sign of deeper problems in the market.

JFAR noted that there could be sources of objective research such as using the FCA register, list of PC holders to measure average tenure of Chief Actuaries, looking at salaries or time to fill vacancies to identify high risk roles. It was suggested that other professional bodies may also have information on pressures and support systems (e.g. ICAEW in relation to auditors).

IFoA agreed to lead a project in this area which would investigate the potential areas of conflict and pressure (across all sectors) and the additional monitoring or support that could be provided.

(Subsequent to the meeting the IFoA & PRA considered the issues and agreed to continue monitoring at the current time.)

5.3.1 Environment Agency

Mark Ellis Jones (Manager Environment Agency) and Marion Maloney (Policy, Governance and Risk Manager Environment Agency Pension Fund) spoke to JFAR.

EA fearing 4° rise by 2100

The Environment Agency (EA) analyses the effects of climate change and their chair (Emma Howard Boyd) is keenly interested in the role of the finance community. She sees it as critical that the finance community is engaged in measures to help address the effects of climate change.

They presented graphs[135] to show the trajectory of average global temperate increase of between 3° and 4° by 2100 based on existing commitments under the UNFCC Paris Agreement. The EA is now using a "reasonable worst-case scenario" of 4° by 2100.

This is despite the international agreement to keep temperature below the 2° target. But even the UK is off target on emissions reductions. The EA is planning for a world of +3.2° but fears that it maybe 4°. The impact of this would be catastrophic. There is a need to invest in infrastructure globally to produce a pathway to an increase of only 1.5°, it's a major global challenge.

Importance of environmental factors

The World Economic Forum Risk Outlook shows that most of the top risk factors are related to climate change both in terms of likelihood and size of impact. Climate change is increasingly becoming a major economic risk for companies and the supply chain.

The TCFD Framework[136] splits climate change into transition and physical risk. Transition risk/cost measures the overall cost of moving from a fossil fuel-based economy to one based on sustainable energy.

They went through examples of physical risks; these included,

- Wildfires – direct and indirect
- Clean air/Pollution
- Flood surges
- Drought
- Food shortage because of supply interruption
- Hurricanes leading to cascade failure
- Infrastructure vulnerability

They presented their climate impact tool based on water availability and mentioned that they have issued a consultation (which has just closed) on coastal erosion strategy. The strategy is due to be published in 2020, and is focused on how to make homes, communities and infrastructure more resilient.

A number of companies have produced reports on physical risk under the Climate Change Act. This is all in the public domain and a precursor to the TCFD[137].

The EA pension fund assets strategy is now 40% in sustainable investments by carefully choosing their investment managers; they have a lot of focus on transitional cost. Getting engagement on physical risk is harder but they are keen to do this.

EA's pension fund has returned approximately 10 %pa over the last 5 years. It is one of the best funded of the local government pension schemes. This shows that you do not have to choose between investing in sustainable assets and achieving a good return.

135.
136. See TCFD website
137. The Task Force on Climate-related Financial Disclosures.

5.3.2 IFoA Resource and Environment Board

Nick Spencer (Vice Deputy Chair of the IFoA Resource and Environment Board) spoke to JFAR.

The mandate of the Resource & Environment (R&E) Board is to support actuaries in all fields. He noted that there has been a considerable increase in regulation around climate change.

The R&E Board was created as a distinct practice board founded in 2013. The IFoA published a Risk Alert on climate related risk in 2017. The R&E Board has also issued various practical guides for actuaries in different practice areas and looks to support actuaries by illustrating the tools and techniques available.

In response to a question on the extent to which the emerging climate-modelling tools and guidance provided by the regulators and profession were being used and having effect, it was commented that the Risk Alert is advisory and not a mandatory part of actuarial standards nor practice. This is an emerging area and the R&E Board is keen to support actuaries and enable them to do more.

Tools and skills

NS was asked whether the guidance is feeding through to pricing of insurance products. NS replied that, as an example, general insurance actuaries are looking at the statistical progress of natural catastrophe events to see if changing costs can be predicted. There are commercial studies and various tools emerging to help actuaries to understand the climate impacts on catastrophe events although large uncertainties remain.

Beyond the direct consideration in catastrophe risks, NS felt more could be done to consider climate risks, but it should be noted that there are limits to what is currently possible. For example, there are very limited econometric projections on the impact of climate change on future interest rates and inflation which are key variables for actuaries. This is a gap that has been highlighted to the macroeconomic workstream of the Network for Green Financial System (NGFS) a collective group of central banks working on green finance issues. NS is hopeful the NGFS can help make progress on some of these gaps. So, whilst some progress been made, there are direct limitations in the available actuarial tools and approaches which will need to be addressed before the R&E Board can be satisfied. There are also fundamental uncertainties that cannot be removed.

Graphs published by the EA (and presented to the meeting) seem to show that temperature rise took a significant uptick from around 1980 and this prompted the question as to whether the actuarial profession has the tools to spot the points of inflection rather than just the trend. The answer was that the profession does not directly have those tools and is reliant on the guidance of data scientists and others. But an equivalence could be made to the professions position in mortality where it is reliant on medical and bio-science professionals to consider trends vs inflections.

The skills of the actuary are based on the capability to think through scenario projections to see how to, for example, build resilience into the asset and liability structures. Recent scenario analysis suggests that in a business as usual, long-term 4° warmer world the risk and the impacts could be enormous. For example, before we reached 4° warmer there are projections suggesting 1bn migrants by 2050 and far higher numbers 2080. From a financial projection point of view, it is unclear the scale of impact which these geopolitical tensions would have on global trade or even whether it would throw doubt on the ability of the structure of the nation states to remain intact. The meeting noted that implications of these risk scenarios are very troubling.

The world is at a crucial moment in a choice of futures of extremes. If effective global action is not taken the threats are literally existential. However, it should also be considered that there are also massive investment opportunities for emission reduction and the transition to a low carbon economy. Those that set the rules (i.e. policymakers and regulators) have an enormous responsibility.

5.3.3 FRC Lab – Climate Group

Phil Fitz-Gerald and Hannah Armitage (FRC Lab) spoke to JFAR.

The FRC Lab has been working on best practice reporting to investors about climate change. The Green Finance Strategy sets out the expectations that listed companies and large asset owners will report in line with the TCFD by 2022.

TCFD Reporting

There is a cross regulatory task force chaired by HMT to implement the government's vision for implementation of TCFD reporting by 2022. TCFD reporting is under the four core elements of

1. Governance
2. Strategy
3. Risk management and
4. Metrics and targets.

There is a lot of investor interest in climate reporting. The Lab report encourages disclosure under the TCFD pillars.

Expectations noted in previous reports remain relevant (e.g. the relevance of sustainability of the business model in a range of scenarios). The focus on best practice reporting highlights the gaps between reporting practice today and what investors want. Granularity of information on the risks of specific assets and liabilities is important.

Investor needs

Investors want to understand at a high level

1. How boards engage on climate change.
2. How the business may be affected by climate change.
3. How a company may respond to the risks and opportunities of a lower carbon world.
4. How the impact is measured as more data becomes available.

The Lab is encouraging TCFD reporting and encouraging companies to ask themselves questions under each of the four TCFD core elements.

The relevance of the actuarial profession with respect to climate related risk concerns understanding the future by considering alternative scenarios and what decisions need to be made to steer the company in the context of the scenarios. Companies have traditionally not been good at understanding the future.

Most companies do not define clearly what future time horizons they are assuming. The Lab is encouraging companies to be explicit when they refer to short, medium- and long-term future horizons. FRC has not come to a conclusion on horizons, but most investors seem to have a time horizon up to 2030 at the current time. The Lab is looking at another project to further analyse the actual definitions of short- and long-term horizons by different players in practice.

The complexity of the situation and the need for cooperation

There is a spectrum of investor sophistication. At one end some have hired climate scientists to advise on the fund asset allocation and at the other end there are investors who know this is important but who have not yet worked out what to do.

The issues are more complex than actuaries can address alone. On the other hand, climate scientists do not have a background in markets. So, there is a need for multidisciplinary working. Actuaries have a role to play.

Pragmatically actuaries should not necessarily assume a smooth transition in their risk modelling and advice. There is a risk, and a high probably, of a series of shocks and policy responses. Actuaries, regulators and policymakers should apply systems-thinking models to engage and mitigate the impact of these transition risks. There is a need to consider how the system (i.e. companies and markets) operate and find the right levers to drive change (e.g. CEO bonus systems that reward desired behaviours). Different sectors will exhibit different characteristics and require different interventions.

There was a discussion on TCFD, whether it should be mandatory if not implemented voluntarily. There is also a question as to whether TCFD reporting should be subject to audit.

TPR are interested in the impact of climate change on

1. Employer covenant;
2. Investments of pension plans;
3. Scheme funding; and
4. Incorporating ESG into statement of investment principles.

The chair thanked the speakers and asked attendees for take away thoughts from the presentation. Responses were as follows:

1. Importance of business keeping the conversation going.
2. Break down silos and be an active voice so that issues reach public consciousness.
3. Articulate the potential impacts so that people understand the quantum and nature of the risks.
4. There is a potential tension between populism and sustainability: it is critical to focus on a Just Transition, to support and include those where the impact is greatest and pre-empt the types of conflicts seen in the gilets-jaune protests.
5. The Pensions Minister is very interested in this topic.
6. At the individual level we need to find ways to support actuaries so that they are not caught like rabbits in headlights.
7. Important to work together on this and for each regulator to have named contacts.
8. Lots of people are thinking about this. There is a case for setting up a Climate Team linking all regulators together.
9. Use the hotspots in Risk Perspective to gain momentum.
10. What gets measured gets done.
11. Value in having the group of regulators of actuaries to speak with a common voice.
12. Need to ensure that climate change is top of mind.

5.4.1 Changes to Funeral Plan Trusts

Graeme McAusland (CEO Funeral Planning Authority) spoke to JFAR.

This is a small market with only around 20 actuaries involved in advising funeral plan trusts.

The HMT proposals are that all Funeral Plan Trusts should come under the FCA for authorisation and ongoing regulation. There is much that the FCA does already that will enable authorisation of Funeral Plan Trusts to fit in easily to FCA processes. The suggestion was made that the prudential side may be harder. However, it was noted that the FCA is already the largest prudential financial regulator in the UK and therefore understands what needs to be done about prudential supervision. However, it was observed that the funeral plan trusts are closer to DB pension schemes and insurance companies and therefore the FCA will have to allow for the difference this makes to their prudential procedures. They will also have to consider what prudential arrangements will apply to insurance based funeral plan arrangements, which may require actuarial input.

Legislation will be required to effect the transfer of authority to the FCA and this is currently expected in 2020. Following this there will be an 18-month transition period before the new regime becomes effective and existing trusts need to be re-authorised by the FCA.

In the meantime, the FPA have amended their Rules

Widening the range of sanctions available

Enhancing governance requirements and

Introducing an annual Asset Adequacy Report (AAR) requirement.

This last item is intended to address the question "what happens to contractual relationships if the funeral plan provider fails?" When introducing this requirement, the intention of the FPA was not to create a need for extensive additional actuarial work and therefore they did not believe that TAS400 needed to be amended for this new item. They did feel that it was a good way for the actuaries to the funeral plan trust to gain a good insight into the liabilities and the provider. They were not anticipating extra valuations.

Assuming the move to FCA proceeds and we are past the transition period it was suggested that there may be a need for a significant rewrite of TAS400. However, we are still at an early stage.

There was concern expressed about the increased risk during the transition period. Trusts that will be unable (or unwilling) to be authorised by the FCA may become focused on short term finances and extract "surplus" from the trust before winding up or selling the trust.

There is a reputational risk here for actuaries who might be signing off a refund of assets or surplus. The view was expressed that there is a need for guidance from the profession on this. In response the IFoA stated that they would be reviewing guidance once the direction of travel to the FCA was more defined.

It was noted that this is not a new risk, but an escalation of a concern that had been present for some time (in some trusts the actuary has limited power other than to "speak up").

A related concern was that the current regime relies on the opinion of the actuary to the trust. However, it is far from clear that the actuary has any power to influence the actions of the provider.

Discussion turned to whether the new AAR would help to identify and protect from those who might want to strip assets in the transition period. It was explained that the AAR would help to identify those trusts at risk during the transition period but only applies to FPA registered firms which at least in the FPA's view is not where the risks lie. It was also agreed that the FRC would consult Appendix 2 of the new FPA Rules when specifying changes to TAS400.

6 DISCUSSION PAPER: THE ROLE OF ACTUARIES IN DB TO DC TRANSFERS

Discussion Presented To JFAR December 2019

Introduction & background

1.1. Trustees are required, by law, to quote cash equivalent transfer values (CETVs) and, before they can calculate them, must have taken advice from their actuary as to the appropriate assumptions to use. Actuaries are closely involved in this process but do not make the ultimate decision on the transfer value basis to use. The eventual decision is one for the trustees.

1.2. There is some professional uncertainty as to what member options should be included in the transfer value calculation (eg tax free cash).

1.3. Actuaries will also advise the trustees on whether and by how much to cut back CETVs to allow for scheme underfunding. However, there are very few instances of CETVs actually being reduced for underfunding.

1.4. Transfer values are set on a "best estimate" basis. This results in a lower value being paid out than is being reserved for on the scheme's funding basis (which will contain margins for prudence). The difference to the full "buyout" cost associated with securing benefits with an insurer is even greater.

1.5. Therefore, scheme funding tends to improve when members transfer out. This creates an incentive for employers, trustees and those who advise them to encourage transfers. Actuaries will also often advise corporate bodies on the costs of their DB pension schemes. Part of this process includes de-risking strategies which involve removing DB liabilities from the balance sheet (individually through member options, or in bulk through buy-outs and hedging strategies) and in devising communication strategies for schemes' membership.

1.6. The member's decision on whether to transfer will be made after receiving financial advice (if the CETV is greater than £30,000). Actuaries may be involved directly in the advice process and, indirectly, in specifying some of the calculation routines and disclosures shown to clients during the process. Those who advise on DB transfers are regulated by the FCA and operate separately from the scheme actuary.

1.7. Actuaries may be involved in the mechanics of the calculation of CETVs. This could be a direct role in the calculation or, more usually, an indirect role, where calculations are carried out on the basis of instructions issued by the actuary.

1.8. The scope for harm arising from an unsuitable decision to transfer a DB pension is significant. The FCA estimates that average FOS redress of around 16% of CETV is typical, with current CETV averages of around £350,000 (ie over £50k per case). They estimate that total redress of £1.6bn-£2bn each year could be due (based on current volumes of transfers). Even if the market has peaked and demand for transfers reduces in future, the sums could be still be substantial.

1.9. With a low interest rate environment transfer values are at historical highs (as is the cost of replacing such benefits in the insurance market). However, whether these high transfer values will be able to produce sufficient retirement income depends on many factors and requires communications that help the transferee to appreciate the assumptions that are being made and what they mean for the future in terms of the underlying risks to the members.

De-risking exercises and scheme communications

2.1. Many actuaries are employed by benefit consultancies, who advise companies and trustees. Encouraging members to transfer their benefits out of a DB scheme improves funding levels and reduces the cost of a potential buy-in/out. However, giving up DB benefits is unlikely to be in the interests of most members (the view taken by the FCA, TPR and government). This generally holds true for many members, even after the introduction of the pension freedoms. Therefore, the output of actuarial advice could be viewed by some as an encouragement to poor consumer outcomes.

2.2. There is some evidence that schemes that both promote transfers as a retirement option and provide transfer values more routinely have higher proportions of members seeking advice. Some benefit consultancies actively promote to employers the proactive communication of transfer values to members. This may also result in more members seeking advice to transfer – the key risk being the quality of communication they have received.

2.3. Actuaries working with scheme sponsors to design de-risking exercises or communication exercises often produce member material which does not present a balanced view of the merits of transferring (compared with the risks). For instance, an at-retirement presentation of an often significant CETV against a much lower annual income are likely to sway the member towards the higher sum - most members are not versed in making value considerations and therefore inclined to put more weight on the 'bird in hand' argument. Further, evidence suggests that members often place too high a value on the perceived flexibility of the pension freedoms which can push them towards a transfer.

2.4. Actuaries may also be involved in selecting a suitable adviser if the trustee or employer wishes to offer members a preferred firm (and potentially pay for or subsidise advice). This requires carrying out appropriate due diligence to ensure that the firm selected has robust processes in place to provide suitable advice.

2.5. On incentive exercises (enhanced transfer values or pension increase exchanges) actuaries are often involved in selecting the group of members to make the offer to and selecting the timing (based on favourability of market conditions and 'gaming' of the IFA industry metrics). Actuaries need to be clear about how the exercise effects the various stakeholder groups. This may be covered by the industry Code of Practice

Impact of new TPR funding regime

3.1. The new funding regime, due to be consulted on in early 2020, may result in more cautious funding bases and investment strategies and a corresponding potential; to increase CETVs.

3.2. This may make CETVs more attractive to members as evidence has shown that demand for transfers rises as average CETVs increase. Schemes and employers may also be more motivated to encourage transfers to reduce funding liabilities, and to reduce the cost of insured solutions, potentially without a clear explanation to members of the value of benefits being given up.

3.3. Some schemes are including CETV decrements in their funding assumptions and thus taking advance credit for expected CETV savings.

Impact of recent political and legal developments

4.1. The recent court ruling[138] requiring equalisation of GMPs will have the effect of increasing benefits for some members and hence their CETVs

4.2. Replacement (or gradual dis-use) of the RPI index in favour of a CPI index will have the effect of reducing benefits in those schemes where pension increases are still linked to RPI, and a consequential reduction in CETVs.

Transfer values and actuarial factors
Reducing transfer values

5.1. Actuaries are involved in providing advice to trustees on whether to reduce CETVs to reflect scheme under-funding, and on how much a reduction should be. This is an option that has historically been little used.

5.2. Going forward, and particularly under the proposed new funding regime (where funding levels may fall), there may be greater pressure to reduce CETVs to protect the security of benefits for non-transferring members.

5.3. Actuaries will therefore increasingly need to balance the needs of all members in recommending reductions to the trustees. There could therefore be a conflict between professional judgement and commercial pressures arising from their employers and their clients.

Partial transfers

5.4. DB schemes are permitted to transfer out only part of members' benefits but, to date, few schemes (perhaps 1 in 6) have offered this option even though there is an increasing focus on the flexibility of such an option.

5.5. Actuaries (and the firms who employ them) may play a central role in recommending whether to offer partial CETVs and to advise on a basis of calculation.

Actuarial factors

5.6. The IFoA has launched its Actuarial Monitoring Scheme (AMS) with the announcement of a thematic review (in 2020) into actuarial factors used to calculate pension scheme benefits. The review will look at current practices adopted by actuaries in this area including how factors such as commutation at retirement are determined for schemes and how frequently these factors are reviewed.

5.7. Commutation factors, where these are not fixed in scheme rules, are often set at a level which is favourable to the scheme, which effectively makes a "profit" when members take cash.

5.8. Commutation factors are particularly relevant to the assessment of DB to DC transfers as they effectively represent giving up 25% of a member's DB benefits (most members take their full entitlement). The risks here are similar to full DB transfers, albeit at a lower level.

5.9. Financial advice is needed for transfers of over £30,000. Many tax-free cash payments

138. https://www.11kbw.com/wp-content/uploads/Lloyds-judgment-Oct18.pdf

are above this level, but no financial advice is needed to give up this guaranteed, lifetime income. Giving up pension on unfavourable terms may not be in members' best interests and may not reflect their actual needs in retirement.

5.10. Actuaries are often involved in designing member communications and this has often remained silent on the merits, or otherwise, of taking a cash sum instead of pension.

Other DB scheme advice

5.11. Actuaries may also be involved in assessing the basis (albeit uncommon these days) for DB transfers-in. There is a need to ensure consistency with transfers out.

5.12. CETVs are used in pensions sharing on divorce. Actuaries need to take care that they are not favouring/ disadvantaging one or other of the parties involved. Some actuaries specialise in advising divorcing couples on their pension options.

Actuarial Roles

Role of actuaries involved pension superfunds transactions

6.1. Superfunds are designed to consolidate DB schemes and could be a cheaper alternative to an insured buyout. Although the funding regime for superfunds has yet to be finalised, CETVs payable may be at a higher level than for DB schemes given the potentially more conservative investment strategy.

6.2. Actuaries will also be expected to play a key role in assessing risks to see if a superfund is the best option for a scheme (as opposed to insured buyout or running on in its current form).

6.3. Given commercial pressures to reduce liabilities and increase returns to investors, there may be an incentive to encourage members to transfer which could be greater than in the original DB schemes. Actuaries working for superfunds may therefore find themselves conflicted.

6.4. When preparing for entry to a superfund there may also be pressures to reduce the liabilities before they have transferred across. Employee Benefit Consultancies and the actuaries who work for them may be part of this process.

Role of actuaries at buyout providers

6.5. Policies that have been fully bought out will generally offer surrender values to non-retired policyholders (the insured equivalent of CETVs). Actuaries working for providers will be involved in setting the surrender basis.

6.6. As with superfunds, there could be competing priorities and pressures arising in terms of the needs of the provider and the transferring policyholders. There will also be pressures arising on trustees to reduce liabilities before buyout takes place.

Role of actuaries at advice firms and providers

6.7. Actuaries may work at providers who can benefit significantly from the inflow of income from DB transfers. They may be involved in the production of promotional material and evidence has shown that there is often a lack of balance in terms of the merits of a DB transfer (eg downplaying the safety net provided by the PPF on employer insolvency – the value of the PPF may be further strengthened pending the outcome of the Bauer case).

6.8. Some actuaries are also employed by advice firms, where similar issues arise. The work here may also involve designing projection models which can show an over-optimistic assessment of the returns to be gained from a personal arrangement.

Summary

7.1. As this paper has highlighted, there are a number of public interest risks which could affect the actuarial profession arising from members' work on DB transfers.

7.2. Challenges could be made regarding not clearly communicating the risks of transfers to members. Actuaries could also be seen as failing to fully balance the needs of all members when advising on aspects of DB transfers as they are affected by conflicts between their professional judgement and commercial pressures arising from their employers and their clients. These may be areas for the Pension Working Group to look into further.

7.3. Effective communication is at the heart of the value that the Actuary can bring to society and actuaries are often involved in designing communication material to DB scheme members. Commercial pressures may mean that communication material may often over-play the merits of a transfer or under-play the benefits of guaranteed lifetime income.

7.4. With scheme funding issues likely to increase over time, the pressures on actuaries advising in this area are also likely to become more significant in future.

7.5. There are also overlaps between the issues in this paper and those called out in the 2019 Risk Perspective being developed separately.

7 APPENDIX 3: EXTERNAL PUBLICATIONS REVIEWED TO SENSE CHECK THE CHOICE OF HOTSPOTS

List of external publications reviewed to sense check with risks derived using the ARIA methodology. Literature consulted in the context of specific issues are referenced within the text at the appropriate places.

- Risk Barometer 2019 – Allianz
- Global Risks 2035 Update – Atlantic Council
- Emerging Risks Survey 2018 - AXA
- Global Risk Landscape 2019 - BDO
- Major Trends and Emerging Risks Radar May 2019 Update – CRO Forum
- Global Risk Management Survey 2019 - Deloitte
- Systemic Risk Barometer 2020 Risk Forecast – DTCC
- The Global Business Risk Report Q4 2019 – Dun & Bradstreet
- Future Risks 2019 - EURASIA
- Annual Report 2018-2019 – The Geneva Association
- What worries the world (September 2019) – Ipsos Public Affairs
- Scenario Analysis for Systemic Climate Risk – Ortec Finance
- Risk Trends 2019 (part of Annual Global CEO Survey) – PwC
- SONAR 2019 – Swiss Re Institute
- Global Assessment Report 2019 – UNDRR
- Cambridge Global Risk Index 2019 – University of Cambridge Judge Business School
- Global Risks Report 2019 – World Economic Forum
- Global Risks Report 2020 – World Economic Forum