



Financial Reporting Council

JOINT FORUM ON ACTUARIAL REGULATION

RISK PERSPECTIVE: 2018 UPDATE

APRIL 2019

JOINT FORUM ON ACTUARIAL REGULATION



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JOINT FORUM ON ACTUARIAL REGULATION

Who is the JFAR?

Established in 2013, the JFAR is a unique collaboration between regulators to co-ordinate, within the context of its members' objectives, the identification and analysis of public interest risks to which actuarial work is relevant.



What does the JFAR do?

- JFAR is *not* another regulator.
- It is a forum for the five regulators to meet and collaborate:
 - Share expertise;
 - Identify current and emerging issues;
 - Reduce risk of duplicating or conflicting actions;
 - Reduce risk of regulatory gaps or overlaps;
 - Increase knowledge through engagement with experts to brief it on topical matters;
 - Identify areas where JFAR can help actuaries and/or users.

What are the JFAR's outputs?

- Annual Risk Perspective update; and
- JFAR Thematic Reviews:
 - DB to DC transfers;
 - Group think;
 - General insurance internal reserving reports;
 - Impact of low interest rates on insurers and pension schemes;
 - The role of the actuary in with-profits life assurance;
 - Actuarial Function Reports roundtables;
 - Pension Working Group (ongoing).

What is the Risk Perspective?

The JFAR sets out its collective view on current risks to high quality actuarial work in its Risk Perspective. The Risk Perspective is intended to raise awareness of the risks to, and the importance of, high quality actuarial work in mitigating the risks to the public interest.

In the Risk Perspective: 2017 Update the JFAR identified nine ‘hotspots’ where there is a perceived increase in risk to the public interest where actuarial work is central. For each hotspot, the risk is described in generic terms and the key risk drivers and current influences that lead to its definition as a hotspot are identified.

In its Risk Perspective: 2018 Update, the JFAR shares the key developments during 2018 in relation to each of the hotspots, summarises the 2017 discussion and implications for actuaries and provides links to further reading.

To prepare the 2018 Update, the JFAR reviewed relevant literature (e.g. the World Economic Forum’s Global Risk Report 2018 and papers from the CRO Forum Emerging Risks Initiative), assessed the macro environmental conditions and considered the projects (completed and planned) within each of the JFAR regulators. In particular, the JFAR considered whether the current risk environment should lead to new hotspots being included in, or existing ones removed from, the Risk Perspective: 2018 Update. The research confirmed the continuing relevance of the nine hotspots. However, where necessary, the hotspot descriptions and current influences have been updated to more accurately reflect the 2018 conditions.

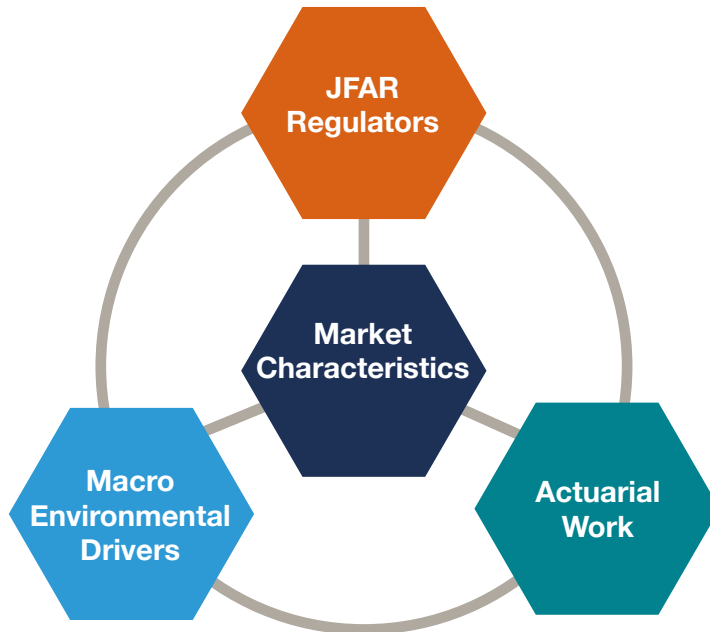
In today’s fast changing world where people are living longer, environmental concerns are rising and technology is advancing at an unprecedented pace, it is vital that actuaries focus on the right risks to perform their work to the highest quality.

What are the hotspots?



How are hotspots identified?

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.



Macro Environmental Drivers

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

Actuarial Work

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

Market Characteristics

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

JFAR Regulators

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

Interactions

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

ARIA

Actuarial Risk Identification Architecture



03

THE HOTSPOTS

Political and legislative risk



HOTSPOT DESCRIPTION

Risk that actuaries do not sufficiently consider or plan for the potential for political or legislative change and as such over or under react to political uncertainty.

CURRENT INFLUENCES

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

Further, recent international electoral results appear to reflect societal polarisation, income inequality and the inward orientation of countries with the potential to impact national and international government policy in unexpected ways.

KEY DRIVERS

Primary driver: political

Secondary drivers: political landscape influenced by economic, environmental, legal and regulatory, ethical and international factors



Key Developments During 2018

Brexit

The ongoing uncertainty over Brexit is likely to lead to indirect impacts on actuarial work. For example, insurers have taken action to restructure their organisations to ensure continuity of service for existing and new customers (such as setting up operations in EU states, entering into fronting/reinsurance arrangements with local carriers and using Part VII transfers to move books of business into new or existing entities). These actions may lead to increased complexity in operations and data flows impacting actuarial work e.g. valuation data may need to be collected from different sources. However, there is expected to be little direct impact on actuaries from Brexit e.g. membership of the European Actuarial Association is not restricted to EU member states.

Global Geopolitical Risk

The World Economic Forum in its latest two reports has highlighted the increase in global geopolitical risk; as illustrated by the North Korean missile crisis, the volatile policy backdrop under the US Trump administration, US-China trade war, the impact on French economic policy of the 'gilet jaune' protestors, elections resulting in success for anti-establishment parties in Italy and Sweden as well as currency crashes in Turkey, Argentina and Venezuela.

Guaranteed Minimum Pensions

The English High Court ruling in *Lloyds Banking Group Pension Trustees Limited v Lloyds Bank plc and others* was published on 26 October 2018 and held that UK pension schemes with Guaranteed Minimum Pensions (GMPs) accrued from 17 May 1990 must equalise for the different effects of these GMPs between men and women. The case also gave some guidance on related matters, including the methods for equalisation. The assessment of the GMP adjustment will involve actuaries: the IFoA issued a Risk Alert in November 2018 reminding actuaries to work within their competency highlighting the risk of straying into legal interpretation. There is also an issue for those individuals who have tax protected benefits which generally have a condition that no further contributions can be made. There is a risk that the payment of the GMP adjustment is assessed as a contribution resulting in a loss of the tax protection. HMRC is being made aware of this issue.

Equity Release Mortgages

Equity release mortgages are a current cause for concern with the PRA continuing to develop policy in this area. Following consultation paper CP13/18 'Solvency II Equity Release Mortgages', the PRA published a policy statement (PS31/18) and updated supervisory statement (SS3/17) in December 2018 setting out new expectations for equity release lenders to address the risks surrounding the existence of a 'no negative equity' guarantee. For practical reasons, the proposed implementation date will be 31 December 2019. The IFoA and ABI, through the Actuarial Research Centre, has recently commissioned a research project "Equity Release Mortgages: No Negative Equity Guarantee".



HOTSPOT DESCRIPTION:

Risk that actuaries do not sufficiently consider or plan for the potential for political or legislative change and as such over or under react to political uncertainty.

Civil Liability Act (2018) and Personal Injury Discount Rate ('Ogden rate')

The Civil Liability Act (2018) received royal assent in December 2018. The Act introduces a tariff of fixed damages for soft-tissue injuries lasting up to two years, alongside secondary legislation to increase the small claims limit for road traffic accidents claims to £5,000. The changes are designed to reduce the cost, expense and complexity of dealing with whiplash type injuries and will be facilitated by an online portal for claims (expected to launch in April 2020). The Act also addresses how the Ogden rate, should be set following the cut from 2.5% to (0.75)% in 2017.

The Act requires the Lord Chancellor to consult with both the Government Actuary and the Treasury and to determine the personal injury discount rate by 7 August 2019. Subsequent reviews will take place at least once every five years. In defining the rate, the Lord Chancellor must assume that the damages are invested in a diversified portfolio, using an approach to investment that involves more risk than a very low level of risk, but less risk than would ordinarily be accepted by a prudent and properly advised individual investor.

In January 2019, the Government Actuary's Department (GAD) published a technical memorandum setting out the analytical approach that it intends to adopt to support the Government Actuary's response to the Lord Chancellor in which it explains its methodology around modelling claimant outcomes, the significant assumptions it will make when considering the appropriate investment portfolios, damage profiles and economic scenarios and outlines the outputs that will be produced as part of GAD's analysis. In order to inform the decision, the Ministry of Justice has issued a call for evidence to gather up-to-date data on how claimants invest their damages, investment advice provided to them and model investment portfolios. The deadline for the response to the call for evidence was 30 January 2019.

The setting of the personal injury discount rate is also under review in Scotland. The Bill, which is in its second stage, proposes that the rate be set by the Government Actuary by reference to a notional investment portfolio suitable for a hypothetical investor.

Summary of 2017 Discussion & Actuarial Implications

The outcome of Brexit negotiations and the UK government's strategy for policy decisions following Brexit are key sources of uncertainty. The outcome may impact the context in which actuaries work and/or actuarial work directly e.g. changes to insurance regulation in the UK compared with Solvency II, legality of contracts which are sold by UK companies but underwritten by EU companies.

Away from Brexit, actuarial work could be impacted by government decisions on economic factors such as tax rules, changes to pension and other welfare schemes or policies to improve intergenerational fairness. An example is the government White Paper looking at the security and sustainability of the defined benefit pension sector which is likely to lead to changes in legislation to allow new forms of scheme consolidation.

International political risks may also affect the work of UK actuaries because they impact on the UK's relationships with other countries or the business written overseas by UK insurers. They may arise through regulatory requirements, domicile of insured risks, regional economics, or relate to specific characteristics of the work being performed.





Political and legislative risk could impact actuaries by directly changing their work e.g. increased regulation on collection and use of data could impact insurance pricing or product design. It could also affect actuaries' models and assumptions e.g. changes in the taxation scheme may alter individual's propensity to invest or increased public access to new medicines could improve longevity.

Insufficient data can be a key risk during periods of political uncertainty as there may be no relevant history of similar situations. Stress and scenario testing could help actuaries explain the potential impacts to decision makers but incorporating the impact of political decisions into business planning can be difficult and there is a risk that the actual outcome differs significantly from expected.

The risk is greater where actuaries have limited knowledge of the factors being considered by government or are unaware of, or give insufficient weight to, the views of other groups that may influence the government's actions.

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Regulatory Change



HOTSPOT DESCRIPTION

Risk that the quality of actuarial work is adversely impacted by the level of regulatory change resulting in poor outcomes for users.

CURRENT INFLUENCES

Recent changes to regulation impacting actuarial work may not yet be fully embedded (e.g. revised Technical Actuarial Standards, Actuarial Professional Standards, Actuaries' Code, Solvency II, Pension Freedoms, Senior Managers and Certification Regime).

KEY DRIVERS

Primary driver: legal/regulatory

Secondary drivers: political and international factors



Key Developments During 2018

General Data Protection Regulation

The General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679) came into force in May 2018. It imposes new obligations and stricter requirements on all organisations involved in the processing of personally identifiable data, emphasising transparency, security and accountability. The insurance, pensions and investment industries hold a large amount of personal data and sensitive personal data meaning insurers and pension administrators now need a greater awareness and command over the data they process and share and will also need to be able to justify why they must obtain and hold the data in question. The IFoA issued a Risk Alert in January 2018 highlighting considerations for actuaries such as whether an actuary holds an individual appointment which would lead them to be a data controller, data processor or joint data controller and alerting them to information available from the ICO.

Actuarial Monitoring Scheme

The IFoA consulted on proposals to introduce proportionate, appropriate monitoring of actuarial work in summer 2018. The proposal is to introduce a system to gather information about the work being carried out by IFoA members, to use that information to provide evidence of the quality of actuarial work, promote best practice and develop training, education, standards and guidance, when appropriate.

DWP consultations: The Pensions Regulator, Collective Defined Contribution pension schemes, Defined Benefit pension scheme consolidation and Pensions dashboards

During 2018, TPR has evolved into a more visible and proactive regulator and is working in a clearer, quicker and tougher way. In June, the DWP launched a consultation examining whether TPR should be given greater powers, including granting it the ability to levy civil penalties of up to £1m on companies that mismanage their defined benefit pension schemes.

The DWP has launched consultations into the design and management of Collective Defined Contribution (CDC) pension schemes (which allow contributions to be pooled and invested to give members a target benefit level) and into proposals for DB scheme consolidation through the use of ‘superfunds’ (commercial undertakings in which the protection given by the employer covenant is replaced by commercially invested capital). These will give rise to new areas of actuarial work in which actuaries will need to consider carefully the impact on different stakeholder groups.

In relation to the DWP’s consultation on “Pensions Dashboards” government has indicated that it will compel pension schemes to provide data for a dashboard provided initially by the Single Financial Guidance Body (SFGB). There remains uncertainty as to what information will be in the dashboard and therefore for the data, assumptions and models that actuaries will be required to provide.

IFRS 17 Insurance Contracts

In November 2018, the International Accounting Standards Board (IASB) proposed a one-year deferral of the effective date for IFRS 17, the new standard for insurance contracts, to 2022. It also proposed extending to 2022 the temporary exemption for insurers to apply IFRS 9 Financial Instruments, so that both IFRS 9 and IFRS 17 can be applied at the same time.

The IASB has been working proactively to support insurers and others with the transition to IFRS 17, including through establishing a Transition Resource Group (TRG) and providing education materials. It will consider whether any of the concerns



HOTSPOT DESCRIPTION:

Risk that the quality of actuarial work is adversely impacted by the level of regulatory change resulting in poor outcomes for users.

and implementation challenges discussed by the TRG and other stakeholders, including those relating to costs and benefits, indicate a need to amend the requirements of IFRS 17. However, it agreed that any amendments would not result in significant loss of useful information relative to that which would otherwise be provided by IFRS 17 for users of financial statements; and amendments would not unduly disrupt implementation already under way or risk undue delays in the effective date of IFRS 17. The decision to propose a one-year deferral acknowledges the uncertainty that arises from the IASB's continuing discussions, while being responsive to comments from stakeholders that implementation should not be unduly disrupted.

At its January 2019 meeting, the IASB continued its considerations of how to respond to the concerns and implementation challenges raised in relation to IFRS 17 and decided to propose targeted improvements in three areas (i.e. the recognition of contract costs, reinsurance contracts and the investment service elements of a contract). It expects to publish a consultation on proposed narrow-scope amendments around the middle of 2019.

Sir John Kingman's review of the FRC

The UK Government conducted an independent review of the FRC, led by Sir John Kingman, that reported its findings in December 2018. The review recommends that the FRC should be replaced with a new independent regulator with clear statutory powers and objectives. The regulator should have an overarching duty to promote the interests of consumers of financial information, not producers, and should also have a duty to promote competition; a duty to promote innovation; and a duty to apply proportionality to all its work. It included reviewing the existing arrangements for the regulation of actuaries in the UK (put in place following Sir Derek Morris' review of the actuarial profession in 2005). It identified a risk that stakeholders may assume that the FRC's current oversight of the actuarial profession is a great deal more thoroughgoing and effective than, in the absence of credible powers, it actually is or can be. Therefore, the review suggests that the Government, working with the PRA and TPR, should review what powers are required effectively to oversee regulation of the actuarial profession and recommends that neither the FRC, nor its successor body, is best-placed to be the oversight body. It suggests the PRA as an alternative repository of regulatory actuarial expertise.

CMA investigations: Competition in investment consulting, Citizens Advice super-complaint

The Competition and Markets Authority (CMA) published a provisional report on the findings of their investigation into competition in investment consultancy and fiduciary management services. One proposal is that the FCA's regulatory perimeter be extended to cover both investment consulting and fiduciary management. Some firms offering such services could be licensed under the Designated Professional Bodies (DPB) regime operated by the IFoA under the Financial Services and Markets Act 2000. The extension of the perimeter of the FCA might have an impact on those firms who provide investment advice incidental to their main business under the DPB regime.

In September 2018, Citizens Advice submitted a super-complaint to the CMA raising concerns about long-term customers paying more for goods and services ('the loyalty penalty'). The CMA's response sets out a package of reforms both across markets and specifically in relation to the five markets identified by Citizens Advice, which included household insurance. The report's recommendations include publicising the loyalty penalties along with market surveys; targeted pricing regulations such as limiting price differentials or price caps; and other support to ensure customers, particularly vulnerable customers, get better deals. It also published market specific recommendations and in respect of household insurance, it welcomed the work of the FCA in reviewing pricing practices.





Actuaries are likely to be involved in work that underpins the prices set in the market and in assessing price differentials for new and existing customers. As such they should be aware of the ongoing work of the CMA and FCA and its impacts on treating customers fairly.

Senior Managers and Certification Regime

The Senior Managers and Certification Regime (SM&CR) promotes the safety and soundness of regulated financial services firms and financial stability by strengthening the link between seniority and accountability. The PRA and FCA together with HMT developed the SM&CR which was rolled out to banking institutions from March 2016, and will be extended in full to insurers from December 2018, and to all other financial services providers by the end of 2019. The SM&CR comprises the Senior Managers Regime (SMR), Certification Regime, Regulatory references and Conduct Rules. It forms part of a broader set of measures to improve decision-taking and provide incentives for prudent risk-taking, and should therefore be viewed alongside assessments of board effectiveness, sustainable remuneration policies and strengthened market codes.

Users' Expectations

Recent corporate failures have highlighted the public expectation gap between the actual and perceived work of auditors. There is a risk that similar issues in actuarial work arise in the future. For example, actuaries may be seen as responsible for the assumptions used in the valuation of insurance liabilities or pension schemes rather than the directors and trustees who are accountable for the decisions made. There is a risk that prior practices may be viewed with increased scrutiny or against new standards of ethics e.g. cross subsidies across policy holder groupings, expenses and commissions or product design and exclusions may no longer be deemed appropriate. These changes could lead to the invalidation of actuarial data, models and assumptions as well as reputational damage to actuaries and their employers.

The expectations of the user for whom the actuary is providing advice may impact the role of the actuary and could lead to commercial pressure or conflicts of interest e.g. pension actuaries advising employers in-house and those advising scheme trustees should both be aware of and apply the principles of TAS 100. Changes in the insurance value chain (consolidation, disintermediation and disaggregation) may increase the risk that concentrated expertise, or a lack of independence, leads to group think or undue commercial influence, asymmetry of understanding of complex products (e.g. insurance-linked securities) or a failure to 'know your client' may lead to poor decisions by users.

Interpretation and Application of new legislation and regulation

It is recognised that the interpretation and application of new legislation and regulation can lead to increased risk in actuarial modelling and assumption setting. When first published, uncertainty will remain for the interpretation by regulators, practitioners and auditors until market practice emerges e.g. application of the High Court ruling on GMP, finalisation of the personal injury discount rate or application of IFRS 17. Additionally, where there are new areas of legislation and regulation there may be a limited pool of knowledge and resource and a risk of conflicts of interest or group think.

Actuaries face a challenging environment for experts and are reminded of the standards expected of professionals acting in the public interest. In May 2018, the IFoA published changes to the Actuaries' Code. The revised Code has six key principles and introduces 'Speaking Up' as a stand-alone principle, in order to emphasise its importance. It will come into force on 18 May 2019. The IFoA is developing non-mandatory Guidance to accompany the Code, which will provide information about each of the six principles contained within the revised Code, as well as its application, scope and status and purpose.

Summary of 2017 Discussion & Actuarial Implications

Recent changes to regulation impacting actuarial work (e.g. revised TAS, APS, Actuaries' Code, Solvency II, Pension Freedoms and the Senior Managers and Certification Regime) may not be fully embedded. This could increase risk as changes often require interpretation and application of judgement, systems changes, new methods, models and data and of course can be resource intensive. Actuaries can play a role in helping firms form a strategic approach to implementing changes to comply with new regulation impacting actuarial work.

Regulators aim to follow the principles of good regulation to mitigate the risk of an inappropriate regulatory burden. There are risks both of over-regulation, which could place demands on actuarial resource, and under-regulation, resulting in an overreliance on professionalism which could affect the quality of actuarial work.

For actuaries, professionalism encapsulates technical competence, ethics and integrity and the skillset to apply these in real life circumstances. Actuaries may face challenges to acting in accordance with their professional values through commercial pressures such as the focus on short-term profit generation or because they do not have sufficient support within their organisations.

Actuaries as professionals acting in the public interest are required to comply with their obligations under the Actuaries' Code and have due regard to a wider stakeholder group as well as the immediate user of their work. This could lead to conflicts of interest e.g. between shareholders and policyholders or pension scheme sponsors and members. A reluctance or inability to speak up in difficult circumstances could lead to an increased risk to high quality actuarial work as could risks arising from silo thinking or group think.

There is a risk that users of actuarial work may find less relevance in the actuaries' professional skills if actuaries do not keep up to date with the changing social, political and business environment. In the current climate, where there is some mistrust of experts, actuaries and other professionals may be considered to be anti-competitive, too cautious or a barrier to innovation.

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Market Performance and Uncertainty



HOTSPOT DESCRIPTION

Risk that actuaries fail to make sound judgements and risk based decisions given the uncertainty in the current financial market conditions within which they operate.

CURRENT INFLUENCES

Brexit and the continuation of the low interest rate environment seen since the global financial crisis may result in new and volatile economic and financial market conditions that create challenges for actuaries managing and communicating uncertainty e.g. the impact of Brexit on inflation, real interest rates, business investment and the currency markets.

KEY DRIVERS

Primary driver: economic

Secondary drivers: political, environmental and international factors



Key Developments During 2018

Economic changes

Since the UK vote to leave the EU, foreign and domestic investors have been worried over the uncertainty and economic impact of Brexit on the UK economy, so they have sold sterling-priced assets and bought elsewhere, which has in turn sent the value of sterling down. The value of sterling against major currencies such as the dollar and euro has generally fallen, but it has also regained back some of these losses whenever some form of positive news or certainty over future trade relations has come to the fore. However, as the value of sterling has dropped the FTSE 100 index has tended to go up reflecting the rise in value of overseas revenue from the multinationals making up the index.

The UK's withdrawal from the EU will have far-reaching consequences on the European economy. However, the ultimate consequences of Brexit depend on the final agreement, which remains uncertain. The consequences for the stock and financial markets are therefore also uncertain.

Brexit impacts on occupational pensions schemes could include a requirement for them to disinvest from significant proportions of their overseas investments to realign their portfolio to be primarily invested in UK markets, changes to the strength of employer covenant due to relocation or business impacts on employer solvency.

A hard Brexit could trigger a rise in aggregate UK pension liabilities, driven by the impact of falling gilt yields, falling interest rates, weakened sterling and a corresponding rise in inflation on schemes' long-term pension obligations. Higher than expected inflation could impact actuarial work in other sectors e.g. current assumptions used for estimating general insurance liabilities based on recent benign history may no longer be appropriate if shortages or delays in sourcing parts and labour drive up costs.

Interest rates since the Global Financial Crisis have fallen to record lows. However, there are signs of normalisation of monetary policy in some territories e.g. US Federal Reserve is now 'rolling off' its balance sheet by allowing for the bonds it has bought to mature and the ECB is tapering its bond-buying. These conditions have put insurers and pension funds under increased pressure and led to actions such as a shift from guaranteed savings products to unit-linked, an increase in reinsurance transactions and bulk annuity deals, takeovers of less well-capitalised groups and changes in investment strategy.

Alternative Investments

Pension funds (DB and DC) are looking at investing in alternative asset classes: Mercer reported that the proportion of DB pension plans allocating assets to private debt increased from 7% to 11%, while secured finance strategies emerged from close to zero exposure last year to 3% of plans in 2018. The UK's Investment Association called for greater access for DC funds to illiquid assets, such as infrastructure and property. Actuaries should be aware of the limitations in modelling illiquid or unusual asset classes and could make use of scenario testing to help decision makers evaluate the impact of investment conditions and changes in business strategy.



HOTSPOT DESCRIPTION:

Risk that actuaries fail to make sound judgements and risk-based decisions given the uncertainty in the current financial market conditions within which they operate.

Market consolidation

2018 has seen continued consolidation in the life insurance industry (e.g. Life Company Consolidation Group acquired Equitable Life, Phoenix Group acquired Standard Life Aberdeen's life assurance business). The consolidators, some of which are backed by private equity groups, aim to generate economies of scale by combining businesses into a single capital structure and IT system. The complexity of these groups may increase the risk of maintaining accurate data and in selecting appropriate models and assumptions.

Similarly, in the non-life sector there have been mergers of insurance and broking groups as the abundance of capital has driven consolidation. The non-life sector has continued to face a soft market cycle with only small rate increases despite the significant natural catastrophe losses in 2017. In September 2018, the PRA wrote to Chief Actuaries of non-life insurers to highlight its continuing focus on realism in firms' business planning and underwriting policies and the risk of inadequate reserving or underestimation in the assessment of capital requirements. Where firms re-underwrite their portfolios or move into new lines of business actuaries may face challenges in selecting assumptions due to the limited historical data available.

Pensions Risk Management

TPR's 2018 Annual Funding Statement reports that trustees need to monitor and understand the scale and nature of risks (investment, funding and covenant) and notes that tools such as Integrated Risk Management (IRM) can help. On Brexit, the TPR expects open and collaborative discussions between trustees and sponsors to understand the potential impact for the scheme and the sponsor. Actuaries are key advisors for pension schemes and can help users to assess the uncertainties arising from market conditions.

Summary of 2017 Discussion & Actuarial Implications

Economic and market conditions have a direct impact on the assumptions used for pricing products, reserving for risks, assessing pension funding, asset pricing and allocation and calculating capital requirements. All the areas where actuaries are employed are affected – from insurance to pensions and investment, as well as wider fields such as regulatory or consultancy.

The unusual economic conditions and persistent low interest rates, which have not been experienced in living memory, mean that past experience may be a poor guide to future outcomes. It is uncertain how long policies that were adopted by Central Banks to manage the financial crisis, to respond to Brexit or to support climate change commitments will remain the same or what their impact will be on economic growth.

Market innovations to achieve higher yields, a lack of rational market behaviour and the use of Quantitative Easing also mean that historical relationships cannot be relied on, thus increasing a potential for step-changes in risks. This is leading to a greater uncertainty in selecting and communicating assumptions.

Insurers and pension schemes may make strategic decisions to manage this uncertainty e.g. investment policy, business model changes or benefit modifications. There is a risk that actuaries do not take into account the risks associated with the new, complex investments created to provide higher yields. To some extent the risk is influenced by group think and commercial pressures with a risk of herding around particular solutions even if they are not appropriate in the individual circumstances.





Actuaries will play a role in helping decision makers manage these uncertainties. Actuaries could use stress and scenario testing to look at a range of potential outcomes. However, there is a risk that economic conditions mean the management actions assumed in these scenarios are no longer valid e.g. the ability to attract capital may have changed.

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Climate-related Risk



HOTSPOT DESCRIPTION

Risk that actuaries may not take into account appropriately, or communicate clearly, the assumed impact of changing climate on decisions of users.

CURRENT INFLUENCES

There is an increasing body of evidence demonstrating that climate-related issues represent a material risk to future economic stability affecting environmental, societal and governance matters. Users of actuarial work may be exposed to the physical, transition and liability risks related to climate change and actuaries are increasingly involved in assessing their impacts. Governments and users of actuarial work are increasing their efforts to manage these impacts. Actuaries need to help users of their work to understand the risks and uncertainties.

KEY DRIVERS

Primary driver: environmental

Secondary drivers: inter-connections: economic impact, legal/regulatory and political responses to changes including international situation, ethical investment policies



Key Developments During 2018

Physical Risk

In the WEF Global Risk Report 2018 failure of climate-change mitigation and adaptation is reported as the fourth highest risk in terms of impact and the fifth highest risk in terms of likelihood, having been rated more highly than previous years. It also considered extreme weather events to be the second highest risk in terms of impact and the highest in terms of likelihood. The prominence of environmental risk reflects the findings from recent research on environmental conditions, changes in legislation, changes in global investments and the potential economic impacts of low-carbon transition.

The Intergovernmental Panel on Climate Change (IPCC) met in South Korea, in October 2018, to consider the Special Report “Global Warming of 1.5°C”. The report concludes that human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels and global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. Climate-related risks for natural and human systems will depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options.

In its November 2018 Emissions Gap Report the UN reported that global emissions have reached historic levels with no signs of peaking and the current pace of national action against the Paris Agreement commitments is insufficient to meet the Paris targets. However, it highlights the momentum from the private sector and untapped potential from innovation and green-financing as pathways to bridge the emissions gap and reach the target of keeping global warming below 2°C. The report calls for increased action and innovative solutions: risk-acceptance, commercial scalability, holistic economic alignment, mission-oriented approaches and a long term-horizon to increase financial uptake.

Liability Risk

In its November 2017 snapshot of global trends in climate-change legislation and litigation, the LSE identified approximately 1,400 climate change-relevant laws worldwide, a twentyfold increase since 1997. It also found that the number of climate litigation cases has grown. Environmental lawyers, ClientEarth, have recently published two reports showing that the evidence on climate-related financial risk continues to grow.

Transitional Risk

Research published in Nature, using a simulation model to study the macroeconomic impact of stranded fossil fuel assets (SFFA), found that SFFA would occur as a result of an already ongoing technological trajectory, irrespective of whether or not new climate policies are adopted; the loss would be amplified if such policies were adopted; and the magnitude of the loss from SFFA may amount to a discounted global wealth loss of \$1–4 trillion.

During 2018, a number of European insurers and banks committed to pulling back from investing in and insuring the most polluting industries under pressure from environmental groups and activist investors.

Royal Dutch Shell, the world’s second largest publicly traded oil company, recently announced major commitments to reduce its carbon footprint and to reduce greenhouse gas emissions 20% by 2035 and 50% by 2050. The company’s targets will include Scope 3 emissions (i.e. it will include direct and indirect emissions from consumers such as drivers who use their fuel). The company will also tie executive remuneration to achieving these commitments.



HOTSPOT DESCRIPTION:

Risk that actuaries may not take into account appropriately, or communicate clearly, the assumed impact of changing climate on decisions of users.

Climate Adaptation

As well as efforts to cut greenhouse gas emissions, 2018 has seen an increase in actions to adapt to climate change by boosting resilience to current and anticipated climatic hazards. For example, in October 2018, the Global Commission on Adaptation was launched (It will produce a report on innovative approaches to spreading and financing climate adaptation, to be presented at a UN summit in 2019) and in December 2018 the World Bank committed to invest \$200 billion over five years to help developing countries invest in cutting emissions and boosting resilience.

Regulators' Actions

The effects of climate change and the associated transition to a low carbon economy may have a major impact on financial markets and on products that serve those markets and is therefore of concern to regulators.

There have been several developments/publications in 2018:

- The Task Force on Climate-related Financial Disclosures (TCFD) recommendations for forward-looking climate-related financial disclosures have been widely welcomed. Numerous organisations, including the IFOA, are considering how they move forward with them. In March 2018, the Chair of the cross-party Environmental Audit Committee wrote to the top 25 UK pension funds to ask how they manage risks that climate change poses to pension savings and found that a quarter had committed to reporting in line with the recommendations.
- Following the DWP consultation “Clarifying and strengthening trustees’ investment duties”, the Investment Regulations have been updated such that from 1 October 2019, trustees of occupational pension schemes will be required to set out, in their statement of investment principles (SIP), how they take account of financially material considerations and stewardship. The Regulations now make clear that the financially material considerations which trustees must consider when making their investment decisions include, but are not limited to, environmental, social and governance factors, including climate change.
- In October 2018, the PRA issued a consultation paper on banks’ and insurers’ approaches to managing the financial risks from climate change. The purpose of these proposals is to set out how effective governance, risk management, scenario analysis and disclosures may be applied by firms to address the financial risks from climate change.
- The FCA Discussion Paper “DP18/8: Climate change and green finance” sought input on four areas in which the FCA considers a greater regulatory focus is warranted: climate change and pensions – ensuring that those making investment decisions take account of risks including climate change; enabling competition and market growth for green finance; ensuring that disclosures in capital markets appropriately give adequate information to investors of the financial impacts of climate change; and the scope for the introduction of a new requirement for financial services firms to report publicly on how they manage climate risks.
- In December 2018, DEFRA confirmed that the PRA, FCA, TPR and FRC will take part in the third round of adaptation reporting under the Climate Act 2008. Organisations are required to produce reports on the current and future predicted effects of climate change on their organisations and their proposals for adapting to climate change.





Actuarial Considerations

Actuaries in all areas should be aware of the physical, transitional and liability risks associated with climate-related risk including the actions being taken to mitigate and adapt to climate change. The IFoA has published guides to help and support actuaries working in the pensions sector to understand how climate change should be factored into their work. Similar guidance for the general and life insurance and investment sectors is currently being developed. Sources such as these provide information which actuaries and users may wish to consider when reviewing the impact of climate-related risk on their work.

Summary of 2017 Discussion & Actuarial Implications

Risks arising from climate change can impact all areas of actuarial work including methods and modelling, judgement, risk and uncertainty, communications, pricing and funding, reserving and capital modelling, investment portfolio design and management. For example, in life insurance and healthcare there is the risk of new epidemics or changes in mortality trends; in general insurance there is the challenge of modelling unpredictable and extreme weather events; in pensions there may be challenges in setting appropriate investment strategies. In all cases, including in wider actuarial fields, the lack of long-term data about the effects of climate-related risks may result in limitations in data, assumptions and models which need to be communicated clearly.

If actuaries fail to understand and make allowance for the impact of climate-related risk on existing work and practices or when moving into fields that are affected by climate change factors, then it could contribute to increased exposure within the financial system to these risks. This would not be in the public interest.

Actuaries may be able to advise on solutions where individuals or entities are no longer insurable due to excessive risk arising from climate-related claims e.g. by designing structures to pool risk or assessing the value of new risk management measures.

There is a risk of group think and systemic risk where actuaries collaborate to build new models to take account of climate-related events resulting in the widespread use of models which may be flawed. Actuaries could mitigate this risk by collaborating with other professionals, encouraging robust independent challenge and ongoing reviews.

Actuaries in all areas should be aware of the physical, transitional and liability risks associated with climate-related risk including the actions being taken to mitigate and adapt to climate change. They may be able to help decision makers to develop scenario analyses to assess their impact, inform strategy or consider these risks in governance, risk management and financial disclosures.

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Financial Security



HOTSPOT DESCRIPTION

Risk that actuaries fail to communicate the impact of the changing economic and social priorities of government on the current and ongoing appropriateness of the assumptions inherent in products designed to meet consumers' long-term financial and social care needs.

CURRENT INFLUENCES

The combination of slow economic growth, ageing populations and rising income and wealth disparity is increasing the risk that individuals will not have sufficient wealth or income to meet their financial needs. Economic conditions and political and societal changes mean that governments faced with fewer resources and competing priorities may be less willing or able to provide support. In these circumstances actuaries may fail to design products or give advice which appropriately reflects the changing environment.

KEY DRIVERS

Primary driver: economic

Secondary drivers: social (e.g. intergenerational fairness), international



Key Developments During 2018

Financial Protection

People are living longer, often with complex long-term conditions and high expectations about the treatments they will receive. This increasing demand for social care for the elderly combined with the increasing costs of care, is putting an ever-increasing strain on NHS resources. In this environment NHS Trusts make individual decisions which are often referred to as a 'postcode lottery' (as illustrated by the recent debate over provision of diabetes monitors). The degree of provision can vary significantly between different regions of the UK. For actuaries working in this area, there is a risk that using pricing or valuation assumptions based upon aggregate data may be inappropriate particularly where business volumes are concentrated by geography. Actuaries may also face challenges in sourcing appropriate granular data and should be aware of any risks to the credibility of statistical analysis from small data sets.

Insurance, pensions and investment products often provide individuals with coverage or benefits for a long period or in complex situations. There is a risk to financial security if consumers' understanding of the products is low, the price is prohibitive, or the product choice is limited (e.g. for vulnerable groups). The quality of communications and disclosures throughout the life of the product can contribute or inhibit customer understanding. During 2018, there has been increased regulatory scrutiny of firms' touchpoints with consumers. For example, the FCA and CMA recently reviewed market practices in the areas of general insurance pricing, treatment of with-profits consumers and advice provided to pension transferees.

Protection Gap

There is evidence of low financial resilience and a protection gap. In the UK, for example, the FCA's Financial Lives 2017 Survey revealed that just under a third of the UK adult population have 'low financial resilience' due to factors such as over-indebtedness, an inability to cover living expenses for even a week if they lost their main source of income, or being overdrawn constantly or usually by the time they are paid or receive other income. Despite this apparent financial vulnerability and need for a safety net, the FCA research study also highlighted that 65% of the UK adult population does not have any form of protection insurance.

In September 2018, the Social Metrics Commission reported its findings on a poverty indicator that goes beyond a simple measure of relative income and takes account of living costs such as housing, childcare and the extra costs of disability. The adoption of this poverty indicator may lead to different populations accessing government support or changing demand for private savings and insurance solutions.

Vulnerable groups may be particularly at risk from changes in state benefits (e.g. Universal Credit or provision of social care) or developments in the savings and insurance markets (e.g. the increased personalisation of products and changing levels of risk pooling and cross subsidy). There is also the risk of expectation gaps (e.g. in relation to the switch away from defined benefit pensions and the level of benefits that are likely to arise from the payment of minimum auto-enrolment pension contributions) and poor decisions as a result of people being unable or unwilling to pay for advice (e.g. investing in very low risk or high risk pension strategies rather than more traditional annuities).



HOTSPOT DESCRIPTION:

Risk that actuaries fail to communicate the impact of the changing economic and social priorities of government on the current and ongoing appropriateness of the assumptions inherent in products designed to meet consumers' long-term financial and social care needs.

Risks to Consumers

The FCA has decided that a package of measures is necessary on insurance pricing which include: addressing conduct by firms, a market study on general insurance pricing practices and a wider discussion paper on fairness of pricing in financial services. The CMA included household insurance in its review identifying a loyalty penalty and providing several recommendations. The FCA review into the fair treatment of with-profits customers, which reports in Q1 2019, has assessed the strength of governance, capability and influence of the With-Profits Chair/Actuary. In relation to pension transfers, FCA research showed that a significant number of DB members do not receive suitable advice and as such the FCA has reiterated that the starting position should remain that a transfer is not in the individual's best interest.

In light of these challenges, government, the regulators and providers are changing the information provided to consumers and the methods used to interact with them in order to help inform their decisions. Initiatives such as the Key Information Document under PRIIPS, the disclosure of the prior year's premium at renewal in general insurance and the CMA proposal to publish information on the loyalty penalty may alter the decisions made by consumers. Furthermore, technology and behavioural economics may be used to increase access to new or more tailored information or products. Changes in consumers' actions and behaviours would limit and possibly eliminate the use of historic data as a guide to future behaviours in these areas and could impact the data and assumptions used by actuaries e.g. on lapse rates.

Actuarial Considerations

As work and retirement patterns change, demand for products to be designed to accommodate changing lifestyles whilst continuing to provide value for money increases e.g. demand for more flexible pension products or provision of social care. Changes in the pension environment are illustrated by the recent DWP consultations on CDC, Pension Scheme Consolidation and Pensions Dashboard. If implemented these will lead to changes in the design and provision of pension products and the information used by individuals when selecting them. There may be increased risk in actuarial work whilst the impact on individuals' behaviour and data, models and assumptions is embedded.

Cross-subsidy and risk sharing can be either detrimental or beneficial to consumer interests (e.g. gender-neutral rating factors in insurance pricing or the proposals for pension superfunds and CDCs). Actuaries often need to make judgements when advising on the levels of cross-subsidy and in these circumstance ethics, professionalism and speaking up will be key considerations, especially if using limited or uncertain data.

However, there is also an opportunity for actuaries and the profession to be leaders in providing information to support decisions and as a profession to raise awareness of the impacts of government or industry practices to protect the public interest. For example, the IFoA produced a series of papers on Intergenerational Fairness in 2017 and will produce five Social Care briefings in 2019 giving an insight into the demographic, financial and societal challenges facing the social care system. In addition to making consumers aware of the benefits and drawbacks of products, actuaries could also assist in raising awareness of the circumstances where these products may become unaffordable in the longer term due to increasingly variable levels of income or 'stress' events such as illness, redundancy or taking on caring responsibilities.





Summary of 2017 Discussion & Actuarial Implications

Many actuaries are involved in actuarial work in relation to products that provide financial security. Products such as pensions, long-term care, permanent health insurance, third party and employer's liability all provide elements of protection either required by law or designed to meet gaps in the financial security provided by government.

Changes to the benefits provided by government, access to employer sponsored benefits and individual's attitude to ensuring their own financial security will all impact on the assumptions and judgements made by actuaries in areas requiring valuations. These can result from economics impacting both the wealth of individuals and government's willingness to provide social welfare benefits, considerations of intergenerational fairness and international drivers such as migration and will reduce the validity of historical data. These forces make the selection of assumptions particularly uncertain.

Insurance, pensions and investment products often provide benefits for a long period after the original purchasing decision. Changes in government policy and economic conditions can impact the ongoing suitability of products over time. Actuaries are well placed to manage the risk of emerging poor value to consumers e.g. reviewing the charges on old products, ongoing benefit of financial guarantees, impact of changing pension's regulations or applicability of tax breaks. Actuaries may be involved in the design of new products and could help incorporate new technology and data sources to facilitate new features and broader market penetration.

The risk to financial security may be increased by a lack of public understanding of financial products, low saving rates and mistrust of banks and insurers. There is a risk that consumers do not understand the benefits and drawbacks of products and as such make poor decisions and suffer material financial loss e.g. making inappropriate decision with regards to pension transfers or drawdowns. There is also a risk that some consumers will find it difficult to source the products they require at an affordable cost due to a lack of capacity or competition in the market.

Actuaries may be well placed to advise boards and trustees on the potential impact of product design and other assumptions on consumers and should consider their obligations under the Actuaries' Code to have due regard to a wider stakeholder group such as policyholders or pension scheme members.

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Pension Scheme Management



HOTSPOT DESCRIPTION

Risk that actuaries provide poor quality advice such that trustees and employers are unable to respond effectively to the challenges facing occupational pension schemes resulting in poor outcomes for members.

CURRENT INFLUENCES

Current economic conditions, and the ongoing low interest environment in particular, continue to present challenges for the management of pension schemes. In addition, these economic conditions mean that transfer values are at historically high levels making transfers from Defined Benefit (DB) schemes to Defined Contribution (DC) schemes seem highly attractive to scheme members wishing to take advantage of “Freedom and Choice in Pensions (Pension Freedoms)”.

The White Paper on the security and sustainability of the defined benefit pension sector, published in March 2018, introduced proposals that aim to maintain confidence in DB pensions by increasing the protection of members’ benefits with proposals to strengthen the Pensions Regulator’s powers, improve scheme funding and encourage and facilitate scheme consolidation.

KEY DRIVERS

Primary driver: economic and political,

Secondary drivers: legal/regulatory, ethical



Key Developments During 2018

DWP Consultations

In March 2018, the government published its white paper “Protecting defined benefit pension schemes” to explain how it intends to increase the protections for defined benefit scheme members and make improvements to the system. The paper sets out government plans to protect private pensions through a stronger Pensions Regulator, clarify scheme funding principles and create the right conditions for, and promote the benefits of, consolidation. This paper follows on from the consultation “Defined benefit pension schemes: security and sustainability”.

In September 2018, the government stated its intention to improve the provision of information to, and financial capability of, individuals, so they can make informed and more confident financial decisions. It brought together the Money Advice Service, the Pensions Advisory Service and Pension Wise into the Single Financial Guidance Body (SFGB) to improve provision of free and impartial government sponsored money and pensions guidance and debt advice. It committed to facilitating industry to lead the creation of pensions dashboards to offer people access to their pensions information in a clear and simple form – bringing together an individual’s savings in a single place online. In the December 2018 “Pensions Dashboards” consultation the government indicated that it will legislate to compel pension schemes to provide their data for a dashboard provided initially by the SFGB and will also take steps to provide State Pension data for inclusion. There remains uncertainty as to what information will be in the dashboard and therefore for the data, assumptions and models that actuaries will be required to provide.

In November 2018, the consultation “Delivering collective defined contribution pension schemes” set out the government’s proposals for collective defined contribution (CDC) pension schemes which allow contributions to be pooled and invested to give members a target benefit level. These schemes will give rise to new actuarial work including the proposed scheme actuary role. These schemes will require actuaries to take into consideration the treatment of different policyholder groupings where intergenerational fairness will be a key consideration.

Consolidation of DB schemes is a hot topic with a range of proposals including ‘superfunds’ where a third-party capital provider would replace the employer covenant of the sponsor. The DWP consultation “Defined benefit pension scheme consolidation” covers issues including the governance of such entities, controls over the supply of capital and withdrawal of profits and the method and frequency of valuations. Although there are benefits from economies of scale, there may be increased risk from insufficient control over commercially invested capital and over the terms on which DB schemes are allowed to enter a superfund. Actuaries will play an important role in these schemes and will need to balance the needs of the various stakeholders and be aware of the danger of commercial pressures eroding the security of members rights.



HOTSPOT DESCRIPTION:

Risk that actuaries provide poor quality advice such that trustees and employers are unable to respond effectively to the challenges facing occupational pension schemes resulting in poor outcomes for members.

DB to DC Transfers

DB to DC transfers continue at a high rate and recent FCA research showed that a significant number of DB members are not receiving suitable advice when transferring out of occupational pension schemes. In “FCA PS18/6: Advising on Pension Transfers” the FCA stated that the starting position should remain that a transfer is not in the individual’s best interest. The FCA continues to consult on the details of their proposals on roles and processes in respect of pension transfer advice.

Mature DB Schemes

Mature DB schemes present different challenges to those facing open schemes across various areas such as funding, investment and risk management, operations and governance. In May 2018, the IFoA working party “Running Off Mature Schemes” published a paper covering the many issues faced by such schemes and how they might tackle them. It also set out a framework for managing their run-off as they move through the various stages of maturity. Cashflow Driven Investment strategies which are mentioned in the report have grown in prominence as a greater number of schemes reach levels of maturity where benefit outflows begin to matter more.

Pension schemes investment strategies

Pension schemes investment strategies are evolving as they adapt to the low interest rate environment and requirements to consider ESG in their investment strategy. Schemes may also need to consider the impact of Brexit and climate-related risk on the strength of employer covenant (see Political and Legislative, Market Uncertainty and Climate-related Risk).

Actuarial Considerations

These developments are likely to change the behaviour of pension providers and members and hence may increase the uncertainty around actuarial work. Actuaries should keep up to date with changes and consider impacts on data, models and assumptions as well as the potential for commercial pressures, conflicts of interest or group think.

- The JFAR has set up a Pension Working Group with three workstreams – DB Scheme Consolidation, DB to DC Transfers and Pensions Dashboard. These workstreams will be reporting to the JFAR during 2019.
- There are several IFoA working parties active in research into pensions issues including transfer value activity, the pensions dashboard, use of technology, running mature schemes and member/pensioner behaviour/choices.



Summary of 2017 Discussion & Actuarial Implications

The financial position of defined benefit pension schemes in the current environment is challenging. The uncertain economic conditions including Brexit may also make it more difficult to assess employer covenant and the assumptions used in the valuation to allow for it. Actuaries may face commercial challenges to their work from scheme sponsors to adjust assumptions used for funding to reduce contribution requirements, or to recommend investment strategies which rely on more complex or innovative products in the search for higher returns.

Since the introduction of Pension Freedoms in April 2015, consumers have more options available to access their pension savings. This, along with the current low interest rate environment and the consequent impact on transfer values, has led to historically high levels of transfers. The actuary setting transfer values faces a challenge to balance practical requirements against the needs of fairness – for the ongoing scheme as well as the transferees. There are several reasons why this is a challenge including, allowing for selection risk, the funding level of the scheme, the liquidity of the assets supporting the scheme and the volatility of the investment markets. Actuaries could also face pressure to quote transfer values which encourage transfers reducing the long-term liabilities for the sponsor.

Actuaries are not often involved in the delivery of professional advice to individual members but may be involved in the design of systems developed to provide robo-advice. There is a risk that the data, systems and assumptions used for robo-advice to individuals do not adequately reflect the circumstances of the specific transferee (e.g. attitude to risk, dependents, other financial resources). There is also a risk that scheme sponsors using modelling systems to test alternative actions or to assess progress of scheme solvency may not fully understand the complexity and inter-relationships of the assumptions.

Actuaries are well placed to play a role in advising trustees, sponsors and other users on the complexities of DB pension scheme management. Actuaries may wish to consider the best ways to communicate the assumptions, judgements and uncertainties to their users to support them in making appropriate decisions.





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Technological Change - Automation and Digitisation, Big Data, Artificial Intelligence and Cyber risk



HOTSPOT DESCRIPTION

Risk that actuaries may not recognise and take account of technological changes such as the availability of Big Data and new modelling techniques, increasing cyber risk or changing business models.

CURRENT INFLUENCES

Technological advances and developments in artificial intelligence (AI) are changing the nature of insured risks and the tools used to model and manage these risks.

Several recent reports and surveys identify the emergence of Big Data and analytics as a key trend and area of investment especially in the insurance sector. Actuaries may face challenges in interpreting and communicating insights from Big Data and its impacts on consumers, operations and business strategy.

These developments are also likely to result in disruptions to current business models. These changes may invalidate the judgements, models and assumptions currently used by actuaries.

KEY DRIVERS

Primary driver: technological

Secondary drivers: social, international nature leads to political and legal/regulatory



Key Developments During 2018

Technological Change

Technology is driving change in the economy with a recent survey indicating that data scientists will be the most important workers in the search for future growth, with emerging technology specialists such as AI professionals close behind. These roles will make use of automation and digitisation, big data and artificial intelligence and may increase challenges such as modelling risks for which there is no existing data or the liability or impact is unclear (e.g. autonomous vehicles, genetic modification).

The FRC's Lab has been investigating the impact of new technologies through its Digital Futures project. It has issued two reports "XBRL: Deep-dive Digital future of corporate reporting" and "Blockchain and the future of corporate reporting: How does it measure up?". A final report on artificial intelligence will be released in early 2019.

Operational Challenges

Financial services firms are increasing their reliance and dependence on technology and may face operational challenges in adopting new technologies whilst maintaining legacy systems, adapting to complexity of Brexit or facing cyber incidents. High profile operational incidents include RBS, TSB and cyber attacks on NHS, Bangladesh Central Bank, Equifax, Yahoo, and Sony. In July 2018, a joint discussion paper was issued by the PRA, the FCA and the Bank of England "Building the UK financial sector's operational resilience". The purpose of this DP is to share the supervisory authorities' thinking regarding operational resilience and obtain feedback.

Actuarial Considerations

KPMG report that "AI systems may be seen as a 'black box', making important decisions when few people outside of analytics teams, data science labs and technology centers can fully understand how." The appropriate use of models and understanding of 'black box' models including ethical challenges continue to be debated by the industry and regulators. The PRA has issued a supervisory statement "Algorithmic trading" in June 2018 regarding banking firms' governance and risk management of algorithmic trading. Increased automation and use of artificial intelligence within actuarial work may change the nature of actuarial work with implications for regulation and education.

The ethical questions raised by big data research have increased as the size and complexity of available datasets has grown and big data research is woven into our daily lives (e.g. mining digital medical records for scientific and economic insights, mapping relationships via social media, capturing individuals' speech and action via sensors, shaping security policy via 'predictive policing', etc). These techniques are also increasing within the insurance and savings industries. Therefore, actuaries should be aware of data privacy and security issues (e.g. GDPR obligations) and ethical considerations (e.g. using geocoding to infer health characteristics) as well as any accuracy or reliability limitations (e.g. third party or scraped data). In May 2018, the Royal Statistical Society and IFOA announced plans to collaborate on the exploration of the practical and ethical implications in the rapidly developing field of data science.



HOTSPOT DESCRIPTION:

Risk that actuaries may not recognise and take account of technological changes such as the availability of Big Data and new modelling techniques, increasing cyber risk or changing business models.

In its review of pricing in household insurance the FCA found that there was a risk of discrimination against consumers through using rating factors in pricing based on data relating to or derived from protected characteristics and of differential pricing leading to some identifiable groups paying significantly higher prices than others with similar risk and cost-to-serve characteristics. The FCA has decided that a package of measures is necessary on insurance pricing (see Financial Security hotspot) and carried out a market study into how GI firms charge their customers for home and motor insurance which closed on 3 December 2018.



Summary of 2017 Discussion and Actuarial Implications

Technological advances and developments in AI are changing the nature of insured risks and financial products, as well as the tools used to model and manage them. Recent reports and surveys identify the emergence of big data and analytics as a key trend and area of investment, especially in the insurance sector.

These developments may result in disruptions to current business models, may invalidate the judgements, models and assumptions currently used by actuaries or make it more difficult for actuaries to interpret data and communicate insight. Actuaries need to make sure they are aware of how the new technologies are impacting the underlying risk and adapt their methods, models and assumptions using the latest tools – where appropriate.

For example, the increased use of telematics in motor shows how technology can inform and influence policyholder's behaviour and give flexibility in pricing, product design and added services. Where changed driving behaviour changes the frequency and severity of claims, past data may no longer be appropriate for pricing or reserving. Enabled by the detailed telemetry data actuaries can, using increased computing power and more flexible analysis tools, investigate trends or risk factors which it was not possible to even know about before.

Some data sources or practices may pose ethical questions. For example, using data relating to health or lifestyle or using data for pricing in relation to propensity to switch that may unfairly disadvantage some groups. Actuaries can play a role in decisions around the suitability of data use on technical and ethical grounds and support its use in the public interest.

Increasing digitisation and connectivity creates new cyber risks, such as data loss and cyber crime. These may impact actuaries themselves, e.g. data corruption leading to advice based on incomplete data or the industry e.g. insurers need to develop products and methods for pricing and reserving for cyber exposures whilst avoiding unintended coverage.

As well as these risks there are opportunities for new products and new business models where actuaries' skills and experience can help users take decisions and understand uncertainties.

There are sources of information and research available within the profession such as the MAID working party and many external sources – some of which are listed in the Risk Perspective reference section.

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Terrorism and Cyber Crime



HOTSPOT DESCRIPTION

Risk that actuaries may fail to update assumptions or adjust working practices to reflect the changing nature of terrorism and cyber crime risks.

CURRENT INFLUENCES

Recent high-profile terror attacks on major cities in Europe and the US have shown a change in the operations of terrorists – using irregular, low-tech means to target the general population.

High-tech crimes are also increasing such as the recent ransomware attack on the NHS, alleged political espionage and use of cyber crime, scams and frauds by organised criminal gangs.

This changing nature of crime may pose challenges in managing disruption and associated costs (including the impact of reputational damage) and invalidate actuarial judgements, models and assumptions.

KEY DRIVERS

Primary driver: political, economic

Secondary drivers: international, technological



Key Developments During 2018

Terrorism: Threat Landscape

Marsh report in their “2018 Terrorism Risk Insurance Report” that attacks by ‘lone wolves’ and small groups against soft targets are becoming more common, vehicles are increasingly being used by attackers, and the threat of cyber attacks continues to grow. The EU Terrorism Situation & Trend Report 2018 confirms that recent terror attacks by jihadist terrorists have followed three patterns: indiscriminate killings; attacks on symbols of Western lifestyle and attacks on symbols of authority.

Buyers of terrorism coverage are seeking expanded coverage to include active assailant events and that give first- and third-party business interruption protection for lost income or revenue without the need for a direct property damage trigger.

Terrorism: Pool Re

The Counter-Terrorism and Border Security Bill will amend the scope of reinsurance available to cover business interruption losses through an amendment to the Reinsurance (Acts of Terrorism) Act 1993 to enable Pool Re to extend its business interruption coverage to include losses that are not contingent on physical damage to property. The 1993 Act is being amended so that a loss will fall within coverage where it results from interruption to business resulting from or consequential upon acts of terrorism. The Bill has had its third reading in the House of Lords and been returned to the House of Commons for the amendments to be considered.

In January 2019, Pool Re announced that as a result of sufficient capacity now existing within the commercial insurance and reinsurance markets to cover contingency losses arising from acts of terrorism, it will cease to reinsure Members for the contingency cover they provide to their insureds. After Q1 2019, therefore, it will not be possible for Member insurers to cede this class of business to Pool Re. Most of the risks formerly ceded to Pool Re consisted of sporting events, concerts and tours. Actuaries may need to take into account changes in risk profiles from retaining these coverages gross or transferring them to commercial reinsurers.

Cyber Crime: Threat Landscape

In their Cyber Risk Outlook 2018 Judge Business School, Cambridge University reports on the international nature of cyber risk, with loss events reported in over 150 countries. The potential for global contagion was illustrated by WannaCry and NotPetya attacks in 2017. They also report that the commoditisation of cyber criminal tools (Ransomware-as-a-Service, Malware-as-a-Service and DDoS-for-Hire) has made global extortion and business disruption campaigns accessible to the less experienced, with crypto-currencies and anonymity fuelling the spread of cyber crime.

2018 has shown that politics, deception and malicious intent are also sources of cyber risk. More evidence came to light of alleged Russian cyber attacks in Ukraine, the potential influence of Cambridge Analytica and fake news on the US Presidential election and in the Brexit campaign. The ability for data to be misused and for disinformation to spread was recently explored by the BBC in its “Beyond Fake News” project.

The number of attacks and the attractiveness of Financial Services as a target is illustrated by a 2018 Forbes report which states that cyber attacks cost financial services firms more to address than firms in other industries (\$18 million per firm vs. \$12 million for firms across industries) and that they “fall victim to cybersecurity attacks 300 times more frequently than businesses in other industries”.



HOTSPOT DESCRIPTION:

Risk that actuaries may fail to update assumptions or adjust working practices to reflect the changing nature of terrorism and cyber crime risks.

Cyber Crime: Regulator Actions

HMT, the BoE and FCA work together to manage incidents which impact or have the potential to impact the financial sector which includes working with the National Cyber Security Centre (NCSC) and the National Crime Agency (NCA) for cyber incidents. As well as issuing guidance around operational resilience they have organised a series of cyber exercises to test the sector's response to a large-scale cyber attack. Such testing aims to test a firm's defences and its ability to detect and respond to a range of external attackers as well as people on the inside.

Non-affirmative, or silent cyber, is an area which continues to raise concern for regulators, insurers and risk managers. Silent cyber refers to potential cyber-related losses stemming from traditional property and liability policies that were not specifically designed to cover cyber risk. Traditional policies may not explicitly include or exclude cyber risks and this ambiguity can result in a scenario where cyber losses are paid under a policy that was not originally designed to cover them. There have been silent cyber losses on non-cyber lines of business for various insurers e.g. as a result of the NotPetya attack. In its July 2017 supervisory statement "PS15/17 Cyber insurance underwriting risk", the PRA set out its expectations that firms should be able to identify, quantify and manage both affirmative and non-affirmative cyber coverage. Actuaries working in this area may face problems including limited data, ambiguity of policy wordings and difficulty is assessing aggregations of exposure as well as the changing nature of the underlying risks.

Cyber Crime: Actuarial considerations

The IFoA paper "Cyber operational risk scenarios for insurance companies" sets out a framework for actuaries and others to robustly assess the potential losses stemming from cyber risk that their insurance organisations face.

Summary of 2017 Discussion & Actuarial Implications

The changing nature of crime may pose challenges in managing disruption and associated costs.

- Setting assumptions for pricing, measuring accumulations and reserving for terrorism and cyber crime policies is challenging given the limitations of the data and uncertainties in the future developments of the risk profile.
- Actuaries may need to work collaboratively with others to increase their understanding of the underlying risk drivers and develop ways to measure and respond to them.

Terrorism coverage traditionally designed to cover property damage but significant losses have occurred in recent attacks from business interruption e.g. police cordons, reduced visitors. Coverage may be insufficient for small business and individual travel policies.

Cyber risk is a continuously evolving threat - it is a challenging risk to assess, with limited historical experience available, and rapidly changing patterns of loss.

- Result of economic and technological risk drivers. It often exploits people's culture and behaviour to breach computer security.
- Insurers and pension schemes hold large amounts of personal and financial data that is attractive to criminals. Scheme members and policyholders are also vulnerable to fraud and scam attacks.

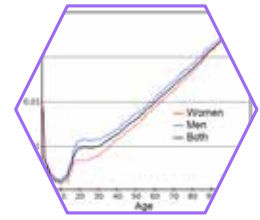




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Mortality



HOTSPOT DESCRIPTION

Risk of failure to pick up, understand and respond to changes in mortality trends in an appropriate and timely manner.

CURRENT INFLUENCES

In its report dated March 2018 the CMI continues to report a reduction in the rate of mortality improvement in UK mortality. The report was calibrated on England & Wales population data to December 2017. The slowdown in general population mortality improvements in the UK since 2011 has been greater than that predicted by most projection models. This continues to present a challenge for actuaries in understanding, interpreting and communicating its cause and impact and considering assumptions to be made regarding the future level of mortality improvements.

KEY DRIVERS

Primary driver: social

Secondary drivers: political, economic, environmental, technological



Key Developments During 2018

Current mortality trends

The CMI_2017 briefing note published in March 2018 commented that all users of the CMI tables expected that mortality improvements would continue, albeit at a slower rate. It also noted that the causes of the improvement slowdown seem to be due to longer term issues rather than short-term issues such as flu.

There is evidence of different effects when viewed by socio-economic group and there may also be variances between healthy and unhealthy lives. Some observers suggest that it is to do with the effects of austerity measures and others point to cohort effects. A recent study has shown a link between levels of deprivation and mortality with higher levels of deprivation showing adverse mortality.

Future mortality trends

Looking ahead there are drivers of change that may suggest that the level of improvement could continue to decline, and possibly even move to deterioration. For example, increasing obesity levels (including in childhood), increasing concern over sleep deprivation with proven links to Alzheimer's, heart attacks and strokes, worries over antibiotic resistance and the spread of opioid addiction.

In contrast, advances in medical technology in relation to medical procedures, artificial organ transplants and the use of genetics to personalise medicine along with the increasing use of healthtech 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, 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, their effect on long-term health is still unknown

Climate-related risks to mortality are complex and can have both a positive and negative effect. Positive benefits could arise if actions taken to improve the environment lead to a healthier society e.g. actions to improve air quality such as reducing car usage could lead to healthier populations if they lead to increased walking and cycling. Harmful effects such as greater volatility in temperatures could impact on food production and lead to societal unrest or the emergence of new diseases. The deterioration of our eco-system (e.g. reduced biodiversity or plastic pollution) could also adversely affect mortality by impacting food production or contaminating the food-chain.

Actuarial considerations

Actuaries should ensure that any changes in mortality assumptions to reflect the emerging trends are appropriate for the portfolio that they are valuing and that they are not subject to undue commercial pressure to change assumptions too quickly. Changes in mortality experience and assumptions could also change the liability profile, and investment strategies based on a matching approach may need to be revisited.



HOTSPOT DESCRIPTION:

Risk of failure to pick up, understand and respond to changes in mortality trends in an appropriate and timely manner.

Summary of 2017 Discussion & Actuarial Implications

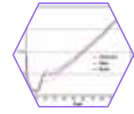
The slowing pace of mortality improvements in the UK is a trend seen elsewhere in the world with lower mortality improvements seen in recent years in Canada, Ireland and the USA.

There is inherent uncertainty in assessing future mortality trends, and uncertainty remains as to whether the current emerging mortality data is a “blip” or indicative of a long-term change in future mortality trends. There is a risk that there is insufficient understanding of the drivers for the change in experience at this time.

A key external driver of this risk is changing demographics. However, this is also influenced by political priorities, social care government spending, the varying impacts on different socio-economic groups and the potential impact of technology and climate change on future patterns of mortality and morbidity.

Whilst the reasons for the current changes in trend are not fully understood there is a risk that actuaries may make judgements in setting assumptions that are not reflective of the true underlying reasons for the observed change. Examples of assumptions where this issue is relevant are annuity and assurance pricing and reserving in life (re) insurance; pension scheme funding; longevity de-risking activity; and assessment of factors such as transfer values in pensions. While the risks may be lower in general insurance, there is still exposure through Periodic Payment Orders, and, for investment activity, there is a risk that there is an impact on duration matching.

To support users to make informed decision actuaries may need to consider the most effective ways to communicate the judgements made, the basis for these judgements and the level of risk and uncertainty in the assumptions. Consulting professionals in other relevant disciplines and deep interrogation of the data could help actuaries and users understand the reasons for the changes seen in mortality patterns.





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