JFAR Risk Perspective

2021

JFAR

Joint Forum on
Actuarial Regulation

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1 About the JFAR: the Joint Forum on Actuarial Regulation

The Joint Forum on Actuarial Regulation (JFAR) was established in 2013 and comprises the Financial Reporting Council (FRC), the Institute and Faculty of Actuaries (IFoA), the Financial Conduct Authority (FCA), The Pensions Regulator (TPR), and the Prudential Regulation Authority (PRA).

The JFAR is a unique collaboration between regulators to coordinate, within the context of JFAR member regulators' objectives, the identification and analysis of public interest risks to which actuarial work is relevant.

BANK OF ENGLAND PRUDENTIAL REGULATION AUTHORITY

FCA FINANCIAL CONDUCT AUTHORITY

FRC Financial Reporting Council

Institute and Faculty of Actuaries

The Pensions Regulator

2 About the JFAR Risk Perspective 2021

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 actuarial work to the highest quality.

The JFAR sets out its collective view on current risks to high quality actuarial work in the JFAR Risk Perspective 2021. The JFAR Risk Perspective 2021 is intended to raise awareness of the risks to, and the importance of, high quality actuarial work in mitigating the risk 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 JFAR Risk Perspective 2019/20[1], using Actuarial Risk Identification Architecture (ARIA), the JFAR identified eight 'hotspots' where there is a perceived increase in risk to the public interest where actuarial work is central.

For the JFAR Risk Perspective 2021 the JFAR confirmed that those eight hotspots remained relevant. For each hotspot the risk is defined, and the current influences related to the hotspot are discussed. The key developments and actions by JFAR member regulators are identified and discussed. A list of references and further reading is included.

In common with other commentators the JFAR believes that Climate-Related Risk (including Biodiversity) (Section 4.1, Page 8) is the defining risk of our times. Actuaries have 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 unless efforts are intensified to reach carbon neutrality very quickly. The costs and risks to companies of transitioning to a low carbon environment are impacting company results and are becoming subject to disclosure requirements.

The COVID-19 pandemic has dominated global life since early 2020 and into 2021. The JFAR Risk Perspective 2021 discusses the COVID-19 pandemic in Systemic Risk (Section 4.2, Page 15), building on the approach taken last year.

Other hotspots are discussed in Sections 4.3 to 4.8 (Pages 20 to 49).

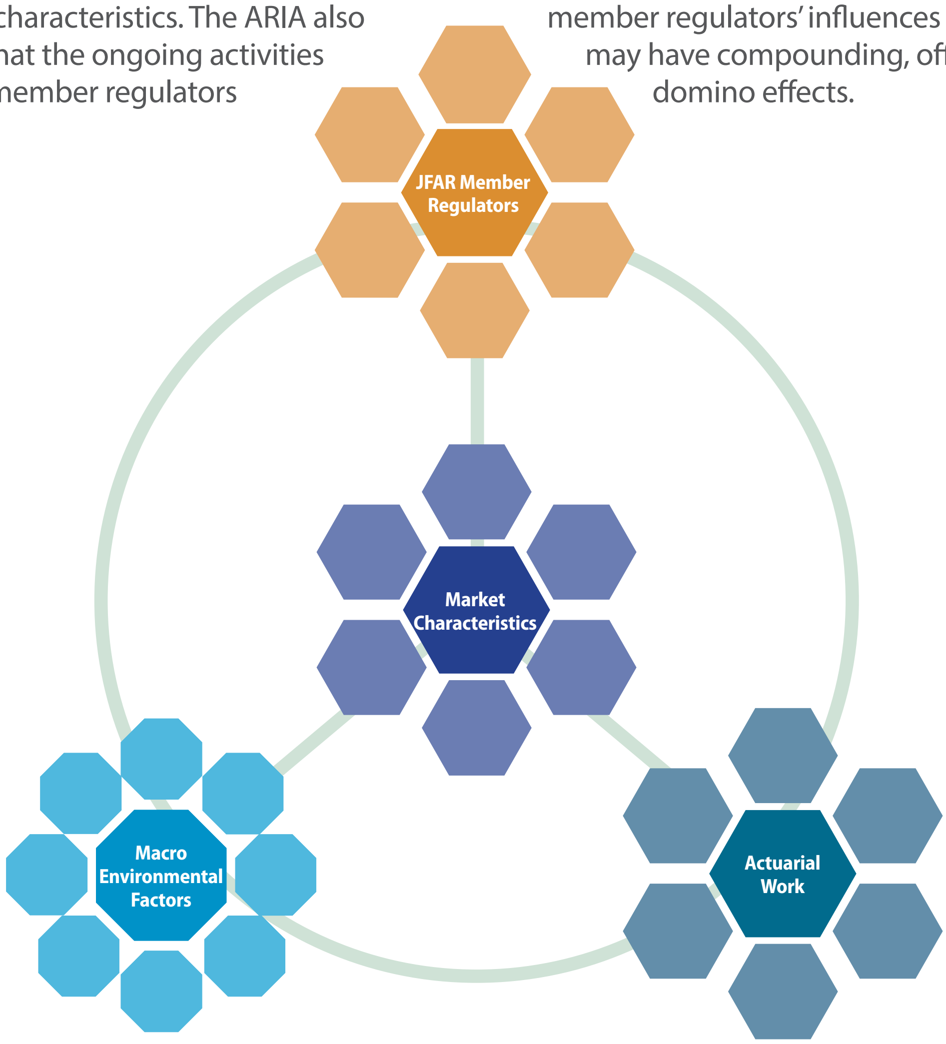
The JFAR is not necessarily saying there is current evidence of the risks materialising or of poor quality or insufficient actuarial work. JFAR does not intend to propose additional regulation to mitigate all the identified risks. Any coordinated action will be proportionate and selected from a wide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

[1] https://www.frc.org.uk/getattachment/2bddf6ca-7d5d-4f79-9560-ff023142fc76/JFA-Risk-Perpective-Web-2-1.pdf

3 Actuarial Risk Identification Architecture

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 factors, the inherent risk in actuarial work, and market characteristics. The ARIA also recognises that the ongoing activities of the JFAR member regulators influence the risk to the public interest of actuarial work. There are dynamic interactions between these three sources of risk and JFAR member regulators' influences on risk which may have compounding, offsetting, or domino effects.

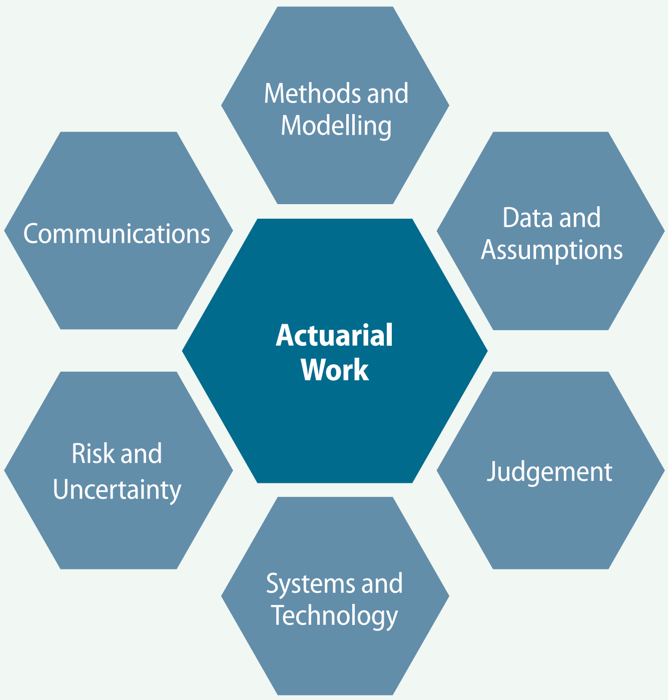


Macro Environmental Factors

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

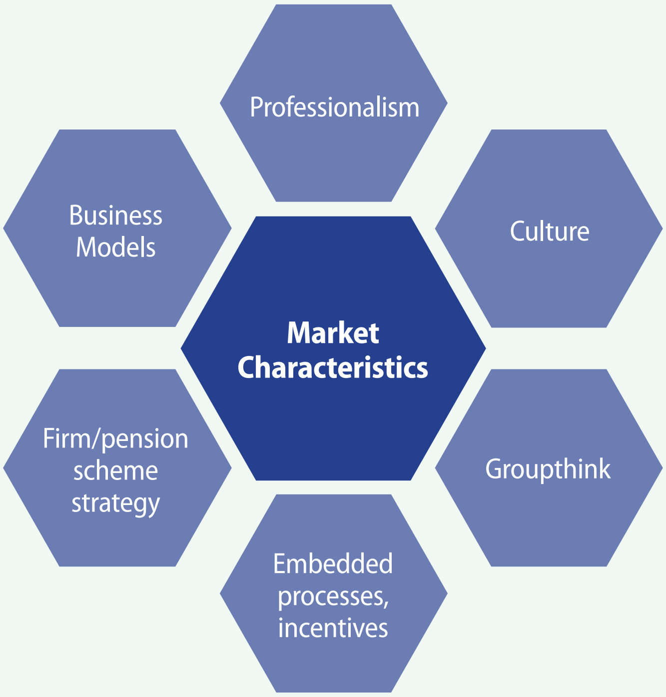
Actuarial Work

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 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 represents the risk to the public interest which arise from this. The market characteristics include professionalism, culture, groupthink, embedded processes and incentives, firm/pension scheme strategy, and business models.



JFAR Member Regulators

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

4 Hotspots

4.1 Climate-Related Risk (including Biodiversity)

Hotspot Description

The risk that actuaries may not appropriately consider, or communicate clearly, the impact of climate-related risk on their actuarial work. The related influence of climate change on, and from, biodiversity-related influences is also noted. Biodiversity risk is expected to become a specific hotspot in the near future (perhaps in the JFAR Risk Perspective 2022, as understanding of this risk improves).

Current Influences

Climate-related risk represents 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 ever-increasing political and societal pressure on long-term investors (e.g. life insurers and pension schemes) to respond to climate change. 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 actuarial work 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 of their actuarial work 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 general insurance and for investments (especially in real assets).

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, and may be heavily influenced by local, national, or supranational regulations and actions. Actuaries need to be aware of the potential impact of transition risk when advising on which companies to include in equity investment portfolios and the assumptions to be made concerning investment portfolio performance.

In respect of both risks there is a risk of climate-related litigation liability with potential implications for the pricing of Directors' and Officers' (D&O) insurance and Business Interruption (BI) insurance.

Governments, users of actuarial work, and society more broadly have increased efforts in recent years to mitigate climate-related risk and their impact, as well as developing pathways to a transition to net zero.[2] Numerous regulations introduced to enforce these ambitions have now been in place for a number of years and have been mainstreamed; for example, ongoing efforts to mandate disclosure in line with the recommendations of the Task Force on Climate-related Financial Disclosures[3] (TCFD). Financial services firms should be increasingly familiar with the regulations and must develop the skill and expertise to meet them. As efforts to tackle climate change gain momentum, both in the UK and internationally, actuaries must be aware of the increased role they will play in delivering these efforts.

Linked to climate-related risk is biodiversity, or nature, loss. Biodiversity is affected by climate change, with negative consequences for human well-being. Through the ecosystem services it supports, biodiversity also makes an important contribution[4] to both climate change mitigation and adaptation. The Dasgupta Review,[5] published in April 2021, reviewed the economics of biodiversity and assessed the economic benefits of biodiversity globally as well as the economic costs and risks of biodiversity loss. The review has brought increased policymaker and regulator attention to the issue of biodiversity loss, and the role of private finance in addressing biodiversity loss.

Some recent assessments[6] have suggested that the world's largest insurers are currently falling behind the world's largest banks on responsible investment governance, climate change, biodiversity, and human rights. While this is not an issue that actuaries can address alone, there may be a role for actuaries working for insurers to improve that position by elevating these topics with their internal executives and board members.

Key developments and JFAR member regulators' actions during 2020/21

UK Actions

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

UK sets ambitious new climate target

On 20 April 2021 the UK government announced plans to set the world's most ambitious climate change target into law to reduce emissions by 78% by 2035[7] compared to 1990 levels, in line with the recommendation from the independent Climate Change Committee.[8] The UK government intends for the new target to become enshrined in law by the end of June 2021.

G7

The UK hosted the 47th G7 summit in Carbis Bay, Cornwall on 11-13 June 2021. As the G7 President the UK sought to solidify and extend an earlier virtual meeting[9] of the G7 on 20-21 May 2021 which committed to accelerating progress under the Paris Agreement,[10] achieving net zero greenhouse gas emissions as soon as possible and by 2050 at the latest, harnessing the significant opportunities for sustainable development (including green jobs and sustainable, resilient growth), and mobilising and aligning finance to support the green recovery.

2 https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/
3 https://www.fsb-tcfd.org/
4 https://www.cbd.int/climate/
5 https://www.gov.uk/government/collections/the-economics-of-biodiversity-the-dasgupta-review
6 https://shareaction.org/research-resources/insuring-disaster/
7 https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035
8 https://www.theccc.org.uk/
9 https://www.gov.uk/government/publications/g7-climate-and-environment-ministers-meeting-may-2021-communique/g7-climate-and-environment-ministers-communique-london-21-may-2021
10 https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

COP26

The UK will host the 26th UN Climate Change Conference of the Parties[11] (COP26) in Glasgow on 1-12 November 2021. The climate talks will bring together heads of state, climate experts, and campaigners to agree coordinated action to tackle climate change. As the COP26 President the UK is committed to working with all countries and joining forces with civil society, companies, and people on the frontline of climate change to inspire action ahead of COP26.

Climate Financial Risk Forum (CFRF)

The CFRF,[12] co-chaired by the FCA and the PRA,[13] brings together senior representatives from across the financial sector to build capacity and share best practice between financial regulators and the financial industry. In June 2020 the CFRF published a guide[14] to help the financial industry approach and address climate-related financial risks. The guide aims to help financial services firms understand the risks and opportunities that arise from climate change, and support financial services firms as they adapt their risk, strategy, and decision-making processes to reflect climate-related financial risks.

The guide includes a summary co-produced by the PRA and the FCA, as well as the following four industry-produced chapters:

- Risk management (includes risk management annex[15] with list of data and tools providers)
- Scenario analysis
- Disclosures
- Innovation

Institute and Faculty of Actuaries

The IFoA published its climate change statement[16] in January 2021. The statement takes an international outlook on climate-related risk and takes an actuarial view by focusing on risk mitigation. The statement is intended to drive action in aligning the finance system with a net zero ambition. The statement sets out the context for all activities arising from the IFoA's Climate-Related Risk Taskforce[17] (CRRT).

The IFoA's CRRT is currently progressing 38 recommendations, endorsed by the IFoA's Council, aimed at supporting IFoA Members understand and address climate-related risk in their actuarial work. Key recommendations include updating the actuarial syllabus to promote greater consideration of climate-related risk, reviewing the IFoA's regulatory framework to mainstream climate-related risk within it, and encouraging the introduction of relevant new knowledge and new skillsets into actuarial work through thought-leadership.

The IFoA became a signatory[18] to the Green Finance Education Charter[19] (GFEC) in July 2020. The GFEC was developed by the UK Department of Business Energy and Industrial Strategy, Her Majesty's Treasury, and the Green Finance Institute to act as a tool for focusing collaboration between the UK government and industry. The IFoA is one of the original 12 professional bodies to sign the GFEC and has undertaken to integrate green finance into IFoA work and to engage and educate IFoA Members. The IFoA's commitments under the GFEC feed into the CRRT recommendations under knowledge and skillsets. The IFoA is reviewing its ethical code of conduct, the Actuaries' Code, to consider whether changes should be made to meet those commitments and expects to consult on this in 2021.

The IFoA has also created a Biodiversity and Natural Capital Working Party[20] to consider and promote the urgent need for actuaries to

11 https://ukcop26.org/uk-presidency/
12 https://www.fca.org.uk/transparency/climate-financial-risk-forum
13 TPR and the FRC are observers.
14 https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2020-summary.pdf
15 https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2020-data-tools-providers.pdf
16 https://www.actuaries.org.uk/climate-change-statement
17 https://www.actuaries.org.uk/system/files/field/document/CRRT.pdf
18 https://www.actuaries.org.uk/news-and-insights/news/ifoa-signs-green-finance-education-charter
19 https://www.greenfinanceinstitute.co.uk/green-finance-education-charter/
20 https://www.actuaries.org.uk/practice-areas/sustainability/research-working-parties/biodiversity-working-party

take into account the importance, perils, and impacts of global biodiversity risk. It also seeks to promote the role of finance in addressing the risks of biodiversity loss.[21] Biodiversity loss is amplified by, and amplifying of, climate change impacts. The IFoA considers this to be an important stream of ongoing work that is likely to need its own specific risk focus in the near future.

Prudential Regulation Authority

In July 2020 the PRA sent a letter[22] to the CEOs of all PRA-regulated firms to build on the expectations set out in the PRA Supervisory Statement on Enhancing banks' and insurers' approaches to managing the financial risks from climate change[23] (SS3/19). The letter also served to provide observations on good practice and set out steps for implementation.

The Bank of England launched the 2021 Biennial Exploratory Scenario[24] (the Climate BES) in June 2021. The objective of the Climate BES is to test the resilience of the largest banks, insurers, and the financial system to different possible climate pathways and provide a comprehensive assessment of the UK financial system's exposure to climate-related risk. The Climate BES asks firms to consider three scenarios, which are based on scenarios published by the Network for Greening the Financial System[25] (NGFS).

In November 2020 the PRA published the response to the general insurance industry – a framework for assessing financial impacts of physical climate change.[26] The report outlined the PRA's response to industry feedback received on the framework for assessing financial impacts of physical climate change[27] report (May 2019).

The PRA has further demonstrated that climate-related risk is a key priority by communicating this in letters about 2021 priorities to the Chief Executive Officers of PRA-regulated insurance firms,[28] PRA-regulated UK deposit takers,[29] and PRA-Regulated international banks.[30]

Financial Conduct Authority

In December 2020 the FCA published Policy Statement PS20/17[31] to introduce a new rule to enhance climate-related disclosures by listed issuers and clarify existing disclosure obligations.

Under the rule, in-scope issuers (commercial companies with a UK premium listing) would be required to state in their annual financial report whether they have made disclosures consistent with the recommendations of the Task Force on Climate-related Financial Disclosures[32] (TCFD) or explain if they have not done so.

The FCA also introduced a Technical Note in PS20/17 clarifying existing disclosure obligations for a wider scope of issuers.

Encouraging issuers to make more comprehensive and high-quality climate-related financial disclosures should:

- enhance market integrity due to better informed asset pricing and more accurate valuation of issuers' securities;
- improve available information to enable financial services firms to develop products that meet consumers' climate-related preferences, and reduce the risk of consumers buying unsuitable (or mis-sold) products by supporting more reliable climate-related disclosures to clients and end-investors; and

21 http://blog.actuaries.org.uk/blog/biodiversity-sessional-planting-seeds
22 https://www.bankofengland.co.uk/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change
23 https://www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss
24 https://www.bankofengland.co.uk/stress-testing/2021/key-elements-2021-biennial-exploratory-scenario-financial-risks-climate-change
25 https://www.ngfs.net/en
26 https://www.bankofengland.co.uk/prudential-regulation/publication/2020/response-to-the-general-insurance-industry-feedback
27 https://www.bankofengland.co.uk/prudential-regulation/publication/2019/a-framework-for-assessing-financial-impacts-of-physical-climate-change
28 https://www.bankofengland.co.uk/prudential-regulation/letter/2020/pra-insurance-supervision-2021-priorities
29 https://www.bankofengland.co.uk/prudential-regulation/letter/2020/ukdt-supervision-2021-priorities
30 https://www.bankofengland.co.uk/prudential-regulation/letter/2020/ibd-supervision-2021-priorities
31 https://www.fca.org.uk/publication/policy/ps20-17.pdf
32 https://www.fsb-tcfd.org/

- support more effective competition between financial services firms: with better information to support firms' product development and their own disclosures, clients and end-investors will be better equipped to assess which products meet their needs.

The FCA has since consulted in June 2021 on potential client-focused TCFD-aligned disclosures by UK-authorised asset managers, life insurers, and FCA-regulated pension providers in CP21/17.[33] The FCA has further consulted on enhancing climate-related disclosures by standard listed companies and is seeking views on ESG topics in capital markets in CP21/18.[34]

The Pensions Regulator

The Pensions Regulator (TPR) published its climate change strategy[35] in April 2021. The strategy sets out TPR's strategic response to climate change and how TPR will support pension schemes' trustees to meet the challenges from climate change. The strategy comes ahead of proposed regulations which will require trustees of larger pension schemes to maintain oversight of, and make mandatory disclosures in relation to, climate-related risk. Beyond the proposed regulations the strategy outlines TPR's expectations that all pension schemes' trustees will comply with existing requirements; for example, to publish their statement of investment principles and implementation statement.

In July 2021 TPR will consult on draft guidance outlining what is expected from pension schemes' trustees who are subject to the new requirements. TPR's guidance is intended to be read alongside statutory guidance from the Department for Work and Pensions (DWP). TPR will also consult on a new appendix to its monetary penalties policy, which will outline TPR's approach to penalties for breaches of the proposed regulations.

Financial Reporting Council

Throughout 2020 the FRC has undertaken a thematic review[36] of climate-related considerations by boards, companies, auditors, professional bodies, and investors.

The thematic review acknowledged the important role boards, companies, auditors, professional bodies, and investors play in considering climate-related issues. These important actors assess climate-related challenges, help to drive appropriate reporting to the market, equip accountants and auditors with relevant knowledge and the confidence to challenge, and encourage the behaviour and reporting they want to see. These groups all play important roles in delivering society's climate ambitions, as each has the capacity to act as a driver of change.

The thematic review highlights the FRC's views on current market practice, outlines expectations, and shows where it will focus energies in ensuring that those within the FRC's remit are responding appropriately to this challenge.

In November 2020 the FRC published a Climate Thematic Summary Report[37] which brought together views on all areas of the thematic review.

On 10 November 2020 the FRC made a statement[38] on Non-Financial Reporting Frameworks, encouraging "*UK public interest entities voluntarily to report against the Task Force on Climate-related Financial Disclosures' (TCFD) 11 recommended disclosures and, with reference to their sector, using the Sustainability Accounting Standards Board[39] (SASB) metrics.*"

33 https://www.fca.org.uk/publications/consultation-papers/cp-21-17-climate-related-disclosures-asset-managers-life-insurers-regulated-pensions
34 https://www.fca.org.uk/publications/consultation-papers/cp21-18-enhancing-climate-related-disclosures-standard-listed-companies
35 https://www.thepensionsregulator.gov.uk/en/document-library/strategy-and-policy/climate-change-strategy
36 https://www.frc.org.uk/frc-for-you/climate-thematic-review-2020
37 https://www.frc.org.uk/getattachment/ab63c220-6e2b-47e6-924e-8f369512e0a6/Summary-FINAL.pdf
38 https://www.frc.org.uk/news/november-2020/frc-nfr-statement
39 https://www.sasb.org/

Global Actuarial Involvement

Climate change is an issue that transcends borders and the International Actuarial Association[40] (IAA) has been approached by supranational bodies (OECD[41] and others) to help develop understanding of how the base risk may evolve.

To support this, the IAA established a Climate Risk Task Force[42] (CRTF) to deliver on several IAA activities relating to climate-related risk over a five-year time horizon. The objectives of these activities are to contribute to the valuable global efforts to further identify, measure, and manage climate-related risk, thereby serving the public interest.

In September 2020 the IAA published the first in a series of planned papers. Importance of Climate-Related Risks for Actuaries[43] discusses the main components of the climate-related risk relevant to actuaries, their implications, the broad categories of actuarial work and the importance of climate-related risk to each category. The second paper, Introduction to Climate-Related Scenarios,[44] was published in February 2021 and aims to provide background covering principles and outlining the processes for developing climate-related scenarios. The third paper, *Scenario Application to Financial Institutions and Insurance*, is to be published shortly.

More papers are scheduled to be released over the coming years to address the needs of actuaries, including:

- a paper on the application of climate-related risk scenarios to asset portfolios with an important subsidiary goal of encouraging consistency between assets and liability modelling;
- a paper on climate-related risk management and addressing emerging third-party regulatory / reporting / disclosure requirements;
- a paper on the potential effects of transition and adaptation steps; and
- a paper on the link between climate-related risk scenarios and social security.

A review of existing IAA publications is also planned to identify and address any gaps related to climate-related risk.

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 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.

International Actions

EU Sustainable Finance Disclosure Regulation

The EU's Sustainable Finance Disclosure Regulation[45] (SFDR, (EU) 2019/2088) came into force on 19 December 2019 and phasing in commenced on 10 March 2021. The objective of the SFDR is to set out the duties of financial market participants with regards to integrating environmental, social, and governance (ESG) risks and disclosing information on this. The UK government has opted not to implement the SFDR into UK domestic law following the UK's post-EU Exit transition period. However, SFDR will most-likely still be relevant for UK firms either as a requirement under the regulation or in practical terms.

European Green Deal

The European Green Deal,[46] announced by the European Commission in December 2019, commits to the EU becoming climate-neutral by 2050, whilst promoting to help companies

[40] https://actuaries.org/iaa
[41] https://www.oecd.org/
[42] https://www.actuaries.org/IAA/Documents/COUNCIL/Meetings/2020_Brussels/06a_ProposedFinal_SOI_on_Climate_Risks_8March2020_clean.pdf
[43] https://www.actuaries.org/IAA/Documents/Publications/Papers/CRTF_ImportanceClimateRelatedRisksActuaries_FINAL.pdf
[44] https://www.actuaries.org/IAA/Documents/Publications/Papers/CRTF_Introduction_Climate_Scenarios.pdf
[45] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088
[46] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

to become world leaders in clean products and green technologies. It provides an action plan to boost the efficient use of resource by moving to a clean circular economy, and to restore biodiversity and cut pollution. The EU 2030 Climate Target Plan[47] and the EU Biodiversity Strategy for 2030[48] were both presented in 2020.

EIOPA issues Opinion on the supervision of the use of climate change risk scenarios in ORSA

In April 2021 the European Insurance and Occupational Pensions Authority (EIOPA) issued an Opinion on the supervision of the use of climate change scenarios in the Own Risk and Solvency Assessment[49] (ORSA) addressed to national supervisory authorities, which outlined expectations on the supervision of the integration of climate change risk scenarios by insurers in their ORSA.

In order to foster forward-looking management of climate change risks to ensure the long-term solvency and viability of the insurance industry, national supervisory authorities should expect insurers to integrate climate change risks in their system of governance, risk-management system, and ORSA, similar to all risks undertakings are or could be exposed to. In the ORSA insurers should do an assessment to identify material climate change risk exposures and subject the material exposures to a risk assessment. Climate change risks should be assessed not only in the short-term but also in the long-term using scenario analysis to inform the strategic planning and business strategy.

China's net zero goals

In September 2020 President Xi Jinping made a pledge to cut China's CO_2 emissions to net-zero by 2060.[50] As the world's largest single emitter of greenhouse gasses, this is an extremely important development and signifies the global momentum that is building. China's plan to meet these long-term targets is outlined in its 14th five-year plan (2021-2025).

US joins the Network of Central Banks and Supervisors for Greening the Financial System (NGFS)

The US Federal Reserve joined the NGFS[51] in December 2020, together with seven other new members: Central Bank of Paraguay, Financial Regulatory Authority of Egypt, Financial Services Authority of Indonesia, Central Bank of Iceland, Polish Financial Supervision Authority, Central Bank of Uruguay, and the European Securities and Markets Authority. The addition of these new members cements the NGFS's commitment to collective action on a global level.

The US joining the NGFS follows the executive actions[52] of President Joe Biden to rejoin the Paris Agreement[53] on climate change and the directing of his agencies to reverse a number of previous policy positions on environmental regulations and emissions standards. These actions are reflective of President Biden's broader plan to align climate goals with economic recovery.

47 https://ec.europa.eu/clima/policies/eu-climate-action/2030_ctp_en
48 https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_en
49 https://www.eiopa.europa.eu/content/eiopa-issues-opinion-supervision-of-use-of-climate-change-risk-scenarios-orsa_en
50 https://www.carbonbrief.org/qa-what-does-chinas-14th-five-year-plan-mean-for-climate-change
51 https://www.ngfs.net/en/communique-de-presse/us-federal-reserve-joins-ngfs-and-two-new-publications-released
52 https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/
53 https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

4.2 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. It remains to be seen whether the impact of the COVID-19 pandemic causes a short-term retrenchment and reduction in trade interconnectedness and increased sensitivity to the vulnerability of supply chains for a period of time.

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. Due to the impact of the COVID-19 pandemic remote working has increased significantly and may lead to wider societal changes (e.g. movements in population densities in different parts of the country).

Climate change may lead to nature adaptions that are unpredictable and therefore make pricing of insurance products more uncertain. In the long-term the impact of climate change is the most significant systemic risk, but short-term sentiment has been strongly influenced by the COVID-19 pandemic.

The COVID-19 pandemic introduces uncertainties into the assumptions to be used for both mortality and health future experience as well as the future economic experience to be assumed in the UK once the COVID-19 pandemic has subsided. The COVID-19 pandemic has also provided a reminder to us that the modern world is intrinsically interconnected regardless of political or other man-made decisions.

Key developments and JFAR member regulators' actions during 2020/21

The JFAR Risk Perspective 2019/20[54] contained a fuller consideration of the nature of systemic risk and the reader is referred there for more detail.

The last year has shown that interconnectedness is not limited by category but extends across categories. For example, the COVID-19 pandemic has been not just about health, but also about financial stability and climate change.

The COVID-19 pandemic has dominated global life since early 2020 and into 2021: this section of the JFAR Risk Perspective 2021 focuses largely on that topic.

[54] https://www.frc.org.uk/getattachment/2bddf6ca-7d5d-4f79-9560-ff023142fc76/JFA-Risk-Perpective-Web-2-1.pdf

According to the United Nations Environment Programme[55] COVID-19[56] is zoonotic[57] i.e. the virus is passed from animals to humans. Such infectious diseases are occurring more frequently due to a number of factors: 75% of all emerging infectious diseases[58] are zoonotic.

According to the World Bank[59] climate change can increase the risk of an epidemic like COVID-19 in a number of ways, including by causing deforestation. Deforestation is responsible for 31% of the zoonotic diseases.[60]

Systemic failures may be considered either to be of the domino type or the tsunami type.[61] The first type occurs where an event creates aligned behaviours that cause multiple failures. The second type occurs when a single overwhelming event swamps the system. For the domino type event it is the correlation between risk factors that does the damage (and the lack of appreciation of how strong these correlations are).

The Impact of the COVID-19 Pandemic

In the Global Risk Report 2021[62] infectious disease was included in the top five by likelihood and was number 1 by impact. The report categorises risks into "*clear and present danger*" (horizon of 0-2 years), "*knock-on effects*" (horizon of 3-5 years), and "*existential threats*" (horizon of 5-10 years).

In the short-term category infectious diseases and livelihood crises are the top two concerns with extreme weather events coming third. In the medium-term category asset value falls and IT infrastructure failure come top and in the long-term category weapons of mass destruction and state collapse come first and second with biodiversity loss being third in the list of global concerns.

It is therefore clear that the effect of the COVID-19 pandemic has been to focus attention and concern on the risks of infectious disease and the resulting economic meltdown that can arise in the aftermath of measures designed to combat the health effects.

The Human Cost

Aggregator websites[63] [64] show the number of cases, recoveries, and deaths from COVID-19, updated on a daily basis. As of mid-May 2021 the cumulative number of cases worldwide is approximately 165 million and the number of deaths is around 3.4 million. In the UK the number of cases was 4.4 million and there were 127,000 deaths (a crude mortality rate of 2.9%). The crude mortality rate globally and for Europe are around 2.1% and 2.2% respectively. However, at the time of writing further strains (i.e. variants) of COVID-19 are being identified and it remains too early to know what the final statistics will show.

These numbers represent total deaths where COVID-19 is mentioned as cause. The Continuous Mortality Investigation (CMI) produces a weekly monitor showing excess deaths (compared to the expected value in the absence of the COVID-19 pandemic). To mid-May 2021[65] the number of UK 'excess deaths' is approximately 100,000.

The impact of COVID-19 on future mortality and morbidity remains uncertain. Given that deaths have numbered disproportionately among the older population it might be thought that future mortality could improve (the vulnerable having been reduced in number). However, the world has also seen the development of Long COVID. This is recognised as a condition by the National Health Service[66] (NHS) and they have established a Long COVID

55 https://en.wikipedia.org/wiki/United_Nations_Environment_Programme
56 https://en.wikipedia.org/wiki/COVID-19
57 https://en.wikipedia.org/wiki/Zoonosis
58 https://www.unep.org/news-and-stories/statements/preventing-next-pandemic-zoonotic-diseases-and-how-break-chain
59 https://blogs.worldbank.org/climatechange/fighting-infectious-diseases-connection-climate-change
60 https://www.ecohealthalliance.org/2017/11/deforestation-impact-planet
61 http://www.nematrian.com/Pages/SystemicRiskCombined.pdf
62 https://www.weforum.org/reports/the-global-risks-report-2021
63 https://covid19.who.int/
64 https://www.worldometers.info/coronavirus/
65 https://www.actuaries.org.uk/system/files/field/document/Mortality-summary-pandemic-monitor-Week-18-2021-v01%202021-05-18.pdf
66 https://www.nhs.uk/conditions/coronavirus-covid-19/long-term-effects-of-coronavirus-long-covid/

Taskforce.[67] It is estimated that approximately 300,000 people[68] in the UK have symptoms of Long COVID and it is as yet unknown how long the symptoms may continue or the ultimate health impact.

It is therefore clear that actuaries will need to use judgement when determining what assumptions to make about future mortality and whether to make adjustments to that indicated by past statistics. This topic is discussed more-extensively in Ageing Population and Affordability (Section 4.3, Page 20).

TPR's Annual Funding Statement[69] (May 2021) urges trustees of DB pension schemes to take a prudent view with respect to the future impact of COVID-19 on life expectancies when setting technical provisions, in the absence of any currently reliable evidence.

Financial Impacts

The COVID-19 pandemic has severely depressed economic performance in the UK and globally. The Office of Budget Responsibility (OBR) has estimated[70] that UK GDP declined by 9.9% over 2020. UK government expenditure (and borrowing) to enable the UK to cope has run into hundreds of billions of pounds. It is widely expected (and quantified by the OBR) that the next few years will exhibit weaker financial performance than anticipated previously.

The financial impact of COVID-19 has had varying impacts on the ability of pension schemes' sponsoring employers to support their pension scheme. TPR has issued extensive guidance to pension schemes' trustees and sponsoring employers on the short-term and long-term impacts throughout 2020, and again in their most recent Annual Funding Statement (May 2021).

Business interruption costs arising from the COVID-19 pandemic have been significant and it was unclear whether insurers were obligated to meet the business interruption costs caused by lockdown closure. For small businesses this was a very significant issue and the FCA brought a test case to the courts for rulings on the interpretation of a group of insurers' policy wordings. This topic is discussed further in Geopolitical, Legislative, and Regulatory Risk (Section 4.5, Page 34), sub-section 'Business Interruption insurance' (Page 34).

On 15 January 2021 the UK Supreme Court handed down a judgment[71] on appeal from an earlier judgment[72] by the UK High Court. Following the ruling the FCA has published a Policy Checker[73] so that businesses can check whether their policy wording does cover business interruption caused by the COVID-19 pandemic. The FCA is publishing data[74] on insurers' claims received and payments made to policyholders.

IFoA Pandemics Hub

A considerable body of helpful material has been built up and collated on the IFoA website under the heading Pandemics Hub[75] relating the actuarial aspects of the COVID-19 pandemic.

The Pandemics Hub includes:

- IFoA COVID-19 Action Taskforce[76] (ICAT) details showing workstreams grouped by practice area together with outputs to date;
- links to external resources (International Actuarial Association and various overseas actuarial profession websites together with academic, medical, and regulatory links); and
- CMI mortality monitor showing regular and frequent updates on how COVID-19 deaths are affecting mortality experience.

67 https://www.england.nhs.uk/coronavirus/post-covid-syndrome-long-covid/#long-covid-taskforce
68 https://www.bbc.co.uk/news/uk-england-oxfordshire-55668650
69 https://www.thepensionsregulator.gov.uk/en/document-library/statements/annual-funding-statement-2021
70 https://obr.uk/overview-of-the-march-2021-economic-and-fiscal-outlook/
71 https://www.bailii.org/uk/cases/UKSC/2021/1.html
72 https://www.bailii.org/ew/cases/EWHC/Comm/2020/2448.html
73 https://www.fca.org.uk/firms/business-interruption-insurance/policy-checker
74 https://www.fca.org.uk/data/bi-insurance-test-case-insurer-claims-data
75 https://www.actuaries.org.uk/news-and-insights/public-affairs-and-policy/epidemics-and-pandemics-hub
76 https://www.actuaries.org.uk/news-and-insights/public-affairs-and-policy/pandemics-hub/covid-19-action-group

The Pandemics Hub lists 52 ICAT sponsored workstreams showing 54 outputs (to mid-April 2021) with many other outputs pending. These outputs contain short articles, blogs, and longer articles / papers and cover such areas as:

- economic impacts;
- impacts on asset portfolio choice for life insurers and pension schemes;
- impact on general insurance (GI) and health pricing;
- impact on GI claims development;
- behavioural aspects;
- effectiveness of Enterprise Risk Management (ERM) frameworks;
- scenario modelling;
- impact of vaccination on mortality; and
- impact on social care.

It will take more time before the ultimate impact of the COVID-19 pandemic finally becomes definitive, but there is currently a great deal of material available to practitioners and the challenge to actuaries is to sift through the material and apply professional judgement to extract the information that is relevant to the circumstances that they are considering.

Internet of Things (IoT)

The number of connected smart devices continues to increase faster than predicted. The JFAR Risk Perspective 2019/20[77] reported that it was estimated that there would be 26 billion such devices in 2021. The latest estimate[78] in November 2020 is that there will be 35 billion such devices by 2021 and 75 billion such devices by 2025.

In two respects[79] [80] the IoT has been fuelled by the COVID-19 pandemic. First, healthcare investment in smart wearable devices is expected to 'skyrocket' and the COVID-19 pandemic has also led to a ballooning of on-line medical appointments and remote consultations. On the one hand this may open the way for more-accurate remote diagnostics through these devices but on the other hand remote consultations may be more prone to error. It is therefore difficult to predict what impact these changes may imply for healthcare costs.

The second aspect that the COVID-19 pandemic has promoted has been working from home. This has represented an extreme acceleration of a trend that had been developing slowly. Lockdowns enforced a rapid switch to working from home for those who could do so. The experience proved the reliability of the technology and created a widespread culture of virtual networking and meeting.

An immediate implication has been the need for organisations to think more carefully about the security of their IT systems – for the first time private home computers became an integral part of the corporate business infrastructure and protocols were needed to ensure that businesses did not become vulnerable to cyber-attacks.

In the longer term the impact of the 'proof of concept' of employees working effectively and efficiently from home may lead to radical changes to the nature of work. It is easy to imagine corporates needing less central office space and having more-sophisticated IT equipment for use by employees who will live wherever they choose (and not necessarily within large conurbations or within easy commute of their offices). However, there will be knock-on impacts on the viability of sectors of the economy reliant on the footfall and business of commuting workers.

The implications of this change are likely to be profound, both at the societal level as well as at the statistical level. Actuaries will need to consider carefully how the changing movements within the country may impact (for example) postcode as a useful proxy for differential mortality or morbidity.

77 https://www.frc.org.uk/getattachment/2bddf6ca-7d5d-4f79-9560-ff023142fc76/JFA-Risk-Perpective-Web-2-1.pdf
78 https://www.forbes.com/sites/danielnewman/2020/11/25/5-iot-trends-to-watch-in-2021/?sh=347839b6201b
79 https://go.forrester.com/blogs/predictions-2021-technology-diversity-drives-iot-growth/
80 https://www.bernardmarr.com/default.asp?contentID=2125

Summary

The last year has reminded us of the interconnectedness of much of the world that surrounds us. While the tsunami type of event is always a possibility it is likely to be difficult to protect against these, except on a global basis. Additionally, actuaries must take seriously the risk of the domino type events occurring where the correlation and connectedness between seemingly independent bodies or effects has not been recognised sufficiently.

4.3 Ageing Population and Affordability

Hotspot Description

The risk that actuaries fail to allow appropriately for changing costs of mortality, morbidity, and certain support systems (e.g. disability and long-term care) due to future experience deviating from projections.

Current Influences

There is uncertainty concerning the long-term mortality trend, especially post-COVID-19. In addition, 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.

Mental health issues are now more-openly discussed, affording the opportunity for earlier treatment.

The trend from DB to DC pension schemes 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 and JFAR member regulators' actions during 2020/21

Population Mortality

The Continuous Mortality Investigation (CMI) released CMI_2020 in March 2021, covering population mortality data up to 31 December 2020. Naturally the COVID-19 pandemic had a significant effect on mortality rates in 2020. In fact, "*standardised mortality rates in England & Wales were on average 12% higher in 2020 than in 2019 as a consequence of the COVID-19 pandemic.*"[81]

Ignoring the COVID-19 pandemic, mortality improvements remained positive, but lower than in the recent past: "*Average mortality improvements were above 2% a year for most of 2000-2011, but fell to around 0.5% a year for periods ending in 2015-2019.*"[82] As noted:

"*Most actuaries expected some slowdown in mortality improvements as some of the factors that led to the previous high improvements could not persist. In particular, a large part of the high mortality improvements in the decades before 2011 came from reductions in deaths from circulatory diseases, such as heart attack and stroke. As the proportion of deaths from circulatory diseases fell, subsequent reductions could not contribute as much to overall mortality improvements. A higher proportion of deaths are now caused by cancer and dementia, which have shown lower mortality improvements.*"[83]

81 https://www.actuaries.org.uk/learn-and-develop/continuous-mortality-investigation/cmi-working-papers/mortality-projections/cmi-working-paper-147/mortality-improvements-and-cmi2020-frequently-asked-questions-faqs
82 Ibid
83 Ibid

Annuitant Mortality

The Continuous Mortality Investigation (CMI) released the latest "16" Series pension annuity in payment mortality tables in December 2020, covering annuity in payment mortality data from 2016 to 2019.

There are (on average) significant socio-demographic differences between annuitants and the general population, the former having lower mortality and higher expected mortality improvements.

Population Changes

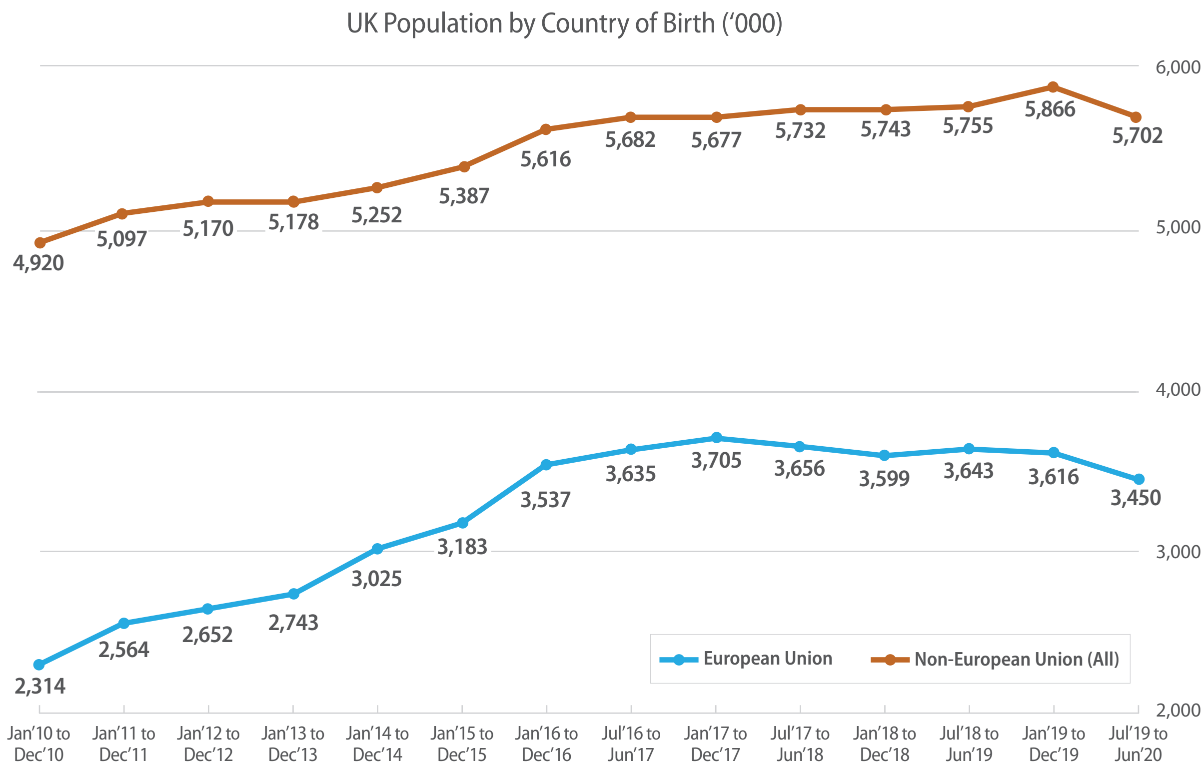
The effects of EU Exit (at relatively lower ages) and the COVID-19 pandemic (at relatively higher ages) has led to a slowdown in UK population growth. The UK population born in the EU is now 7% below the peak. The non-EU born UK population has also fallen.[84]

COVID-19 Mortality

Most COVID-19 deaths in the UK occurred in older age groups: in the period from mid-March 2020 to mid-March 2021 some 98% of England & Wales COVID-19 deaths occurred in the 50+ age group, and some 89% of England & Wales COVID-19 deaths[85] occurred in the 65+ age group.

The COVID-19 mortality effect on older age groups can clearly be seen below. During each peak some 40% to 45% of deaths in the 65+ age group were COVID-19 related.[86] Throughout the COVID-19 pandemic older age groups have disproportionately suffered higher mortality (both relative and absolute).

Seasonal variations in mortality are expected (generally higher in Winter, lower in Summer). UK government responses (especially 'lockdowns') can have quite a profound effect



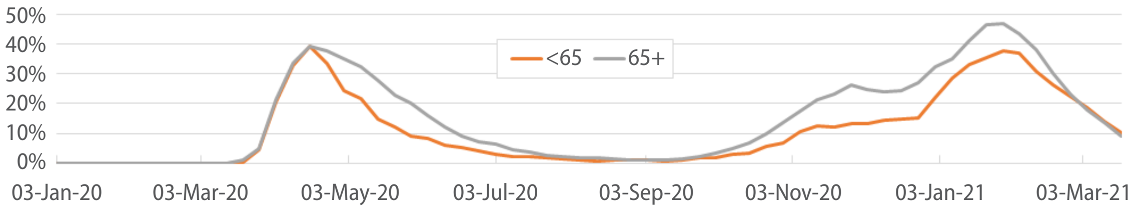
Source: ONS, Population of the UK by country of birth and nationality, Table 1.1

84 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/datasets/populationoftheunitedkingdombycountryofbirthandnationality [Table 1.1]

85 https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredinenglandandwales [COVID-19 - Weekly registrations]

86 Ibid

England and Wales, COVID deaths / total deaths registered weekly, by Age Group, all



Source: ONS, Deaths registered weekly in England and Wales, provisional, COVID-19 - Weekly registrations

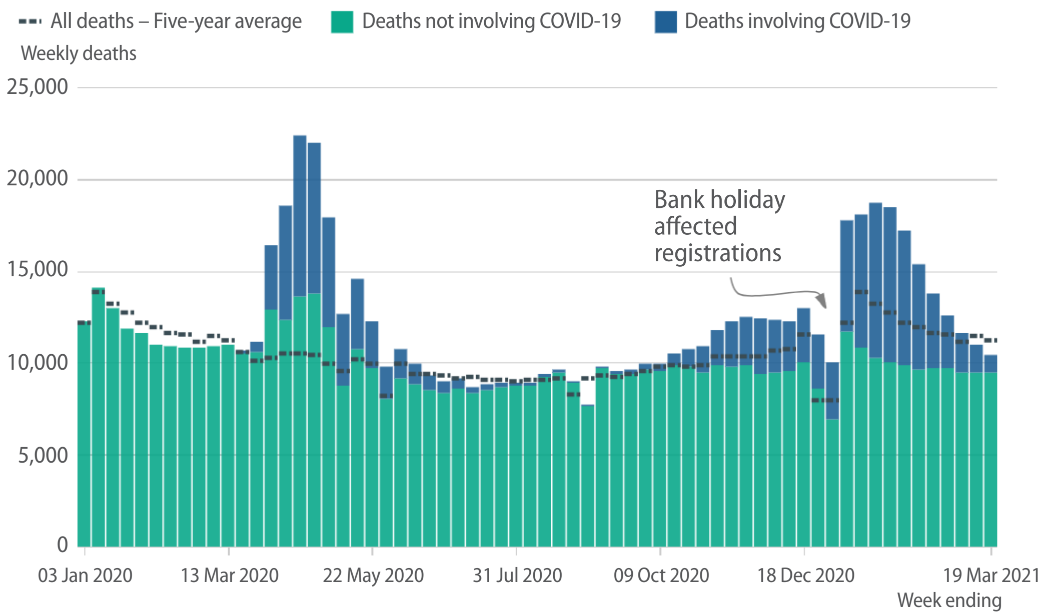
on non-COVID-19 related deaths[87] and this can easily be seen from October 2020 to March 2021 (below).

An alternative measure of the overall impact of the COVID-19 pandemic measures excess deaths (from a normal year e.g. five-year average) only. In this way some positive effects (e.g. less motor vehicle accidents due to the lockdown) and some negative effects (e.g. cancer patients who experience higher mortality as their treatment is delayed) are also captured.

Future mortality trends

Looking ahead, there are drivers of change that may suggest mortality changes might possibly be adverse. For example, increasing obesity[88] levels (including in childhood), increasing concern over sleep deprivation with proven links to Alzheimer's,[89] heart attacks and strokes,[90] worries over antibiotic resistance,[91] and the spread of opioid addiction.[92] In addition, COVID-19 effects including Long COVID and COVID-19-related mental health issues may also be important. The growing

Number of deaths in England and Wales registered by week, 28 December 2019 to 19 March 2021



Source: ONS, Coronavirus (COVID-19) roundup

87 https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19roundup/2020-03-26
88 https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-obesity-physical-activity-and-diet/england-2020
89 https://www.nih.gov/news-events/nih-research-matters/sleep-deprivation-increases-alzheimers-protein
90 https://www.nhs.uk/live-well/sleep-and-tiredness/why-lack-of-sleep-is-bad-for-your-health/
91 https://www.antibioticresearch.org.uk/about-antibiotic-resistance/
92 https://www.gov.uk/government/statistics/substance-misuse-treatment-for-adults-statistics-2019-to-2020

frequency of zoonotic[93] diseases is discussed more-extensively in Systemic Risk (Section 4.2, Page 15) and is linked to deforestation and biodiversity loss. Zoonotic diseases (especially in the form of pandemic) could have a significant effect on future mortality trends. The disruption wrought on the National Health Service (NHS) by the COVID-19 pandemic may also have a longer-term impact on the success of the NHS in treating non-COVID-19 illnesses.

In contrast, advances in medical technology in relation to:

- better preparing for future pandemics (including having "*vaccines and therapeutics available at scale within 100 days*"[94]);
- medical procedures;
- artificial organ transplants;
- the use of Artificial Intelligence and Machine Learning in medicine, although not without drawbacks;[95]
- the use of genetic data to personalise medicine; and
- the increasing use of health-tech[96] to support healthy lifestyle choices may reverse the recent trends.

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,[97] 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.

COVID-19 Morbidity: 'Long COVID'

'Long COVID'[98] refers to lingering health effects long after a COVID-19 infection has subsided. "*About one in five people have symptoms of Long COVID five weeks after an initial infection and one in seven after 12 weeks, an Office of National Statistics (ONS) survey suggests. It estimates that 1.1 million people were affected*[99] *in the UK in the four weeks from 6 February [2021].*" "*There is no universally agreed definition of Long COVID, but it covers a broad range of symptoms such as fatigue, muscle pain, and difficulty concentrating.*"[100]

Of particular concern are reports of hearing loss, tinnitus, and vertigo,[101] symptoms of Long COVID that typically develop in the weeks following a COVID-19 infection.

Mental Health

The COVID-19 pandemic has caused elevated levels of mental health issues[102] related to fear, worry, stress, job loss, impact on physical health, and feelings of isolation. The immediate and longer-term impacts on mortality and morbidity of COVID-19-related mental health issues are still largely unknown.

93 https://en.wikipedia.org/wiki/Zoonosis
94 https://www.ft.com/content/69050b94-0bf0-46b4-9695-3376347214fc
95 https://www.cam.ac.uk/research/news/machine-learning-models-for-diagnosing-covid-19-are-not-yet-suitable-for-clinical-use
96 https://medicalfuturist.com/
97 https://www.nhs.uk/live-well/quit-smoking/using-e-cigarettes-to-stop-smoking/
98 https://www.nhs.uk/conditions/coronavirus-covid-19/long-term-effects-of-coronavirus-long-covid/
99 https://www.bbc.co.uk/news/health-56601911
100 https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/1april2021
101 https://www.healthyhearing.com/report/53127-Coronavirus-hearing-loss-tinnitus-covid
102 https://www.who.int/teams/mental-health-and-substance-use/covid-19

An unexpected by-product, however, has been much-greater openness to discussing mental health issues, and greater acceptance of one's own mental health issues as well as the mental health issues of others. Employers have generally responded rapidly.[103] It is possible that the longer-term impacts on mortality and morbidity of mental health issues (both COVID-19-related, and otherwise) will ultimately be positive, with greater-acceptance and earlier-intervention.[104] However, this may lead to a corresponding demand for services at a scale that is not currently capable of being provided.

The gap between life expectancy and healthy life expectancy

Even though life expectancy is expected to continue to increase, healthy life expectancy is not keeping pace[105] with the overall increase to life expectancy. In addition, there are significant regional variations in the UK ("*Richmond-upon-Thames had the highest male healthy life expectancy at birth in the UK of 71.9 years, 18.6 years longer than males in Blackpool where it was only 53.3 years.*"), largely linked to significant socio-demographic differences.

What this means is that both men and women are spending more years in later life in poor health.[106] The Global Burden of Disease[107] (GBD) estimates that in 2017 the most common causes of morbidity were musculoskeletal disorders, mental disorders and neurological disorders and these accounted for 47% of the ill health in the population. This has implications for the future cost of healthcare insurance. 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 strain on National Health Service (NHS) finances.[108] If actuaries do not sufficiently anticipate this gearing effect, they may understate future cost increases. Similarly, cost projections for the NHS need to anticipate this gearing.

Pensions before and during retirement

Under the Pensions Act 2008 every employer in the UK must put certain staff into a workplace pension scheme and contribute towards it[109] and the 'pension freedoms' introduced in 2015 have allowed those reaching retirement to have greater flexibility in how they choose to receive their retirement proceeds.[110] 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 (if at all). 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[111] (PLSA) has issued suggested income levels required to support various target standards of living in retirement. In a complementary piece of work the IFoA[112] has produced some 'rules of thumb' for how much needs to be saved to achieve those levels of income in retirement.

Stresses in Defined Benefit pension schemes

Stresses in Defined Benefit pension schemes are not new. Generous benefits promised (sometimes decades ago), and the now-realised costs associated with these, have caused

103 https://www.cipd.co.uk/knowledge/culture/well-being/supporting-mental-health-workplace-return#gref
104 https://www.nhs.uk/mental-health/nhs-voluntary-charity-services/charity-and-voluntary-services/get-help-from-mental-health-helplines/
105 https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/healthstatelifeexpectanciesuk/2016to2018
106 https://publichealthengland.exposure.co/health-profile-for-england-2019
107 http://www.healthdata.org/gbd/2019
108 For example, if life expectancy is 80 years and healthy life expectancy is 76 years, people are expected to live for 4 years in poor health. If LE increases by 4 years but HLE increases by only 2 years, then people are expected 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.
109 https://www.thepensionsregulator.gov.uk/en/employers
110 https://www.fca.org.uk/data/retirement-income-market-data [Table 1]
111 https://www.plsa.co.uk/Policy-and-Research/Document-library/Hitting-The-Target-A-Vision-for-Retirement-Income
112 https://www.actuaries.org.uk/news-and-insights/media-centre/media-releases-and-statements/uk-savers-must-set-aside-quarter-earnings-good-retirement

sponsoring employers to seek ways to scale back costs by closing pension schemes to new pension scheme members, by closing pension schemes for future service for all pension scheme members, by down-sizing benefits,[113] and by investigating newer more-innovative structures involving some level of employer-employee risk-sharing (e.g. via Collective Defined Contribution[114] (CDC) schemes, or 'collective money purchase schemes').

In closed DB pension schemes the impact of ageing changes the dynamics of funding and investment. TPR has alerted pension schemes' trustees and actuaries to this for several years through TPR's successive Annual Funding Statements. In 2020 TPR consulted on factoring scheme maturity explicitly into funding and investment strategies in TPR's new DB Funding Code, which is under development.

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 projected changes, based on general population or otherwise.

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 efforts could involve designing products to address the various issues. These could be products to fund long-term care costs,[115] draw-down products in retirement, or equity-release products.

Ageing Population Issues

Apart from the impact of mortality, 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[116] that allow individuals to supplement any care they may be entitled to from the state.

Triple Lock

"The triple lock[117] is a government commitment, over and above the statutory requirement, to uprate the basic and new State Pension by the highest of earnings, prices or 2.5%. Its introduction was announced by the Coalition Government in its first Budget after the 2010 election."

The triple lock is a particularly valuable commitment for lower-income older age groups, who not only rely on the State Pension but are keen to ensure future increases in the State Pension keep pace with rises in costs of living. These lower-income older age groups may have little, if any, financial buffer against the vicissitudes of life. Many of these lower-income older age groups will have mortality and morbidity outcomes directly connected to their income levels.

However, the triple lock is an expensive commitment, especially in a time of exceptionally strained public finances and a growing roster of State Pension recipients.[118]

113 https://www.pensionsage.com/pa/UUK-launches-consultation-on-proposed-alternative-route-to-USS-valuation-amid-ongoing-tensions.php
114 https://publications.parliament.uk/pa/cm5801/cmpublic/PensionSchemes/memo/PSB06.pdf
115 https://www.wearejust.co.uk/your-money/planning-for-care/costs-of-care/
116 https://www.ukri.org/our-work/our-main-funds/industrial-strategy-challenge-fund/ageing-society/healthy-ageing-challenge/
117 https://commonslibrary.parliament.uk/research-briefings/cbp-7812/
118 https://www.pensionspolicyinstitute.org.uk/sponsor-research/pension-facts/table-1/

Climate Change

Climate change is discussed more-extensively in Climate-Related Risk (including Biodiversity) (Section 4.1, Page 8), but this topic merits a brief discussion from a mortality and morbidity point-of-view.

The effects of climate change on mortality and morbidity are still largely unknown. Wider variations in temperature extremes, increased rainfall and flooding, more droughts / dry spells, and impacts on crop success and food availability (and the price of same) could all impact mortality and morbidity.

Particularly for life insurers this may result in more-extreme events resulting in greater profit & loss variability, and feed into decisions on reinsurance strategy.

4.4 Unfair Outcomes for Individuals

Hotspot Description

The risk that actuaries may not act in the best interests of customers, either intentionally or unintentionally, for financial or other motives, which may result in unfair treatment of some subgroups in favour of other subgroups.

Current Influences

Climate change (discussed more-extensively in Climate-Related Risk (including Biodiversity), Section 4.1, Page 8), perhaps the biggest systemic risk of our times, is also an issue of inequality which could lead to unfair outcomes for some groups. The UN says:[119]

"The impacts of climate change will not be borne equally or fairly, between rich and poor, women and men, and older and younger generations."

Impacts fall most heavily on those who are already more vulnerable, and with the least resources to respond. This affects the work of actuaries in all areas of insurance, investments, and pensions, whether in product design, pricing, reserving, investment management, or governance. Actuaries engaged in the public debate on the consequences and impacts of potential responses to climate change also need to be alert to the risk of unfair outcomes from this overarching inequality.

There are risks associated with increasing access to Big Data,[120] including 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 (or facing higher prices when potentially already financially vulnerable);
- the statistics may prove to be unreliable; and
- certain groups are known to have a higher propensity to pay and may therefore be charged excessively.

All of these have the potential to alter the balance between broad customer fairness and commercial objectives. Additionally, telematics[121] (in general insurance) create ethical problems of disclosure to third parties and privacy issues. While the General Data Protection Regulation[122] (GDPR) may address some of these issues, the general issue remains of whether customers are aware of how their data is being used.

119 https://www.un.org/sustainabledevelopment/blog/2019/05/climate-justice/
120 https://en.wikipedia.org/wiki/Big_data
121 https://www.gpsinsight.com/blog/what-is-telematics/
122 https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/

A noticeable trend in recent years has been the transfer of risk from institutions – such as employers, the state, and financial services firms – to individuals. The causes are complex and cover a variety of factors from increasing longevity to technological advances, the low interest rate environment, and changes in financial regulation. Prominent examples of the trend include the steady shift from defined benefit (DB) to defined contribution (DC) pension schemes and from annuities to drawdown, fewer investment products with guarantees, and insurance products that are increasingly priced based on the risk profiles of individuals as opposed to groups. The COVID-19 pandemic has heightened the risks for individuals as they are confronted by the need to manage risks they did not have to worry about previously. Actuaries, as advisers and designers of products for consumers, have an important role to play in developing practical solutions.

Much activity in pensions involves competing rights, and judgements made may have the effect of favouring some individuals or groups against others. Even though the primary duty of the actuary is to their client (the pension scheme's trustees or sponsoring employer), in advising the client the actuary may need to bring to their attention any impact on the wider stakeholders[123] (including different groups of pension scheme members). Some examples are:

- DB to DC transfers require 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 the sponsoring employer against the needs of the pension scheme, at a time when COVID-19 and post-EU-Exit-related uncertainty may have put strain on the sponsoring employer. The risk is that the pension scheme's trustees may be put under undue pressure to relent on deficit recovery programmes, thus exposing the pension scheme's members to further risk.
- Emerging economic difficulties may lead companies to manage their dividend policy to favour the shareholders in such a way as to create unfairness for pension scheme members of pension schemes they sponsor.
- Investment strategies in DB pension schemes require a balance between the sponsoring employer's ongoing ability to support the underlying risks over time and potential losses to pension scheme members from events which prevent the sponsoring employer from providing this support.

All these areas may impose pressure on the actuary to balance the commercial and professional aspects of their role.

Actuaries also have to confront competing rights with respect to Pension Superfunds,[124] needing to balance the needs of investors in the superfunds with outcomes for pension scheme members and the Pension Protection Fund[125] (PPF). While these requirements are not new in principle superfunds may introduce sharper polarisation of needs. Actuaries may face increased pressure to satisfy client demands against a background of wider stakeholder detriment.

Key developments and JFAR member regulators' actions during 2020/21

The great risk transfer (GRT)

In July 2020 the IFoA published its interim campaign report exploring the trend to transfer risk from institutions to individuals.

123 The Actuaries' Code (paragraphs 3 and 3.1) states "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."

124 https://www.ft.com/content/7fa8de0c-d645-42d6-99ea-125e0a3d2a0f

125 https://www.ppf.co.uk/

The IFoA summarised the findings of their call for evidence, and they followed up with roundtable sessions on the key themes with the purpose of developing practical recommendations. In April 2021 the IFoA published its recommendations[126] under the two broad themes of rebalancing risks through structural changes to markets, products and services, as well as by helping consumers manage financial risk effectively and affordably through good decision making. Further work is planned with stakeholders, including actuaries.

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[127] in April 2019. These findings give examples of good and poor practice. Most firms assessed were taking reasonable care to manage the risk of customer harm. There were though some areas of poor practice that may lead to customer harm. There are implications for the With-Profits Actuary who has a reserved role in this area.

Fairness in pricing and product value

Fairness in pricing has been an issue of trust between customers and insurers. The practice of dual pricing in personal lines insurance, whereby long-standing loyal customers are charged higher prices than offered to potential new customers because existing customers are considered to be less price sensitive, has been acute. 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, and should consider and apply the new regulations in this area set out below.

The FCA published an evaluation paper[128] in October 2019 that considered the impact of rules to increase transparency and engagement at renewal in general insurance markets. These rules required firms to show both the renewal premium and the previous year's premium on the renewal notice. In addition, in September 2020 the FCA published its final report[129] on its market study into general insurance pricing practices. This report concluded that these markets could be made to work better for customers, and the FCA published a consultation on proposed measures to support effective competition and good customer outcomes. Final rules (PS21/5)[130] to address the harms identified were published in May 2021. The rules aim to ensure that renewing home and motor insurance consumers are quoted prices that are no more than they would be quoted as a new customer through the same channel. They are also designed to make it simpler for customers to stop automatic renewals if they wish to do so, and they introduce new product governance rules to ensure that firms deliver fair value on all their insurance products. Some of these rules also apply to insurers and intermediaries of other general insurance and protection products. The FCA also published a research paper[131] alongside this policy statement, containing the results of an experiment they conducted looking at consumer perceptions of, and response to, discounts and incentives.

The IFoA completed a Thematic Review[132] on 21 June 2021 into actuarial involvement in general insurance pricing for UK home and motor insurance.

126 https://www.actuaries.org.uk/system/files/field/document/TGRT_Campaign_Recommendations_FINAL.pdf
127 https://www.fca.org.uk/publication/thematic-reviews/tr19-03.pdf
128 https://www.fca.org.uk/publication/corporate/ep19-1.pdf
129 https://www.fca.org.uk/publication/market-studies/ms18-1-3.pdf
130 https://www.fca.org.uk/publication/policy/ps21-5.pdf
131 https://www.fca.org.uk/publication/research/research-note-discounts-cashback-soft-toys-promotion-consumer-decision-general-insurance-markets.pdf
132 https://www.actuaries.org.uk/system/files/field/document/GI_Thematic_Review_FINAL_0.pdf

This topic is discussed further in Impact of Undue Commercial Pressure (Section 4.7, Page 45), sub-section 'Pricing' (Page 45).

Access and exclusion in insurance

Certain groups can struggle with access to insurance if they are perceived as less profitable risks to the insurer. Big Data offers insurers more opportunities to analyse insurance risk in smaller and more-homogenous groups for pricing purposes, and if taken too far could lead to a breakdown of the risk-pooling principle.[133]

In July 2019 the FCA launched a consultation proposing new rules to help customers with pre-existing medical conditions (PEMCs) access suitable travel insurance[134] (CP19/23). The available evidence suggested that most customers with PEMCs could get cover if they were able to find the right provider. So the challenge was less about access but rather about how to assist customers in navigating a sometimes complex market. The consultation sought 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. The FCA issued a Policy Statement in February 2020: Signposting to travel insurance for consumers with medical conditions[135] (PS20/3) which made explicit amendments to the Insurance: Conduct of Business sourcebook (ICOBS) to effect these changes.

In 2020 the IFoA launched their Inclusive Insurance[136] Bulletin Series to explore how the insurance industry innovates and evolves to address the changing needs of society in a way that is fair and includes those needing protection the most.

Part VII Insurance Transfers

Part VII insurance transfers involve the transfer of a book of business between insurers. There are signs of increased activity in this area. A key area of focus is that policyholders should not be adversely impacted by the transfer and that each policyholder is given adequate information on the impact of the transfer.

This topic is discussed further in Geopolitical, Legislative, and Regulatory Risk (Section 4.5, Page 34), sub-section 'Part VII Insurance Transfers' (Page 38).

Equity Release Mortgages

Equity Release Mortgages are increasing in popularity,[137] 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.[138] Many products do not involve periodic payments and so a common feature is for the lump sum to roll up with interest and impact future inheritance outcomes. There is a risk that actuaries developing these products may not do enough to ensure that customer communications bring this risk to the fore. The IFoA plans to do a Thematic Review[139] in 2021 to ascertain areas of involvement for actuaries.

In June 2020 the FCA published the key findings[140] from its exploratory work on equity release mortgages. They found three significant areas of concern about the suitability of advice provided, which were considered to increase the risk of harm to consumers in this market:

- insufficient personalisation of advice;
- insufficient challenging of customer assumptions; and
- lack of evidence to support the suitability of advice.

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133 According to a 2019 thematic study by EIOPA there "is no evidence as yet that an increasing granularity of risk assessments is causing exclusion issues for high-risk consumers, although firms expect the impact of BDA [Big Data Analytics] to increase in the years to come."
134 https://www.fca.org.uk/news/press-releases/fca-proposes-new-rules-help-consumers-pre-existing-medical-conditions-access-suitable-travel
135 https://www.fca.org.uk/publication/policy/ps20-03.pdf
136 https://www.actuaries.org.uk/news-and-insights/public-affairs-and-policy/inclusive-insurance
137 https://www.equityreleasecouncil.com/
138 https://www.moneysavingexpert.com/mortgages/equity-release/
139 https://www.actuaries.org.uk/upholding-standards/actuarial-monitoring-scheme/current-and-planned-reviews
140 https://www.fca.org.uk/publications/multi-firm-reviews/equity-release-sales-and-advice-process-key-findings

The FCA set out actions for firms and advisers active in this area. They also found anecdotal evidence of increased interest in equity release mortgages because of new pressures on peoples' finances from the COVID-19 pandemic, thus reinforcing the importance of advice reflecting the needs and circumstances of the individual. The FCA will be undertaking further work to review the suitability of advice in this market.

This topic is discussed further in Geopolitical, Legislative, and Regulatory Risk (Section 4.5, Page 34), sub-section 'Equity Release Mortgages' (Page 39).

DB to DC transfers

Transfers from defined benefit (DB) pension schemes to defined contribution (DC) pension schemes are considered generally unlikely to be in the best interests of most pension scheme 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 pension scheme members and their advisers have all the information they need to make an informed decision about what is in the pension scheme members' best interests. Useful references are:

- Guide for employers and trustees on providing support with financial matters without needing to be subject to FCA regulation,[141] published jointly by TPR and the FCA in March 2021, covering the type of support sponsoring employers and pension schemes' trustees can provide without undertaking FCA regulated activities such as advice or arranging investments.
- Advising on pension transfers[142] (FG21/3), published by the FCA in March 2021, to help advisers give suitable advice consistently. Among other things, it includes a standardised data list (at Annex 1) developed and agreed by the Pensions Administration Standards Association[143] (PASA), TPR and the FCA setting out the information which pension schemes should provide and financial advisers should request in order to advise on DB transfers.
- DB transfer consumers guides from the FCA, with recent updates in 2020/21, for pension schemes' trustees to use alongside the cash equivalent transfer value (CETV) letter and other communications with the pension scheme's members:
  - Considering a pension transfer: defined benefit[144]
  - Pension transfer advice: what to expect[145]
  - Advice checker: defined benefit pension transfers[146]
- PASA (DRAFT) Code of Good Practice[147] guide for DB transfers.

This topic is discussed further in Impact of Undue Commercial Pressure (Section 4.7, Page 45), sub-section 'Pension transfers' (Page 46).

DB scheme commutation rates

The actuarial factors used to calculate DB scheme benefits are one of the ways in which the work of the actuary affects the benefits received by pension scheme members. A Thematic Review[148] carried out by the IFoA was published in December 2020 and identified that the overall standard of advice given by actuaries in such situations is very high. However, the review found that commutation rates are often well below transfer values, which may be seen as poor value for pension scheme

141 https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/tpr-fca-employers-trustees-financial-matters-guide.ashx
142 https://www.fca.org.uk/publication/finalised-guidance/fg21-3.pdf
143 https://www.pasa-uk.com/
144 https://www.fca.org.uk/consumers/pension-transfer-defined-benefit
145 https://www.fca.org.uk/consumers/pension-transfer/advice-what-expect
146 https://www.fca.org.uk/consumers/defined-benefit-pension-transfers/advice-checker
147 https://www.pasa-uk.com/wp-content/uploads/2020/02/PASA-DB-Transfers-CODE-P1-10202020-FINAL.pdf
148 https://www.actuaries.org.uk/system/files/field/document/Pensions-Thematic-Review...PDF

members. In some pension schemes this may be a function of the pension scheme rules but there is a variety of other reasons for these differences, including the role of the pension scheme's trustees and sponsoring employer and the impact on funding.

DB superfunds

Superfunds provide new risks and opportunities as vehicles for delivering pension promises to pension scheme members. Pension scheme members need the confidence that these new superfunds are well-governed, run by fit and proper people, and are backed by adequate capital. TPR has issued clear guidance[149] setting out its expectations for both superfunds and pension schemes' trustees as well as sponsoring employers considering transferring to a superfund. However, in the absence of any specific legislation on superfunds there is a risk that potential providers may promote consolidation propositions which create new and untested risks for actuaries.

Unfair pension scheme member outcomes due to poor governance

Good governance[150] is key to pension schemes achieving good outcomes for their pension scheme members. It requires motivated, knowledgeable, and skilled pension schemes' trustees operating policies and procedures that enable effective and timely decisions and support strong risk management. While many pension schemes are meeting expected governance standards, there are others that are not performing as they should. Through a lack of awareness or capability these pension schemes could be putting pension scheme member benefits in jeopardy. TPR consulted[151] on proposals to clarify and enhance expectations in relation to scheme governance in 2019, and in February 2020 TPR delivered their response on the Future of trusteeship and governance.[152]

Value for pension scheme members in DC pension schemes

Assessment of value for money (VFM) for pension schemes' members consists of several criteria such as cost and charges, investment returns, and quality of services. This is at the heart of TPR's and the FCA's approach to DC governance. TPR works closely with the FCA and the Department for Work and Pensions (DWP) in this area.

On VFM, TPR sets out its regulatory expectations of trustees of DC occupational schemes when carrying out a VFM assessment (as required under pensions legislation) in its DC code. In June 2020 the FCA published their consultation on driving value for money in pensions (CP20/9),[153] to clarify the FCA's expectations and promote a consistent approach to VFM assessment by Independent Governance Committees (IGCs). The publication of the final rules was delayed due to COVID-19, and is now planned for Q4 2021.

In October 2018 TPR and the FCA published their joint regulatory strategy which set out how they would work together to tackle the key risks and issues facing the pensions and retirement income sector in the next five to ten years. One of the objectives set out in the strategy is that pension schemes are well-governed, well-run, and deliver value for money. The strategy acknowledged the complexity of assessing value for money and the need for stakeholders to be given more support with this. Consequently, both organisations have been working on a joint discussion paper which is planned for publication later this year. This paper will set out how TPR and the FCA intend to drive value for money for pension scheme members of DC pension schemes, including the introduction of a common framework for the assessment of value for money across the pension schemes regulated by TPR and the FCA.

149 https://www.thepensionsregulator.gov.uk/en/trustees/managing-db-benefits/db-superfunds/superfund-guidance-for-prospective-ceding-trustees-and-employers
150 https://www.thepensionsregulator.gov.uk/en/trustees/21st-century-trusteeship/1,-d-,-good-governance
151 https://www.thepensionsregulator.gov.uk/en/document-library/consultations/future-of-trusteeship-and-governance-consultation
152 https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/future-trusteeship-governance-consultation-response-february-2020.ashx
153 https://www.fca.org.uk/publications/consultation-papers/cp20-9-driving-value-money-pensions

In September 2020 the DWP published its consultation Improving outcomes for members of defined contribution schemes.[154] The consultation recognised that many smaller DC pension schemes are poorly governed, and that the DWP wanted to ensure that trustees of the pension schemes concerned act in the best interests of their pension scheme members. Therefore the DWP are proposing that all pension schemes that provide DC benefits and have total assets of less than £100 million undertake a more holistic value for pension scheme members' assessment, which will involve comparing their costs and charges and investment returns against at least three other larger pension schemes, or personal pension schemes, as well as assessing their governance and administration against seven key metrics. If these pension schemes are unable to prove that they offer good value the pension schemes' trustees will be expected to take immediate action to wind up and move pension scheme members into another scheme or take immediate steps to ensure that the scheme does provide value. TPR is working closely with the DWP on these matters.

Helping customers make better choices

In Effective competition in non-workplace pensions[155] (FS19/5) the FCA found that in the non-workplace pension schemes 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 the introduction of one or more investment pathways, to reducing the complexity of charges disclosure, to further analysis and remedies in relation to the level of charges.

A further example of complexity and lack of clarity can be seen in the FCA's MiFID II costs and charges disclosures review findings[156] published in February 2019. 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.

In another example of the weakness of competition in certain areas, the FCA published Unit-linked funds' governance review (follow up to PS18/8): findings and next steps[157] in September 2019. The findings demonstrated that firms check their competitors' prices but not apparently with the aim of competing on price. Firms also complied on regulatory interventions but tended not to go further.

Further Reading

- Paper presented to the JFAR (December 2019): The role of actuaries in DB to DC transfers (Section 5, Page 53)

154 https://www.gov.uk/government/consultations/improving-outcomes-for-members-of-defined-contribution-pension-schemes
155 https://www.fca.org.uk/publication/feedback/fs19-05.pdf
156 https://www.fca.org.uk/publications/multi-firm-reviews/mifid-ii-costs-and-charges-disclosures-review-findings
157 https://www.fca.org.uk/publications/multi-firm-reviews/unit-linked-funds-governance-review-follow-ps18-8-findings-next-steps

4.5 Geopolitical, Legislative, and Regulatory Risk

Hotspot Description

The risk that actuaries are unable to consider or plan for geopolitical, legislative, and regulatory change, and as such under-react to those changes that involve their actuarial work, resulting in poor outcomes for users.

Current Influences

The COVID-19 pandemic has dominated global life since early 2020 and into 2021. The exceptional risks created by EU Exit have somewhat subsided, but some ongoing risks remain. Regulation of the actuarial profession is undergoing change.

Key developments and JFAR member regulators' actions during 2020/21

Business Interruption insurance

The COVID-19 pandemic triggered widespread policyholder attempts to claim coverage on commercial insurance policies for business interruption (BI), usually via prevention of access / public authority clauses or notifiable disease clauses. In response, various commercial insurers resisted virtually all attempts to claim coverage. The Financial Conduct Authority (FCA) accordingly sought clarification from the UK High Court as a test case,[158] aimed at resolving the contractual uncertainty around the validity of many BI claims. This topic is discussed further in Systemic Risk (Section 4.2, Page 15), sub-section 'Financial Impacts' (Page 17).

The UK High Court handed down a judgment[159] on 15 September 2020, and then subsequently on appeal the UK Supreme Court handed down a judgment[160] on 15 January 2021. Broadly speaking, both judgments found in favour of the FCA / policyholders.[161] [162] In particular, even though it did not rely on the precedent in its judgment, the UK High Court explicitly rejected the 'but for' argument of the insurers; a precedent that originated from a much-earlier case involving a hurricane in New Orleans.[163] A FCA Dear CEO letter[164] swiftly followed.

Insurers' difficulties on this issue were not limited to the UK: for example, in Australia the Insurance Australia Group (IAG) sought to rely on pandemic exclusions in a policy wording which included a reference to an outdated

158 https://www.fca.org.uk/news/statements/insuring-smes-business-interruption
159 https://www.bailii.org/ew/cases/EWHC/Comm/2020/2448.html
160 https://www.bailii.org/uk/cases/UKSC/2021/1.html
161 https://hsfnotes.com/insurance/2020/09/15/judgment-handed-down-in-fcas-covid-19-business-interruption-insurance-test-case/
162 https://hsfnotes.com/insurance/2021/01/15/supreme-court-hands-down-judgment-in-fcas-covid-19-business-interruption-test-case/
163 https://www.bailii.org/ew/cases/EWHC/Comm/2010/1186.html
164 https://www.fca.org.uk/publication/correspondence/dear-ceo-letter-business-interruption-insurance-january-2021.pdf

act of parliament. IAG's position was rejected unanimously by the New South Wales Supreme Court of Appeal.[165]

Business Interruption policy wordings are notoriously complex, but the failure of insurers to defend their interpretation of their own policy wordings and/or the inherent lack of clarity present in the policy wordings could genuinely be regarded as a manifestation of Operational Risk. Searching questions regarding the sizing of Operational Risk in capital models should follow.

Actuaries are generally regarded as 'numbers people' but it may be that broadening the actuarial skillset to encompass analysis of policy wordings is necessary, to satisfy oneself as to the adequacy of pricing, reserving, and capital modelling. This may be achieved by forming an opinion as to the robustness of the governance surrounding policy wordings,[166] rather than a detailed analysis of the policy wordings themselves.

A coalition of UK insurance bodies has done commendable work over the last two decades on Contract Certainty,[167] that is: "*complete and final agreement of all terms between the insured and insurer at the time that they enter into the contract, with contract documentation provided promptly thereafter*." More-recently, on 13 November 2020, the Prudential Regulation Authority (PRA) issued a Dear CRO letter[168] discussing Contract Uncertainty specifically with respect to the COVID-19 pandemic, among other topics.

Contract Certainty and Contract Uncertainty (in these contexts) are separate but related ideas. Contract Certainty is about the 'four corners' of the contract being certain between the two parties at contract inception. Contract Uncertainty is about unexpected circumstances that arise subsequent to contract inception that give rise to a dispute or uncertainty as to the contract's response (sometimes called Unintended Exposures); this has a prudential aspect, with regulators keen to ensure the full range of possible outcomes to the insurer are considered.

An additional area of Contract Uncertainty is how an insurer's reinsurance programme will respond to unexpected circumstances.

EU Exit

The exceptional risks created by EU Exit have somewhat subsided. Following the UK exit from the EU on 31 January 2020 the UK entered a Transition Period,[169] ending on 31 December 2020. A permanent trade agreement (the EU–UK Trade and Cooperation Agreement[170] (TCA)) was announced on 24 December 2020 and was passed by the UK Parliament and subsequently received Royal Assent. The EU, via the European Parliament, only ratified the TCA on 28 April 2021.

The earlier EU-UK Withdrawal Agreement[171] provides (among other things) for free access of goods between Northern Ireland and the Republic of Ireland, if checks are made to goods entering Northern Ireland from the rest of the UK.

Discussions on access to financial markets continue, with progress reported as positive e.g. the Joint UK-EU Financial Regulatory Forum.[172] However, not all discussions have had a positive outcome: on 12 April 2021 the European Commission unexpectedly rejected[173] the UK's attempt to join the 'Lugano convention', an international legal co-operation agreement addressing cross-border civil and commercial disputes.

165 https://www.iag.com.au/iag-responds-business-interruption-test-case-judgment-and-announces-capital-raising-750-million
166 https://www.smh.com.au/business/banking-and-finance/iag-swings-to-460-million-loss-after-preparing-for-covid-related-claims-20210210-p5713g.html
167 https://lmg.london/documents/contract-certainty/
168 https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2020/pra-review-reserving-and-exposure-management.pdf
169 https://www.bbc.co.uk/news/uk-politics-50838994
170 https://ec.europa.eu/info/relations-united-kingdom/eu-uk-trade-and-cooperation-agreement_en
171 https://ec.europa.eu/info/relations-united-kingdom/eu-uk-withdrawal-agreement_en
172 https://www.ft.com/content/4222515b-e501-4b7f-82ce-f94810f4a819
173 https://www.ft.com/content/7aad8362-ef75-4578-81eb-38b5d2c51223

The UK is also embarking on a range of non-EU trade initiatives,[174] which may prove positive over time.

UK regulators' relationships with key international regulatory partners and international standard-setters may weaken post-EU Exit, resulting in the UK not being able to shape the global regulatory agenda to the same extent as previously.

Solvency II post-EU Exit

On 24 February 2021 Her Majesty's Treasury issued a Solvency II Review: Call for Evidence.[175] The UK government undertook this review "*to ensure that Solvency II properly reflects the unique structural features of the UK insurance sector*".

One might expect a slight change-of-direction from EU principles, in that the UK government's first-stated objective is "*to spur a vibrant, innovative, and internationally competitive insurance sector*".

Areas of review focus on UK-specific concerns: risk margin, matching adjustment, calculation of the solvency capital requirement, calculation of the consolidated group solvency capital requirement, calculation of the Transitional Measure on Technical Provisions (TMTP), reporting requirements, branch capital requirements for foreign insurance firms, thresholds for regulation by the PRA under Solvency II, and lower regulatory requirements for new insurance firms.

Senior PRA representatives have been active in sharing their thoughts: Anna Sweeney,[176] [177] Sam Woods,[178] and Charlotte Gerken.[179]

Post Implementation Review of Technical Actuarial Standards

On 26 February 2021 the Financial Reporting Council (FRC) published the Post Implementation Review of Technical Actuarial Standards Call for Feedback[180] (PIR TAS CFF), seeking feedback on the current Framework for Technical Actuarial Standards, Technical Actuarial Standard 100 (TAS 100), and a potential actuarial standard in relation to IFRS 17.

The PIR TAS CFF is phase 1: a phase 2 encompassing TAS 200 / 300 / 400 will be released at a later date.

The FRC has not yet developed policy positions on potential changes to the TASs; it is soliciting feedback on a range of issues including professional judgement, modelling, statement and evidence of TAS compliance, and IFRS 17.

Practising Certificates Scheme

On 8 April 2021 the Institute and Faculty of Actuaries (IFoA) launched a consultation on changes to its approach to Practising Certificates[181] (PCs).

The proposals are for more emphasis to be placed on the initial PC application stage than on annual renewals, introduction of a competency-based criteria (rather than the current requirements for technical experience of particular work), and enhanced support for IFoA Members throughout the different stages of the PC process, including the pathway to being a PC Holder.

174 https://www.bbc.co.uk/news/business-54654814
175 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/927345/Solvency_II_Call_for_Evidence.pdf
176 https://www.bankofengland.co.uk/speech/2021/february/anna-sweeney-westminster-business-forum
177 https://www.bankofengland.co.uk/speech/2021/may/anna-sweeney-association-of-british-insurers-prudential-regulation
178 https://www.bankofengland.co.uk/speech/2021/march/sam-woods-association-of-british-insurers-executives-neds-and-chairs-network-webinar
179 https://www.bankofengland.co.uk/speech/2021/april/charlotte-gerken-pre-recorded-18th-bulk-annuities-conference
180 https://www.frc.org.uk/getattachment/3177e677-8d1b-4d95-aaf5-5520167f14ec/-;.aspx
181 https://www.actuaries.org.uk/upholding-standards/regulatory-communications-and-consultations/current-consultations/consultation-practising-certificates-pc-scheme-proposals

Continuing Professional Development

On 1 September 2020 the Institute and Faculty of Actuaries (IFoA) launched a new Continuing Professional Development[182] (CPD) scheme.

The most-significant change was the new requirement to "*arrange and conduct a reflective practice discussion*[183] *with an Appropriate Person*". "*A reflective practice discussion*[184] *is a conversation in which you reflect on what your learning needs and objectives were for the year and the outcomes of your CPD activities*." The IFoA will begin IFoA-led reflective practice discussions with selected IFoA Members from September 2021.

Regulation of the actuarial profession

On 18 March 2021 the UK government published Restoring trust in audit and corporate governance,[185] a consultation document on the UK government's proposals for audit and corporate governance, but additionally on the UK government's proposals for the future of regulation of the UK actuarial profession.

Although tucked away on pages 198-205 of a document of 230 pages, the UK government's proposals for the future of regulation of the UK actuarial profession are potentially significant. Central to the proposals is placing the Financial Reporting Council's (FRC's) oversight of the Institute and Faculty of Actuaries (IFoA) on a strengthened and statutory footing via a new regulator, the Audit, Reporting and Governance Authority (ARGA), rather than the current Memorandum of Understanding (MoU) arrangement. In addition, the setting of technical standards (by ARGA) would be placed on a statutory footing and powers would be extended to allow monitoring of the application of those technical standards.

Climate Change, and other Environmental, Social, and Governance (ESG) risks

Climate change / ESG is discussed more-extensively in Climate-Related Risk (including Biodiversity) (Section 4.1, Page 8), but this topic merits a brief discussion from a geopolitical, legislative, and regulatory risk point-of-view.

After a long period of global discussion, but only modest progress, the last few years have seen considerable change and progress with respect to climate change / ESG actions, and this brings to actuaries the need to understand the elevated geopolitical, legislative, and regulatory risk in actuarial work from climate change / ESG risks. The three hallmarks of climate change risk are:

- risks are long-acting;
- risks are (largely) non-priced; and
- risks have fundamental uncertainty.

Climate change risk affects all actuaries in all disciplines. It is imperative that all actuaries have some level of climate change risk knowledge to inform needed judgement. Regulators, governments, trans-national non-profit bodies, and even some large private actors (e.g. BlackRock, Inc.[186]) are all moving rapidly to impose new standards. Many standards lack legislative backing but carry a heavy burden from a reputational point-of-view for non-compliance (or lack of adoption).

The IFoA has assembled an extensive curated library[187] of resources related to climate change: an exceptional store of information for both the novice and the expert.

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182 https://www.actuaries.org.uk/system/files/field/document/2020_09_01%20CPD%20Scheme%20v1.pdf

183 https://www.actuaries.org.uk/system/files/field/document/2020_10_05%20Reflective%20Practice%20Discussion%20Information%20-%20FOR%20PUBLICATION%20v2.pdf

184 https://www.actuaries.org.uk/learn-and-develop/continuing-professional-development-cpd/reflective-practice-discussions

185 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/970673/restoring-trust-in-audit-and-corporate-governance-command-paper.pdf

186 https://www.blackrock.com/ch/individual/en/themes/sustainable-investing/esg-integration

187 https://www.actuaries.org.uk/learn-and-develop/lifelong-learning/sustainability-and-lifelong-learning/climate-change-curated-library

Geopolitical Risk

There are various indices[188] that measure geopolitical risk.[189] 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.

In addition to post-EU Exit UK-EU friction (including in Northern Ireland) the changing dynamics of international relations of the US administration of Joe Biden, particularly with respect to China and Russia and in addition to rogue states like North Korea, present particular geopolitical risk.

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. In this regard it may be useful to consider giving greater prominence to scenario-testing techniques.

Supply Chains

Global supply chains may be subject to disruption and this may impact business costs, highlighting the need for resilience planning. Recent examples include EU Exit, COVID-19, vaccine nationalism, and the Ever Given[190] container ship that disrupted global trade via the Suez Canal. Resilience planning will likely result in the need to build 'reserves', a carrying cost that may be resisted. Ongoing risks remain with respect to the highly uncertain outcomes of climate change, and other environmental, social, and governance (ESG) issues such as societal justice / fairness and 'inclusive wealth' will become more significant.

In addition, global supply chains remain extremely susceptible to terrorism and cyber-sabotage.

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 (particularly post-EU Exit). Short-to-medium-term modelling (pricing, reserving, and capital modelling) could become more difficult due to the increased uncertainty. Care is needed to anticipate changes in supply chain disruption, costs of production and movement, and the risks of unanticipated loss (e.g. due to terror attacks, nationalisation, or infrastructure failure).

IFRS 17 Insurance Contracts

The adoption and implementation of IFRS 17 will have an impact on the work of actuaries. The IASB's objectives for IFRS 17 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

Part VII insurance transfers are subject to UK High Court approval. In 2019 Prudential reached an agreement with Rothesay Life to transfer a closed book of business; both the FCA and the PRA did not object 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. Some

188 https://www.blackrock.com/corporate/insights/blackrock-investment-institute/interactive-charts/geopolitical-risk-dashboard
189 https://www.matteoiacoviello.com/gpr.htm
190 https://en.wikipedia.org/wiki/Ever_Given

policyholders did object, however, and on 16 August 2019 the judge refused to approve the transfer[191] citing the reputational advantage of Prudential over Rothesay Life and the likelihood of parental support for the former in the event of financial distress.

On 2 December 2020 the Court of Appeal allowed the appeal.[192] The Court of Appeal emphasised the importance of the Solvency II Solvency Capital Requirement (SCR) in Part VII insurance transfer approvals, and the role of effectively communicating technical matters to potentially affected policyholders.

The Court of Appeal gave guidance on the word 'material' as it pertained to potentially affected policyholders: "*real or significant, as opposed to fanciful or insignificant*", and most-certainly excluding non-contractual support potentially available to parties to a transaction, and further excluding any subjective factor.

Equity Release Mortgages

On 17 June 2020 the Financial Conduct Authority (FCA) published a report on the equity release sales and advice process.[193] While less directly connected to actuarial work, actuaries operating in this field should be alert to the potential for poor advice to consumers, and the subsequent prudential risk to legal entities offering equity release mortgages.

The PRA released a Dear Chief Actuary letter[194] in February 2021 reminding chief actuaries of the PRA's earlier Supervisory Statement on Solvency II: illiquid unrated assets[195] (SS3/17) and more-particularly the assessment of the appropriateness of the matching adjustment (MA) benefit life insurers derive from restructured equity release mortgages.

This topic is discussed further in Unfair Outcomes for Individuals (Section 4.4, Page 27), sub-section 'Equity Release Mortgages' (Page 30).

Funeral Plans

In January 2021 the UK government legislated to bring pre-paid funeral plans ('funeral plans') under FCA regulation from 29 July 2022, and from that same date consumer disputes may be referred to the Financial Ombudsman Service (FOS). The Financial Conduct Authority (FCA) launched Funeral Plans: Proposed approach to regulation, Consultation Paper CP21/4[196] on 2 March 2021, and on 5 July 2021 published final rules, guidance and standards (PS21/8)[197] for when the pre-paid funeral plans sector enters FCA regulation.

Replacing a period of self-regulation, the FCA's rules are quite broad, covering conduct standards, prudential soundness, and consumer dispute resolution. For example, the FCA has included a rule that "*a funeral plan provider must arrange for a solvency assessment report to be produced at least once every 12 months by an actuary who is a fellow of the Institute and Faculty of Actuaries*".

The IFoA issued a Risk Alert on 15 January 2021: Transitional risks for UK Trust-based Pre-paid Funeral Plans.[198]

In July 2020 the Financial Reporting Council (FRC) published an updated Technical Actuarial Standard 400[199] (TAS 400).

191 https://www.bailii.org/cgi-bin/format.cgi?doc=/ew/cases/EWHC/Ch/2019/2245.html
192 https://www.bailii.org/cgi-bin/format.cgi?doc=/ew/cases/EWCA/Civ/2020/1626.html
193 https://www.fca.org.uk/publications/multi-firm-reviews/equity-release-sales-and-advice-process-key-findings
194 https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2021/february/feedback-on-the-application-of-the-evt.pdf
195 https://www.bankofengland.co.uk/prudential-regulation/publication/2017/solvency-2-matching-adjustment-illiquid-unrated-assets-and-equity-release-mortgages-ss
196 https://www.fca.org.uk/publication/consultation/cp21-4.pdf
197 https://www.fca.org.uk/publications/policy-statements/ps21-8-regulation-of-funeral-plans-feedback-to-cp21-4-and-final-rules
198 https://www.actuaries.org.uk/system/files/field/document/January%202021%20Risk%20Alert%20-%20Funeral%20Plan%20Trusts.pdf
199 https://www.frc.org.uk/getattachment/7c531301-230c-4c9b-9fe1-1ddd10aeca56/TAS-400-Jul-20-Full.pdf

Pension Schemes Act 2021

The Pension Schemes Act 2021[200] received Royal Assent on 11 February 2021. The Act requires trustees of Defined Benefit pension schemes to set a long-term objective and determine a consistent "*funding and investment strategy*". The Act also expanded the powers of The Pensions Regulator (TPR), and made provisions for the Pensions Dashboards Programme (PDP), for regulation of trustees of occupational pension schemes with respect to climate change governance, and for regulation imposing limits on the right to transfer.

The Act also established a framework for Collective Defined Contribution (CDC) schemes ('collective money purchase schemes'). This will be a new area of work for actuaries, who will have responsibilities in helping design the CDC schemes and acting in the capacity of CDC scheme actuary.

A new code for funding defined benefit pension schemes

TPR is working to revise its code of practice on DB pension schemes' funding to provide better security for pension schemes' members through greater clarity on the standards of funding expected, 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 pension schemes can determine prudent technical provisions, appropriate recovery plans, and investment strategies which can be supported by the sponsoring employer's covenant. A consultation[201] seeking views on aspects of the new framework was undertaken in 2020, and a second consultation to include a draft code of practice for pension schemes' funding is expected to be published in December 2021.

Annual guidance on actuarial valuations of DB pension schemes

Each year TPR issues their Annual Funding Statement[202] to provide pension schemes' trustees undertaking actuarial valuations with guidance on navigating topical issues to set funding and investment strategies which balance fairly the interests of pension schemes' members and sponsoring employers. The focus has been on an integrated approach to risk management, with a key role for actuaries in advising pension schemes' trustees and sponsoring employers on the complex issues. Recent statements have dealt extensively with new risks for maturing pension schemes including the impact of COVID-19 and EU Exit on the actuarial assumptions, as well as on the sponsoring employer's ability to finance contributions and to support investment risk.

200 https://www.legislation.gov.uk/ukpga/2021/1/contents/enacted
201 https://www.thepensionsregulator.gov.uk/en/document-library/consultations/defined-benefit-funding-code-of-practice-consultation
202 https://www.thepensionsregulator.gov.uk/en/document-library/statements/annual-funding-statement-2021

4.6 Technological Change and Competence in New Areas

Hotspot Description

The risk that actuaries may not adequately understand the latest modelling techniques and approaches; for example, the move towards Machine Learning models.

Current Influences

Generally, there are risks when the available statistics are inadequate to estimate the cost of future uncertain events. This may occur when actuaries enter new areas (such as banking) or insurers issue new covers such as cyber risk. Also, there are risks of actuaries acting where they do not understand the model processes; for example, when new techniques start to get used such as Machine Learning models.

Key developments and JFAR member regulators' actions during 2020/21

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; and
- be in a position to form sensible assumptions.

A 2019 survey by Deloitte[203] concluded that Cyber needs more executive attention and collective thought. 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. There are different views[204] on whether Big Data[205] compounds the problems[206] or is part of the cure.[207] General consensus points to the need for a structured and considered approach before a cyber-attack occurs.

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 recognises

203 https://www2.deloitte.com/content/dam/Deloitte/us/Documents/finance/us-the-future-of-cyber-survey.pdf
204 https://www.digitalistmag.com/cio-knowledge/2018/08/27/how-big-data-helps-avoid-cybersecurity-threats-06184059/
205 https://en.wikipedia.org/wiki/Big_data
206 https://cybersecurityventures.com/cybersecurity-almanac-2019/
207 https://bi-survey.com/big-data-security-analytics

that IFoA Members need to be up to date with technological change. Some of the IFoA qualification exams are computer modelling based.[208] In addition, the IFoA is offering a Certificate in Data Science[209] course for all IFoA Members.

The IFoA has also held virtual data science conferences[210] to include education aimed at actuaries.

Another issue is how actuarial regulation will keep pace with these developments. The FRC 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,[211] and these could potentially lead to conclusions that are suspect. Financial products may be developed which are not, in fact, 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. In addition, there is the risk that increased use of wider data sources distorts the balance between commercial decision-making and customer fairness, and may potentially lead to the poorest risks, who are often those in greater need of insurance, being priced out of the market.

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.[212] This may in the extreme case lead to inappropriate conclusions[213] being drawn from the data, if the actuary fails to take account of this.

Artificial Intelligence and Machine Learning

Artificial intelligence[214] (AI) is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.

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. These are described

208 https://www.actuaries.org.uk/studying/curriculum/modelling-practice
209 https://www.actuaries.org.uk/learn-and-develop/lifelong-learning/certificate-data-science
210 https://www.actuaries.org.uk/learn-and-develop/lifelong-learning/what-data-science-actuarial-viewpoint
211 https://towardsdatascience.com/correlation-is-not-causation-ae05d03c1f53
212 https://www.researchgate.net/publication/326519154_Big_Data_Quality_A_Survey
213 https://dataanalytics.report/articles/three-big-mistakes-in-big-data-you-never-knew-were-mistakes
214 https://www.britannica.com/technology/artificial-intelligence/Reasoning

as levels 1 – 5[215] (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). 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 determining insurer liability.

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 RPA 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 general insurance claims reserving. RPA 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.[216] For example:

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

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[217] 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 the model 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, and possibly replicate. This is an important issue for an actuary to consider, as the need to be able to explain and validate 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.[218] The FCA is trying to explore how technology can drive new products, services, and firms in consumers' interests, and what technology 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

215 https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-CAV-position-paper-final.pdf
216 https://www.forbes.com/sites/jasonbloomberg/2018/11/06/why-you-should-think-twice-about-robotic-process-automation/?sh=44cccc415fe1
217 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.
218 https://www.fca.org.uk/news/speeches/financial-conduct-regulation-restless-world

start to undermine the risk-pooling 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. The IFoA and the Royal Statistical Society have jointly produced A Guide for Ethical Data Science,[219] and in February 2021 the IFoA also produced specific guidance for IFoA Members working in this area: Ethical and professional guidance on Data Science: A Guide for Members.[220]

Updating skills / Continuing Professional Development

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.

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

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

https://www.bbc.co.uk/news/technology-50047449

Communicating AI Models:

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

219 https://www.actuaries.org.uk/system/files/field/document/An%20Ethical%20Charter%20for%20Date%20Science%20WEB%20FINAL.PDF
220 https://www.actuaries.org.uk/system/files/field/document/IFoA_Ethical_Professional_Guidance_Data_Science_Feb_2021.pdf

4.7 Impact of Undue Commercial Pressure

Hotspot Description

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

Current influences

The continuation of the low interest rate environment may result in financial institutions (in particular, insurance companies and pension schemes), looking for new ways of generating profits. The risk is that this pressure might result in objective and reasoned actuarial judgement (in the actuary's view) being challenged.

Key developments and JFAR member regulators' actions during 2020/21

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.

Reserving

In some instances commercial pressure from the management of general insurers to deliver improved results may translate into actuarial judgements being challenged disproportionately where there may be areas of potential reserve 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.[221]

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 actuary needs to be aware of the impact the price might have on customer fairness and inclusivity (i.e. less attractive risks being priced out of the market), particularly if machine learning models have a material input into the price.

In September 2020 the FCA published a Final Report on general insurance pricing practices[222] showing that the markets in home and motor insurance 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 typically the result of actuarial modelling, commercial considerations, and other factors. The actuary might be heavily involved in some of these factors and little involved in others. Final rules (PS21/5)[223] to address the harms identified were published in May 2021. These included a requirement that, for home and motor insurance, the renewal

221 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
222 https://www.fca.org.uk/publication/market-studies/ms18-1-3.pdf
223 https://www.fca.org.uk/publication/policy/ps21-5.pdf

price offered to a customer must be no higher than the price that would be offered if the customer was new.

This topic is discussed further in Unfair Outcomes for Individuals (Section 4.4, Page 27), sub-section 'Fairness in pricing and product value' (Page 29).

Realistic assumptions for initial expected loss ratios in general insurance business and for planned business and in both life insurance and general insurance business

In the case of insurers that calculate their Solvency II capital requirement using an internal model, the more favourable the assumed performance of the business planned to be written in the coming 12 months, the lower the capital requirement. In the case of general insurers that use initial expected loss ratios (IELR) in the calculation of estimated future claims cost (also known as reserves), the more favourable the assumed IELR in recent accident / underwriting years, the more favourable the published financial result.

Therefore, actuaries working in the areas of insurance capital modelling or general insurance reserving should be aware that there might be an incentive for the business to put pressure on the actuary to agree to assumptions used in the capital requirement calculation or reserves' calculation that are, in the actuary's view, too optimistic to be realistic and are difficult to justify.[224] An example of such pressure could be along the lines "*claims ratios on business planned to be written in the coming 12 months will be lower than historical claims ratios because the book has been completely re-underwritten*".[225]

The actuary should bear in mind that:

- Under the 'Impartiality' principle of the Actuaries' Code[226] an actuary must ensure that their professional judgement is not compromised by the undue influence of others.
- Core provision 8 of Technical Actuarial Standard 200[227] states that "*… any estimates described as "best estimate", "central estimate" or other similar terms shall be neither optimistic nor pessimistic and shall not contain adjustments to reflect a desired outcome.*"

Though the actuary is typically working as part of a multidisciplinary team and might not have the final say on assumption selections, an actuary should not be seen to agree to an assumption unless they are of the view that the assumption is realistic and can be justified.

If the actuary takes the view that assumptions underlying the business plan are not realistic for use in the calculation of the capital requirement or reserves,[228] the actuary should communicate to the business how this situation has arisen and how it might be addressed.

Pension transfers

Pension schemes' 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[229] to use.

When advising on aspects of defined benefit transfers actuaries need to remember that different parties have different needs and motivations. The pension scheme member is likely to want the transfer value to be as

224 See also PRA's letter to Chief Executives of general insurers dated 31 May 2018 on subject Market conditions facing specialist general insurers: Feedback from recent PRA review work (key findings 2 and 5 in particular); and PRA's supervisory statement titled: Solvency II: Calculation of Technical Provisions and use of internal models for general insurance (SS5/14)

225 See also PRA's supervisory statement titled: Solvency II: Calculation of Technical Provisions and use of internal models for general insurance (SS5/14) - paragraph 3.12 on improvements in performance: "Firms should not assume an improvement in performance relative to that seen in the past unless such an improvement has been clearly justified, in line with the expected Delegated Acts. For example, it would not be realistic to base the internal model on a business plan which assumes improved underwriting results unless the measures taken have been shown to be effective."

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

227 https://www.frc.org.uk/getattachment/c866b1f4-688d-4d0a-9527-64cb8b1e8624/TAS-200-Insurance-Dec-2016.pdf

228 See also PRA's supervisory statement titled: Solvency II: Calculation of Technical Provisions and use of internal models for general insurance (SS5/14) – paragraph 2.8 on premium provisions: "Many firms use business plan loss ratios to set the level of premium provisions. Using optimistic business plan loss ratios for this purpose is not realistic, and will not produce a best estimate as required by Article 77 of the Directive."

229 http://www.legislation.gov.uk/uksi/1996/1847/regulation/7B

high as possible. The sponsoring employer may desire that a transfer occurs. The pension scheme's trustees need to protect the position of the pension scheme's members who remain behind, in addition to their fiduciary duty to the pension scheme member to whom they give a transfer value. Although the actuary has a main user to whom they provide advice there are wider public interest issues that need to be considered. In advising their client the actuary may need to bring to the attention of their client any impact on the wider stakeholders. Under the 'Impartiality' principle of the Actuaries' Code an actuary must ensure that their professional judgement is not compromised by bias or conflict of interest.

Commercial pressures may mean that communication to pension scheme members might over-play the merits when transferring from an existing scheme to a different scheme, or under-play the benefits of guaranteed lifetime income when commuting some of that income (i.e. if commutation rates are materially lower than a true best estimate). Particular care needs to be paid to avoiding the provision of 'advice' to pension scheme members: FCA / TPR guidance[230] indicates that information which is not generic or factual is likely to be advice. The actuary should resist any pressure that might result in pension scheme members receiving information which could steer them toward or away from a transfer.

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 advice given is in the pension scheme members' best interests.

If an actuary feels that their professional judgement is being compromised by undue influence of others or by conflict of interest, and considers that they might need support to avoid breaching the 'Impartiality' principle of the Actuaries' Code, the actuary should seek assistance from the IFoA's Professional Support Service.[231] 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.

This topic is discussed further in Unfair Outcomes for Individuals (Section 4.4, Page 27), sub-section 'DB to DC transfers' (Page 31).

Accountability of Senior Managers

The Senior Managers and Certification Regime[232] (SM&CR) regime was introduced in 2019 by the FCA and the PRA, meaning 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. The SM&CR both strengthens individual accountability and reinforces collective responsibility among boards.

The regime defines specific senior management functions (e.g. Chief Risk Officer (SMF4), Senior Independent Director (SMF14), Chief Actuary (SMF20), With-Profits Actuary (SMF20a), Chief Underwriting Officer (SMF23)). Actuaries holding any of these functions need to consider their responsibilities within the regime. These responsibilities may well include not focussing solely on the commercial outcome above everything else.

The IFoA's Practising Certificate[233] regime includes a requirement for IFoA Members that hold the senior management functions of Chief Actuary (SMF20) or With-Profits Actuary (SMF20a) to have a relevant IFoA Practising Certificate. The regime is designed to ensure that IFoA Members who hold these functions are assessed as having skills and experience to

230 https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/tpr-fca-employers-trustees-financial-matters-guide.ashx [especially Pages 9-11]
231 https://www.actuaries.org.uk/upholding-standards/professional-support-service
232 https://www.fca.org.uk/firms/senior-managers-certification-regime
233 https://www.actuaries.org.uk/upholding-standards/practising-certificates

allow them, amongst other things, to withstand different pressures. The FRC's Guidance for Boards and Board Committees[234] includes guidance related to financial reporting.[235]

Insurance capital models

Actuaries at insurance firms (working as part of a multi-disciplinary team) may face internal pressure to calculate a capital requirement that the actuary and others might regard as insufficient given the company's risk profile. Where this pressure arises, it may come in the form of 'model drift' (also known as 'model creep'). This is where year-on-year assumptions are changed marginally so the change in the capital requirement from one year to the next appears not material, but over time the capital requirement drifts down to a level at which it is no longer appropriate for the risks faced by the business. Therefore, when the actuary is considering changes to an assumption, they should also consider recent changes to that same assumption or recent changes to similar assumptions.

An example in both life and general insurance is where actuaries may be under pressure to assume unduly high diversification effects between components of the business being modelled (particularly in the tails of the marginal distributions modelled). Diversification is an area of modelling where small tweaks can have a significant impact on the capital requirement. Actuaries are expected to fully understand the dynamics of this.

Actuaries 'speaking up'

Actuaries face a challenging environment for experts and are reminded of the standards expected of professionals acting in the public interest. The Actuaries' Code[236] includes 'Speaking Up' as a stand-alone principle, in order to emphasise its importance. The FCA has also called for cultural change[237] within some organisations, to deliver good consumer outcomes. The PRA has published information on this under the subject 'whistleblowing' [238] including a written notice[239] to the Society of Lloyd's dated 23 December 2019 on whistleblowing at the Society of Lloyd's. Lloyd's itself notes[240] the importance of employees feeling that they can speak up without fear of adverse consequences.

The IFoA provides a Professional Support Service[241] to IFoA Members, providing assistance with ethical or technical professional issues that they are facing, including matters that may require them to 'speak up'. This service includes: access to an independent confidential helpline operated by the charity Protect and speaking up guidance[242] for IFoA Members.

Further Reading

- https://www.fca.org.uk/firms/remuneration – FCA requirements for firms' remuneration
- https://www.fca.org.uk/firms/senior-managers-certification-regime – with links to larger papers and reports, and podcasts
- PRA annual report for the period 01 March 2019 to 29 February 2020 (published June 2020)
- Paper presented to the JFAR (December 2019): The role of actuaries in DB to DC transfers (Section 5, Page 53)

234 https://www.frc.org.uk/directors/corporate-governance-and-stewardship/uk-corporate-governance-code/frc-guidance-for-boards-and-board-committees

235 https://www.frc.org.uk/getattachment/d672c107-b1fb-4051-84b0-f5b83a1b93f6/Guidance-on-Risk-Management-Internal-Control-and-Related-Reporting.pdf

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

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

238 Whistleblowing and the Bank of England; see also PRA's supervisory statement titled: Whistleblowing in deposit-takers, PRA-designated investment firms and insurers (SS39/15); see also PRA Rulebook / SII Firms / Whistleblowing

239 https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/regulatory-action/written-notice-from-the-pra-to-the-society-of-lloyds.pdf

240 https://assets.lloyds.com/assets/pdf-culture-dashboard-the-foundations-of-a-high-performing-culture-at-lloyds/1/pdf-culture-dashboard-the-foundations-of-a-high-performing-culture-at-Lloyds.pdf [Section 4, sub-section: Trust]

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

242 https://www.actuaries.org.uk/upholding-standards/speaking

4.8 Effective Communication

Hotspot Description

The risk that actuaries fail to adequately explain the risks and potential adverse outcomes to decision-makers or to others impacted by their 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.
- Actuaries working as Independent Experts on Schemes of Arrangement or Part VII transfers need to appropriately consider their readership and the need to balance clarity and detail in their reports.
- Actuaries involved with determining, calculating, and verifying the assets and liabilities of pre-paid Funeral Plan Trusts should communicate the results of their valuation and assessment clearly to ensure users of their actuarial work understand the limitations and uncertainty around the modelled results.
- IFRS 17, which will demand more interaction between actuaries, accountants, and finance.
- Actuaries involved in advising pension schemes' trustees and sponsoring employers on funding and investment strategies need to communicate the uncertainties associated with the key economic and demographic drivers, and the assumptions made.
- Actuaries advising in situations involving competing rights between pension schemes' members need to communicate clearly the implicit or explicit effect of any proposed course of action, or of judgements made, on favouring some individuals or groups against others.

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 and JFAR member regulators' actions during 2020/21

The essence of actuarial work[243] involves building models to project an uncertain future based on what the actuary knows of the past and how the actuary anticipates changes. 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 actuarial work understands the limitations 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. For example, consumers may have low levels of knowledge regarding financial matters[244] or longevity, and it is essential that such concepts are clearly explained to them so that they can make informed decisions.

To qualify as an actuary, actuaries must pass an examination[245] 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 discussed 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 are a few current major considerations.

Climate-Related Risk

It is widely accepted that one of the most serious risks currently facing the world is that due to climate change. Whilst 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 climate change when modelling the future.

A report[246] published by the IFoA Climate Change Working Party in March 2019 considered the challenges to communicating the impact of climate change. Section 6.1 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[247] *"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 how to communicate the uncertainty around the projected effects.

As noted in Climate-Related Risk (including Biodiversity) (Section 4.1, Page 8), although the major physical risks belong to the future, the financial costs of transition and the idiosyncratic[248] risks are anticipated to emerge in the short-term.

243 https://www.actuaries.org.uk/system/files/field/document/2018_01_15_TAS%20100%20guidance%20with%20specific%20case%20studies.pdf [Paragraph 4.9]

244 https://www.ucl.ac.uk/ioe/news/2018/mar/england-has-one-lowest-levels-financial-literacy-study-says

245 https://www.actuaries.org.uk/cp3-communications-practice

246 https://www.actuaries.org.uk/system/files/field/document/Climate-change-report-29072020.pdf

247 https://www.wickedproblems.com/1_wicked_problems.php

248 Idiosyncratic risk: the risk that specific companies may be adversely impacted by a specific occurrence that does not affect the entire market systemically.

Modelling

For annual periods beginning on or after 1 January 2023 IFRS 17[249] will change requirements for reporting reserves in financial statements. The numbers produced are well-defined, but it can be challenging to communicate what they represent.

The world is at a time when modelling is about to become much more complex. Machine Learning (ML) and Big Data are beginning to enable modelling in new and more granular ways. ML poses considerable challenges to understanding the model, communicating what the model is assuming, and communicating why the model is deemed fit for purpose. 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[250] in the results.

The Sterling LIBOR[251] panels will cease at the end of 2021 (see Announcements on the end of LIBOR),[252] and any models which make use of this will need to use SONIA[253] instead. In March 2021 the PRA and the FCA jointly published a letter[254] which makes clear what the expectations are for the final phase of the transition. Actuaries will have a key part to play in communicating the effect of this transition to the various stakeholders including ensuring any impact on policyholders is understood and well managed.

Commercial Pressures in General Insurance

This topic is discussed more-extensively in Impact of Undue Commercial Pressure (Section 4.7, Page 45). However, effective communication is at the heart of the issue along with robustness. When the actuary is challenged to recommend reserves that are below what the actuary considers to be 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 communications to syndicates to warn of the need for adequate reserving.

Letters from the PRA of November 2019 to Chief Executives[255] and Chief Actuaries[256] discuss 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[257] have been developed to encourage recipients to be able to read and understand the current and projected values of their defined contribution (DC) pension schemes. 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.

249 https://www.ifrs.org/issued-standards/list-of-standards/ifrs-17-insurance-contracts/
250 https://www.frc.org.uk/getattachment/b8d05ac7-2953-4248-90ae-685f9bcd95bd/TAS-100-Principles-for-Technical-Actuarial-Work-Dec-2016.pdf [Paragraph 5.5]
251 https://en.wikipedia.org/wiki/Libor
252 https://www.fca.org.uk/news/press-releases/announcements-end-libor
253 https://en.wikipedia.org/wiki/SONIA_(interest_rate)
254 https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2021/march/transition-from-libor-to-risk-free-rates.pdf
255 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
256 https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2019/letter-from-james-orr-feedback-from-recent-pra-reserving-reviews.pdf
257 https://www.gov.uk/government/consultations/simpler-annual-benefit-statements-for-workplace-pensions

The emergence of the Pensions Dashboard has the power to transform the situation. Central to the Pensions Dashboard efforts is the derivation of the Estimated Retirement Income[258] (ERI). 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 governments, regulators, 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[259] considering actuarial aspects of the Pensions Dashboard and the chair of that working party is included in the Money & Pensions Service[260] (MaPS) Implementation Steering Group for the Pensions 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 mean that it is more suitable for an individual to transfer depends on many factors. Pension scheme members should receive communications that help them understand the relationship between transfer values and the benefits they would be giving up so they can make better informed decisions for their future.

The FCA has published a number of consultations[261] 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 pension schemes' trustees or sponsoring employers develop effective communication strategies so that pension scheme members do not take actions which may not be in their best interests.

Advice on actuarial factors used in pension schemes

Actuaries advise pension schemes' trustees on setting actuarial factors which affect the benefits paid to pension scheme members. The IFoA completed a Thematic Review[262] in 2020 which highlighted the need for actuaries to prioritise sound rationale and clear communication. The report highlights that, when advising pension schemes' trustees, actuaries should focus on explaining the range of factors affecting calculations for transfer values and commutation rates and the reasons for the difference between the two.

Scenario testing

Assessing the impact on a financial institution or pension scheme from adverse scenarios (of individual events or combinations of events) is now a key focus in regulation. Actuaries need to communicate to stakeholders: the reasoning for selecting the scenarios tested; that the scenarios are appropriately adverse; and the implications of the results of the scenario tests.

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 and results of scenario tests, 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.

258 ERI = Estimate of the annual income the Individual might receive in retirement, in today's money terms.
259 https://www.actuaries.org.uk/system/files/field/document/The%20Pensions%20Dashboard%20An%20Actuarial%20Perspective%20%282%29%20-%20amends.pdf
260 https://moneyandpensionsservice.org.uk/
261 https://www.fca.org.uk/publications/policy-statements/ps20-6-pension-transfer-advice-feedback-cp-19-25-final-rules
262 https://www.actuaries.org.uk/system/files/field/document/Pensions-Thematic-Review...PDF

5 The role of actuaries in DB to DC transfers

[Paper presented to the JFAR (December 2019)]

Introduction & background

- 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.
- There is some professional uncertainty as to what member options should be included in the transfer value calculation (e.g. tax-free cash).
- 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 being reduced for underfunding.
- 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.
- 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 pension schemes' membership.
- 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.
- 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.
- 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[263] (i.e. over £50k per case). They estimate that total redress of £1.6bn-£2bn [Editor's Note: later downgraded in June 2020 to £1,206m in PS20/6[264]] 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.

263 https://www.fca.org.uk/publication/consultation/cp19-25.pdf
264 https://www.fca.org.uk/publication/policy/ps20-06.pdf

- 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.

Potential areas of concern for the profession:

De-risking exercises and scheme communications

- 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.
- There is some evidence that pension 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.
- 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.
- 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.
- 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

- The new funding regime, due to be consulted on in early 2020 [Editor's Note: now completed], may result in more cautious funding bases and investment strategies and a corresponding potential; to **increase CETVs**.
- This may make CETVs more attractive to members as evidence has shown that demand for transfers rises as average CETVs increase. Pension 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.

- Some pension 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

- The recent court ruling[265] requiring equalisation of GMPs will have the effect of increasing benefits for some members and hence their CETVs.
- Replacement (or gradual dis-use) of the RPI index in favour of a CPI index will have the effect of reducing benefits in those pension schemes where pension increases are still linked to RPI, and a consequential reduction in CETVs.

Reducing transfer values

- 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.
- 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.
- 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.

Role of actuaries involved pension superfunds transactions

- Superfunds are designed to consolidate DB pension 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 pension schemes given the potentially more conservative investment strategy.
- 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).
- 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 pension schemes. Actuaries working for superfunds may therefore find themselves conflicted.
- When **preparing for entry to a superfund** there may also be pressures to reduce the liabilities before they have transferred across. EBCs and the actuaries who work for them may be part of this process.

Role of actuaries at buyout providers

- 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.
- 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

- 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 (e.g. 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).
- 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.

[265] https://www.bailii.org/ew/cases/EWHC/Ch/2018/2839.pdf

Partial transfers

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

- 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 pension schemes and how frequently these factors are reviewed.
- **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.
- 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.
- Financial advice is needed for transfers of over £30,000. Many tax-free cash payments 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.
- 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

- 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.
- **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.

In summary:

- 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.
- 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.
- 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 pension 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.
- 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.
- There are also overlaps between the issues in this paper and those called out in the JFAR Risk Perspective 2019/20 being developed separately.

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