Financial Reporting Council

October 2014

Joint Forum on Actuarial Regulation: A risk perspective

Discussion Paper

The FRC is responsible for promoting high quality corporate governance and reporting to foster investment. We set the UK Corporate Governance and Stewardship Codes as well as UK standards for accounting, auditing and actuarial work. We represent UK interests in international standard-setting. We also monitor and take action to promote the quality of corporate reporting and auditing. We operate independent disciplinary arrangements for accountants and actuaries; and oversee the regulatory activities of the accountancy and actuarial professional bodies.

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Foreword

Actuarial work is central to many financial decisions in insurance and pensions and is an important element in other areas requiring the evaluation of risk and financial returns. High quality actuarial work promotes well-informed decision-making and mitigates risks to users and the public; poor quality actuarial work can result in decisions being made which are detrimental to the public interest.

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

This discussion paper sets out how we have identified these risks, what they are, and our perspective on areas where actuarial work is relevant to the risk or to its mitigation. We are not necessarily saying there is current evidence of these risks materialising or of poor quality actuarial work but we believe they should be assessed and if necessary mitigated.

This paper is very much a "think-piece" – a vehicle for seeking wider input at this preliminary stage on the JFAR's analysis. In particular we are seeking:

- to improve our analysis of risks to the public interest to guide our future work;
- to raise awareness of the risks to help mitigate them; and
- to inform stakeholders about what regulators are doing.

We welcome feedback from actuaries, their clients and employers, other professionals and end-users by 20 February 2015. Details of how to respond can be found in section 2.2. We will be holding a number of stakeholder outreach events during this period to capture the input of practitioners and users of actuarial work.

We will publish a feedback statement in the first half of 2015 that summarises the responses and explains how they have affected our risk perspective and our forward agenda for addressing public interest risks to which actuarial work is relevant.

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1 Introduction

1.1 Purpose

The Joint Forum on Actuarial Regulation ('JFAR') was established in 2013 by the Financial Reporting Council, the Institute and Faculty of Actuaries, the Financial Conduct Authority, the Pensions Regulator and the Prudential Regulation Authority to co-ordinate, within the context of our own objectives, the identification of and response to the UK public interest risks to which actuarial work is relevant.

This risk perspective is a first step in that process. It is designed to stimulate discussion. As a start the JFAR members have developed a list of areas in which actuarial work is undertaken and there is the potential for risk to the public interest. The JFAR now want to engage with stakeholders to improve our analysis and guide our future work.

The JFAR has not prioritised particular areas for co-ordinated analysis and the paper does not describe a current regulatory agenda. In identifying risks described in our list it is important to emphasise that we are not necessarily saying there is current evidence of these risks materialising or of poor quality or insufficient actuarial work.

1.2 Audience

We seek views from stakeholders on these risks, to guide our future work and to help us respond effectively.

This discussion paper is relevant to:

- actuaries and actuarial firms – in seeking to provide high quality work which reflects their professional commitment to serve the public interest;
- their clients and employers – in understanding the risks relating to actuarial work; and
- other professionals, end-users and their representatives – in understanding the relevance of actuarial work to the risks they face.

By responding to this discussion paper, each of these groups can help us ensure that our consideration of the risks is tailored, proportionate, co-ordinated and effective. Some risks might already be appropriately mitigated. Other risks might be addressed by raising awareness, providing education, issuing guidance, or monitoring. We are not assuming there should be more standards or regulation and the collaborative effort of the JFAR will help to ward against any potential duplication.

1.3 Scope

The paper outlines a broad range of areas where there is a potential risk to the UK public interest and in which actuarial work plays a part in the risk or its management.

Actuarial involvement is central to some of the risks (for example in modelling in insurance and pensions). In some areas actuarial work supports decisions that have the potential to create a risk to the public interest (for example in the design and distribution of insurance products). Some of the risks we consider are very broad (for example environmental concerns) and actuarial work is just one strand among many that have an impact on the public interest.

1.4 Actuarial work

By actuarial work we mean work where the use of the principles and/or techniques of actuarial science is central to risk assessment or decision making. Actuarial work is most common in insurance and pensions, but may be carried out in a range of other sectors.

Actuarial work involves analysis and judgement. It includes commercial, financial and prudential advice on the management of an entity's assets and liabilities, especially where long-term management and planning are critical to the success of the entity. It can also cover advice to individuals, and advice on social and public interest issues.

In the main, actuarial work is performed by members of the actuarial profession and by entities which are advised or controlled by them, such as financial institutions and consultancy firms. Suitably qualified actuaries have recognised roles in providing advice for pension funds and many insurers. Outside of these roles such work may be done by others and where we refer to actuaries in this discussion paper we include both qualified actuaries and others who may be performing actuarial work.

1.5 The public interest

We have taken a broad view of the public interest. The various groups of society which constitute the public include, but are not limited to, investors, creditors, savers, insurance policyholders, pension scheme members, employees, consumers, suppliers, users of professional actuarial advice and taxpayers. These groups benefit from a well-functioning and stable economy in which their individual and collective interests are respected.

We consider that there is a risk to the public interest if its crystallisation would impact significantly on a substantial group of individuals, on the 'financial system' or on the 'community as a whole':

Individuals	**The financial system**	**The community as a whole**
Insurance policyholders	Stability of the UK financial system	Taxpayers
Pension scheme members	Consumers / savers / potential policyholders	Wider economic activity
Investors (shareholders)	Confidence in the accountancy / actuarial professions	Welfare and social inclusion
Creditors (bondholders and other financiers)	Government / regulators / auditors	The environment
Creditors (other)	Boards of companies / sponsors of pension schemes	Future generations
Employees		
Suppliers		

In addressing the impact of actuarial work on the public interest, we consider both how actuarial work may contribute to risks to the public interest if done without sufficient care or appreciation of the full context and how it can be used to mitigate those risks.

1.6 The work of the JFAR

1.6.1 Purpose and roles

We have established the JFAR to identify and co-ordinate responses to UK public interest risks to which actuarial work is relevant. Annex 1 provides a summary of the roles and responsibilities of the JFAR members in respect of UK actuarial regulation. The work of the JFAR does not extend those responsibilities.

All members of the JFAR are committed to the principle that regulation should be transparent, accountable, proportionate, consistent and targeted.

1.6.2 Our approach to risk identification

We have adopted a practical approach to identifying risks to the public interest to which actuarial work is relevant, which builds on analyses already performed by each of the regulators to help deliver their objectives.

Having identified risks to the public interest and considered the actuarial work component of each we then selected those which are potentially suitable for a co-ordinated analysis by members of the JFAR.

The FRC and the IFoA held meetings with actuarial practitioners from a wide range of sectors (including Pensions, Life Insurance, General Insurance, Health and Care, Risk Management, Finance and Investment, and Resource and Environment) to gain further insight into risks and issues in each of these areas. We also consulted the FRC's Actuarial Stakeholder Group, which includes representatives of direct users and end-users of actuarial work.

We have approached our analysis from our regulatory perspective. We recognise that others, coming from a different perspective, may have an alternative view of the importance of these risks or may consider other risks are more relevant.

We therefore seek feedback from a wider range of stakeholders to enhance our identification, analysis and selection of risks to the public interest, so as to be assured of a sound foundation for our future work. Our analysis includes:

- high-level risks – broad descriptions of risks to the public interest relating to actuarial work at a high level. These are described in section 3;
- "hotspots" – areas within each high-level risk identified by JFAR for co-ordinated analysis. 'Hotspots' can relate to any current or evolving feature of a high-level risk – including sources of risk, difficult aspects of actuarial work, and potential impacts on vulnerable groups. These are highlighted in grey boxes at the end of each high-level risk description in sections 3.4 – 3.6; and
- common themes – arising in more than one high-level risk or hotspot. These common themes may also be considered by the JFAR for analysis. These are described in section 3.2.

In this discussion paper when we refer to "risk" or "risks" we mean both high-level risks and hotspots.

We have identified risks individually but we recognise that the risks can be interrelated. This might result in risks compounding or off-setting and actions taken to mitigate one risk having the potential to increase risk elsewhere in the system.

1.6.3 How we respond to the identified risks

The work of the JFAR cannot eliminate risks to the public interest, but aims to facilitate co-ordinated responses to reduce the level of risk.

We have a forward programme for analysing and responding to the risks and common themes. Feedback from this discussion paper will inform its further development.

Our analysis will consider the impact of each risk, the likelihood of it crystallising and the significance of actuarial work to it. We will seek to recognise key controls which already mitigate the risk, in addition to considering what, if any, further steps should be taken.

There may be some risks that cannot be addressed but it is important that these risks are acknowledged.

2 Request for feedback and how to respond

2.1 Feedback

We would welcome your perspective on any of the issues raised in this discussion paper.

We are interested in your views as to whether we are looking at the right risks. Do you consider any of the identified risks particularly important and why? Are there other risks you think we should be considering and why do you think they are a risk to the public interest? How important is actuarial work to these risks and their mitigation, and how well is the role of actuaries understood?

We would also welcome your views on how JFAR members might support practitioners or users of actuarial work in responding to these risks.

2.2 How to provide feedback

You can provide your feedback in the following ways:

- at one of the stakeholder outreach events we are planning during the discussion period (details will be published on our website https://www.frc.org.uk/JFAR); and
- through a written response (details are shown below).

We invite comments by **20 February 2015**. Earlier responses would be appreciated.

Written responses should be sent (preferably by email) to:

Natasha Regan
Financial Reporting Council
8th Floor
125 London Wall
London EC2Y 5AS

Email: JFAR@frc.org.uk

We will make written responses publicly available on the FRC website (https://www.frc.org.uk/JFAR) unless respondents specifically request otherwise. If you send an email response which includes an automatically generated notice stating that the content is to be treated as confidential, you should make it clear in the body of your message whether or not you wish your comments to be treated as confidential.

It would be helpful in our consideration of responses to be able to have further communication with respondents. Please provide contact details in your response if this would be welcomed.

2.3 Next steps

The FRC will publish a feedback statement in the first half of 2015 that summarises the responses and explains how they have affected the JFAR's risk perspective and activities.

3 Risks selected by the JFAR

3.1 Risk drivers and high-level risk categorisation

In this section we set out the high-level risks that have been identified through the process described and provisionally selected for co-ordinated analysis by the JFAR members. We expect these high-level risks will stay broadly stable over time.

We have categorised these high-level risks having regard to their drivers, as follows:

Risk drivers	**High-level risks selected by JFAR for co-ordinated consideration and possible response**
Inherent factors in actuarial work and its use such as actuarial techniques used, and skills, knowledge and practices of those providing and those relying on the actuarial work.	Modelling 'Group think' / inappropriate commercial pressure Understanding of risk and return
Characteristics of markets in which actuarial work is used such as processes and incentives that are embedded in the financial sector, individuals' behaviours and decisions, firms' / pension funds' strategies, business models and financial soundness which can all cause poor outcomes for the public interest if mismanaged.	Product design and distribution Financial reporting General insurance reserving Liability management of defined benefit pension schemes
Environmental conditions which may affect individuals' behaviours and decisions, and firms' / pension funds' strategies, business models and financial soundness	Changes in the external environment Economic outlook – impact on insurers Economic outlook – impact on pension schemes Competitive pressure on insurers Rapid change in the pensions market
Further detail of the regulatory context is given in Annex 2.	

Sometimes the categorisation of high-level risks is not clear cut. Additionally, hotspots can relate to more than one high-level risk or risk driver. What is important is that the risks have been identified for co-ordinated analysis.

3.2 Common Themes

There are a number of common themes which the JFAR will consider across a number of risks, including:

- the need for better understanding of the role of actuaries and actuarial work on the part of actuaries and users of their work. This is common to all the risks and in particular product design and distribution, and the understanding of risk and return;
- the competence, ethics and professionalism of actuaries also bear on many risks, as does the environment in which they work; and
- the understanding of the wider context of actuarial work, their ability to influence, and the risk, due to the complexity of the environment, of an over-reliance on the actuary.

Regulation in general and actuarial regulation in particular are not proposed as risks. However there are a number of hotspots which draw on concerns about the impact of regulation. We recognise that poor regulation can make matters worse and are alive to that in our discussions on potential co-ordinated responses.

3.3 The Risks

In the remainder of this section, we describe the high-level risks which we have selected and outline underlying drivers of those risks. We explain the potential impact of the high-level risks on the public interest and the relevance of actuarial work. Within each high-level risk, we list potential areas for co-ordinated analysis by the JFAR. These 'hotspots' for co-ordination can relate to any current or evolving feature of a risk – including sources of risk, difficult aspects of actuarial work, and potential impacts on vulnerable groups. The list of hotspots will be updated as it changes over time.

3.4 Inherent factors in actuarial work and its use

The actuarial techniques used – and the judgement, skills and knowledge of those providing and those relying on actuarial information – may be inadequate for, and may not keep pace with, increasing complexity and/or commercial pressures. This may result in information which is not trustworthy and/or untrustworthy behaviour, contrary to the public interest.

Information asymmetry and biases underlie many of the risks described in this section:

- information asymmetries exist when one party in a transaction has access to more accurate or complete information than the other party. If not managed, information asymmetries may result in consumers relying on misleading information; and
- biases may arise when there are conflicts of interest, where the techniques are deficient, or where the actuaries themselves have insufficient knowledge or ability.

These inherent flaws may cause faults in modelling, 'group think' or biased judgement.

The primary regulators of actuarial work in the UK are the IFoA (responsible for qualifications, ethical standards, quality assurance, and discipline) and the FRC (responsible for technical standards, public interest discipline, and oversight of the IFoA's regulatory activities). Both the FRC's Technical Actuarial Standards and the IFoA's ethical standards and training/qualifications are directed at tackling modelling risk, while the IFoA's ethical standards and training are intended to tackle 'group think'. However, the risks described in sections 3.4.1 – 3.4.3 are relevant to the work of the other members of JFAR, and are therefore considered appropriate for co-ordinated analysis.

3.4.1 Modelling

Risk of inappropriate model design, implementation, use, or poor communication of actuarial modelling work resulting in poor decisions being made and detriment to the public interest

Models are fundamental to actuarial work. Actuarial modelling work is used in premium rating and estimating claim provisions for insurers, pension scheme funding and liability measurement, determination of capital requirements, and to inform numerous other strategic and commercial decisions especially where long-term management and planning are critical.

Technological developments have enabled increased modelling capability which has tended to encourage the development of more complex models. Complex models may inhibit understanding of results and mask flaws. On the other hand simple models may not be sufficiently sophisticated to provide useful information.

While models can be very useful they do have limitations especially in predicting the impact of extreme events. Model results are also highly dependent on the inputs, and in particular data being complete, accurate and appropriate. They are sensitive to:

- expert judgement, both in the inputs and critical assessment and communication of outputs;
- key assumptions and underlying methodology embedded in the model (model risks);
- assumptions and parameters which control the outcome, especially long-term assumptions such as investment returns or longevity, or dependency assumptions for modelling stressed scenarios (parameter risks); and
- external changes and the emergence of new risks not already built into the model.

The exercise of judgement about the appropriateness of the model, parameters and data is key to actuarial models. There is a risk that users take false comfort from models simply because they are in widespread use – see 'group think' risk below.

To mitigate the risk of poor decision-making, it is important that those performing actuarial work are able to:

- convey to the user of the actuarial work the limitations of the model and the sensitivity of its outcomes; and
- exercise judgement free from undue pressures and conflicts. Actuaries need to resist pressure to vary key assumptions and parameters in order to deliver different outcomes.

We have identified the following hotspots relating to modelling:

- Insufficient use of stress-testing and scenario analysis – Actuarial techniques, such as modelling and reverse stress testing, could be used more widely, including in a wider range of sectors, to quantify and understand risks. However some financial institutions and pension schemes have limited capability to quantify risk. As a result, directors and trustees can be under-informed in their response to those risks. They may not have a sound understanding of resilience in stressed conditions (for example consideration of resilience to insurance, investment and operational and liquidity impacts following a natural catastrophe);

- Internal capital models – Regulated financial institutions, particularly insurers, are increasingly managing their solvency and other risks by reference to internal capital models. These models are underpinned by actuarial work (for example Solvency II requires the actuarial function to contribute to the effective implementation of an insurer's risk-management system). Internal capital models can be heavily reliant on expert judgement (for example where the impact of a 1 in 200 year adverse deviation is estimated) which increases uncertainty around results;

- Long-term assumptions – Model results can be very sensitive to long-term assumptions recommended by actuaries (for example longevity and investment return assumptions) which necessarily contain a high degree of judgement. The sensitivity of the results to the assumptions needs to be communicated to users since by the time the assumptions are shown to be inaccurate it may be difficult to make up any financial shortfall. There is also a risk that assumptions are inconsistent or inappropriate (for example in pension scheme asset/ liability work actuaries need to ensure that asset and liability assumptions used in models are consistent, and take appropriate account of the sponsoring employer's credit risk and risk appetite); and

- General insurance personal lines pricing – Actuarial models are used to inform pricing decisions for individual policies and across an insurer's book of business. There needs to be sufficient understanding of the variability associated with some pricing approaches (for example statistical modelling or optimisation techniques). If poorly understood by the practitioner or poorly communicated, the actuarial analysis may not give the user of the actuarial work sufficient understanding of the overall variability of results for the insurer or the impact on prices for individual consumers.

3.4.2 'Group think'

Risk of actuarial 'group think' / herd-like behaviours resulting in poor conduct or systemic business failures

Actuarial work involves making assumptions about the future which requires the use of judgement. Often a range of values is justifiable.

Assumptions may be developed through comparison with external benchmarks or the choices of peer companies. Consensus may also develop or be accelerated by perceived regulatory pressure. It is then difficult for the individual actuary to use an assumption far from 'the market' even where appropriate to do so in the context of a particular piece of work. Some actuaries will not want to be different from others. 'Group think' may detract from the exercise of individual judgement increasing the likelihood of a wrong assumption affecting many companies at the same time.

'Group think' can also increase the risk of poor conduct if behaviours are considered acceptable simply because they are widespread. The FRC and IFoA will be mindful of the risk of 'group think' when reviewing technical and ethical standards for actuaries.

When actuarial estimates are reviewed and discussed (for example as part of the internal governance process, or by external stakeholders), views can be imposed by senior management and/or clients which actuaries may not feel in a position to challenge effectively.

Solvency II, tPR's funding code and the development of EU regulation in pensions have given many insurers and pension schemes the impetus to develop their risk management capabilities and better understand the risks they face. However where actuarial theory and

approaches are developing quickly in response to changes there is also a risk of 'group think' as best practices emerge.

We have identified the following hotspots relating to 'group think':

- Herding around assumptions and modelling – Adoption of similar assumptions or methodology by actuaries across a sector (for example pension scheme modelling) resulting in similar asset allocation strategies and potential market distortion;
- 'Group think' in investments – If investment strategy advice is influenced by 'group think' or 'house' views based on actuarial modelling tools which depend on key assumptions about financial markets, a uniformity of advice may result leading to systemic risk;
- Life expectancy – Assumptions about improvements in life expectancy are crucial in estimating pensions liabilities. Actuaries have in the past underestimated improvements in life expectancy and advances in medical science, with short-term improvements being based on past trends, but with an expectation that longer-term improvements would not continue at past rates;
- Failure to speak up – A failure or inability by actuaries to speak up or not manage conflicts of interest (for example by accepting a consensus view of assumptions when not suited to the particular circumstances – such a consensus may be established at a firm level or at a market level);
- Smaller financial institutions – Organisations with limited actuarial experience need to ensure they are not exposed to lower quality actuarial work (for example by being able to challenge the actuarial work performed, and ensuring the work uses sufficiently bespoke techniques rather than simply adopting general practice); and
- Lack of diversity of actuaries – The profession is relatively small and homogenous and needs to ensure this does not lead to 'group think'. Many actuaries have been subject to similar influences through education, training and peer group discussions.

3.4.3 Understanding of risk and return

Inadequate understanding of risk and return by actuaries and users of actuarial work may result in poor decisions

This risk arises if actuaries do not have a complete understanding of risk and return, in particular for asset-related risks (for example when actuaries are considering long-term investment returns for use in financial models). Some users of actuarial work similarly have an incomplete understanding of risk and return and may not receive actuarial communication to assist their understanding.

Firms' understanding

Actuarial work is widely used by insurers and pension schemes to understand the risks and returns relating to their activities, and it is increasingly used in other sectors. Actuarial work informs many business decisions including pricing, financial management and strategic investment decisions.

Policyholder and investor risk may arise when firms invest in new asset classes, or perform complicated business transformations to simplify their administration or increase their return

on capital. As firms move into new classes of assets and/or undertake such transactions it is important that the risks are fully understood and that the potential risks are identified, communicated and where relevant mitigated.

Consumers' understanding

Consumers need a good understanding of risk and return. They therefore need relevant, comprehensible and transparent information from actuarial work in order to make well informed financial decisions.

We have identified the following hotspots relating to understanding of risk and return:

- Communications on savings business – Disclosures on life or pensions products, based on actuarial judgements concerning risk and return, need to be understood by policyholders;

- Retirement income changes – The changes in the Taxation of Pensions Bill (which implements the changes proposed in the 2014 Budget) will increase the number of options available to those nearing retirement. This increases the need for quality information for providers and consumers to support decision making. It is important that there is appropriate provision of information that clearly articulates risk and return; and

- Understanding of alternative assets – An increasing number of insurers are considering investing in assets such as infrastructure, social housing loans, exchange traded funds, and collateralised loan obligations. They need to understand both their own risks and the risks concerning the particular assets to ensure the assets are appropriate to back the liabilities. Actuarial work is capable of contributing to a fuller understanding of these risks to ensure the 'risk return' profile is appropriate for the institution. Some matters are within the traditional sphere of actuarial work (for example considerations of capital requirements, cash flows and discount rates); others less so (for example knowledge may be needed on the ongoing management of the assets and more detailed on going monitoring may be needed than that required for more traditional assets). Actuarial knowledge and techniques and communication of actuarial work may not be sufficient to provide a full understanding of the risks of such assets.

3.5 Characteristics of markets in which actuarial work is used

Market structures influence how well a market functions. Effective competition is a key element of a well-functioning market. Markets can be undermined by concentration, and product and distribution complexity. Actuaries and their work can make a positive contribution to the proper functioning of the market in the public interest. In some cases the market may give rise to pressure on actuaries.

3.5.1 Product design and distribution

Risk that companies using actuarial information do not design products that respond to consumers' real needs or do not promote transparency on financial products and services

Actuarial work is used in the design of insurance products and pension schemes, to help companies understand their risks and meet their profit goals. This may drive product features and pricing and may also be used to inform decisions concerning the supply of certain products.

Actuarial work informs strategic decisions about distribution channels. It may be used to determine cross-subsidies from add-on products and to model the effects of customer behaviour on product take-up.

Information asymmetries between insurers and consumers can prevent consumers from making well-informed financial decisions or comparisons of products because features, costs and incentives are not transparent.

We have identified the following hotspots relating to the use of actuarial work in product design and distribution:

- Annuity and retirement income products – There is potential, in a rapidly evolving market following the Taxation of Pensions Bill, for development, based on actuarial information, of new products (for example new types of annuities and investment funds with guarantees). These products need to be well designed to meet customer needs and their features properly understood;

- General insurance personal lines products and pricing – The design and pricing of products can have more significant implications for some groups of consumers than others (for example availability of home insurance for those living in a flood plain; underwriting of travel insurance after illness; renewal pricing for motor and home products). The impact of actuarial models on different groups needs to be understood by insurers rather than automatically applied;

- Health and care products – There is increasing need for health and care products driven by demographic developments. Product design is particularly difficult given the uncertainties around changes in the future instance of disease and escalating treatment costs. Actuarial models are used to design the structure and terms of these products and inform how the risks are managed. The affordability of guaranteed rates needs to be understood by insurers and the impact of reviewable rates recognised by consumers; and

- Product distribution mechanisms– Price is a key differentiator through some distribution channels (for example price comparison websites). Actuarial work is used to inform the design and pricing of products through these channels. Consumers need to understand any limitations of the basic cover they are being offered and the value of optional additional benefits.

3.5.2 Financial Reporting

Risk that reporting of actuarial information in the annual report and accounts is not fair, balanced and understandable to investors

Corporate reports inform investors of a company's or group's position and performance over a given period. There can be pressure on the preparers, both in terms of timescales and from the perspective of analyst/investor expectations.

A significant component on the balance sheet of some companies is the surplus or deficit of its pension scheme. This is accounted for in accordance with financial reporting standards

that include actuarial methodologies the results of which are sensitive to changes in market conditions. This sensitivity may influence company and investor behaviour.

In insurance companies' accounts, insurance liabilities, based on actuarial work, are probably the largest item on the balance sheet and some non-GAAP performance measures such as embedded values rely on actuarial work.

This information is the responsibility of the Board who, in exercising this responsibility, will usually rely on actuarial work. The auditors too will usually take account of actuarial expertise.

Management can be under considerable pressure to meet reported performance targets and this may influence the working environment of the actuary and the challenge process around the actuary's advice.

We have identified the following hotspots relating to actuarial work in support of financial reporting:

- Estimating insurance liabilities – Actuaries have to meet very tight reporting deadlines and may stick to a reserving methodology which has been used in the past, even when other methods are more suitable. This increases the risk of poor liability estimates. There may also be pressure on the actuary in the face of management challenge and short term business targets, creating a risk of bias in actuarial judgements;

- Auditing – On the one hand auditors need expertise to challenge the quality of actuarial information and on the other actuaries need to understand audit requirements. If either side lacks these skills there could be a risk that inappropriate insurance and pension liability estimates are not identified by the audit; and

- Life insurance accounting – There is a diversity of practice under current accounting standards for life insurance and a number of alternative measures of life insurers' performance which are built on actuarial work. Investors may find the reported information hard to understand and compare and take inappropriate decisions on the basis of it. Changes in accounting standards currently in development may reduce this risk.

3.5.3 *General insurance claims provisions*

Risk that inadequate claims provisions combined with inadequate premium rates reduces the robustness of a general insurer

Claims provisions are typically one of the largest elements in a general insurer's balance sheet and by their nature are uncertain. Inadequate claims provisions will also influence management's view of the profitability of the business and hence premium rates.

Actuarial work is widely used by insurers to enable them to understand better the ultimate cost of claims arising from business they have written and to help reduce the risk of unexpected movements in claim provisions.

Solvency II introduces a formal requirement (new for general insurers) to have an actuarial function which co-ordinates the calculation of insurance provisions and provides an opinion on underwriting policy including premium rates.

In the more "commoditised" personal lines market, general insurers' business models can be strained. The persistent low interest rate environment means insurers can expect lower returns on their investments whilst at the same time price competition is fierce and the cost of claims uncertain.

When business targets are not being met actuaries need to resist pressure to modify their judgements in setting claim provisions (for example selective management challenge on figures). Actuaries also need to spot potential indicators of increased uncertainty (for example certain changes to claims processes).

Regulatory changes, pressure to meet increased reporting requirements within short accounting deadlines, and the volume of work may mean there may not be sufficient time for the actuary to re-evaluate the methodologies used even when claims progressions are not as expected.

Widespread use of traditional methodologies, 'group think', can impede change and adaptation. Many of the common themes for co-ordination are relevant to this risk. In addition we have identified the following hotspots relating to general insurance claims provisioning:

- Influence of actuaries – Actuaries need to be able to identify business developments and communicate their impacts clearly and objectively to ensure they have sufficient influence to counter the risk of inappropriate claims provisioning if the actuarial work is adjusted or ignored. To be influential actuaries moving into specialised roles need to ensure they have a good overall understanding of the business;

- Settlement of general insurance claims via Periodic Payment Orders (PPOs) – A PPO is a court order awarding compensation to the victim of an accident or act of malpractice in the form of payments throughout their lifetime rather than as a lump sum. Its usage increased following the Courts Act 2003, giving rise to a relatively new claim type for general insurers with very long-term liabilities. There is uncertainty around the adequacy of provisions and the risks are difficult to hedge or transfer. These long-term liabilities can change the shape of the balance sheets of motor insurers and require analysis techniques not traditionally associated with general insurance; and

- Provisioning methodologies – Actuarial methods are used in the determination of claims provisions. The increasing volume of management, regulatory and investor reporting in short timescales has meant reporting deadlines cannot be met without significant automation of the actuarial estimation process. There needs to be sufficient understanding, review and challenge of automated results.

3.5.4 Liability management of defined benefit pension schemes

Risk that liability and risk management actions of pension schemes results in some scheme members being disadvantaged or taking on excessive risk

Actuaries and actuarial firms advise trustees and employers in relation to transfers, options and incentive exercises for defined benefit (DB) scheme members. When pension scheme funding decisions are made they need to be supported by actuarial, investment and

employer covenant advice to ensure that the needs of the various stakeholders are met and pension scheme members are treated fairly. Thus the actuarial advice is considered in conjunction with other strands of advice to support good decision making.

DB pension schemes can create some certainty for employees as to retirement income levels with employers bearing more of the risk of uncertain liabilities and costs. Many employers have closed their DB schemes in order to manage their exposure to such risks.

Some pension schemes have funding deficits. When a pension scheme has closed there is a reduced time for investment returns to repair the deficit.

Employers may explore other ways to reduce their risk, including:

- incentivising members to transfer out;
- innovative ways of structuring pension scheme contributions sometimes using special purpose vehicles (for example facilitating asset backed contributions) to reduce up-front contributions to the pension scheme; and
- encouraging take up of retirement transfer options where members have the option to transfer to a personal pension at retirement.

We have identified the following hotspots relating to liability management of DB schemes:

- Transfers out of DB schemes – Employers typically rely on actuarial information to set the financial terms for transfers out of DB schemes. Transfers may become more attractive to some consumers following the increased flexibility allowed by the Taxation of Pensions Bill and employers may facilitate this to reduce their risk. However this can result in increased risk of poor decisions by members if they do not fully understand the investment and longevity risks they are taking on;

- Investment assumptions for closed schemes – The use of actuarial assumptions for investment returns which assume a rate based on historical long-term yields may not be appropriate in the current low yield environment when the duration of the scheme liabilities is short. This risks the scheme being inadequately funded; and

- Special purpose vehicles (SPVs) – When adopting funding strategies with actuarial advice incorporating the use of contingent assets based on income derived from SPVs, trustees need a full understanding of the inherent risks including financial and legal risks.

3.6 Environmental conditions

Economic and financial market trends, along with regulatory changes and technological developments, play a central role in driving firm and consumer behaviours and decisions. These dynamics have at times led to poor consumer outcomes and risks to market integrity. This has especially been the case where firms and schemes and/or consumers have not fully adjusted to new conditions.

JFAR members need to be alert to how likely developments may impact on the financial markets and activities we regulate.

Economic and market conditions influence perceptions of risk and return and can be important in shaping the future expectations and long term needs of the public. Actuarial work involves making assumptions about environmental conditions such as future demographic experience and investment returns, often over long time horizons.

3.6.1 Changes in the external environment

Risk that changes in the external environment (for example from political or legislative changes, or economic or demographic shifts) are not adequately responded to

The external environment is continually changing through legal, economic, demographic and climate change. Change can happen more quickly than ever before. The internet, social media, the 24-hour culture, league tables of investment results and so on encourage rapid reaction to events. This can lead to the risk that decision making becomes increasingly short-term and may have unintended long-term consequences.

Actuarial work involves making assumptions about future conditions (for example demographic and investment returns). Accordingly to ensure that actuarial work continues to provide trustworthy information for decision-making, the assumptions used need to keep pace with change. Challenges include taking proper account of climate change and demographic changes. Scenarios will need to be considered that are not included in past data, such as food and water security risks, or stranded assets (for example carbon based assets may lose their value).

One key external change relevant to the role of actuaries and actuarial work is that perceptions of what is acceptable conduct for firms or individuals change over time. There is greater public scrutiny of value for money and customer outcomes.

Actuaries need to recognise the impact of changes in actuarial work. A slow reaction from actuaries to change would lead to inappropriate assumptions being adopted.

We have identified the following hotspots relating to changes in the external environment:

- Limits to growth – Actuaries make long-term assumptions concerning investment returns in their work in insurance and pensions. A lack of natural resources (for example food or energy shortages) and/or demographic changes fundamentally changes the sources of economic growth and future expectations (many companies assume exponential future growth). Actuaries need to consider the impact of these changes when making long-term assumptions to avoid these risks being mis-assessed or ignored;

- Climate change – Climate change creates uncertainty. In general insurance, climate change directly affects the risk of catastrophe claims for property business (for example windstorm or flooding). Actuaries are involved in monitoring and stress testing exposures which support pricing of catastrophe exposed risks;

- Technological shifts and cyber risks – New techniques become available and new risks arise (for example cyber risks / terrorism; use of data and privacy) including the risk that technology accelerates the aggregation of risks due to greater interconnectedness between businesses and across locations. Cyber risks could give rise to significant disruption to the financial system and markets which would be likely to have knock on effects to insurers. Some insurers offer cyber risk coverage and actuarial work is used to inform its pricing and provisioning;

- Not communicating that the world has changed – Actuaries need to communicate change to reduce the risk of poor decisions (past examples include out of date assumptions concerning longevity improvements, and the reduction in investment returns and its consequent impact on the value of mortgage endowment policies). A current example of where the world is changing quickly is pensions and actuaries will need to ensure they assess and communicate the impact of such changes as they affect actuarial work; and

- Retrospective changes or changes in practice – Actuaries need to explain the impact of the possible clarification of legislative uncertainty or changes in practice (for example court awards for bodily injury claims, claims handling costs after a major event) that may have a significant impact on insurers' liabilities.

3.6.2 Economic outlook – impact on insurers

Risks to insurers arising from a relatively low interest rate environment persisting for an extended period

Actuaries make long-term assumptions about investment returns. This work informs product pricing decisions and may affect the financial position of the insurer and policyholders for many years into the future. Actuarial work may be used in capital planning to help mitigate the risk that insurers cannot meet their liabilities as they fall due.

A relatively low interest rate environment has persisted in the UK for a number of years. While interest rates may rise they are not expected to revert to historic levels in the short to medium term. We recognise that this risk may not persist indefinitely and there may be other economic risks, such as inflation, that may become more relevant in time.

Many life insurance products contain interest rate guarantees. These may be implicit (for example income or life protection contracts providing a fixed benefit) or explicit (with-profits contracts with explicit guarantees of minimum returns). Some older products provide options with implicit interest rate guarantees such as minimum annuitisation rates.

Regular premium non-linked savings products are exposed to the risk that the insurer's investment returns are lower than assumed. Very long-term products may also be exposed to reinvestment risk where it is not possible to find matching assets with a sufficiently long term, exposing capital providers to poor or volatile results.

Expected investment returns on savings and investment products may also be less attractive to consumers.

We have identified the following hotspots relating to low interest rates:

- Annuity pricing and valuation – Actuaries need to communicate to insurers the uncertainty in the yields that will be received from a portfolio of assets held for the long-term;

- Uncertainty in future interest rates movements – Actuaries need to quantify and explain the risk to insurers and pension schemes of sudden changes in interest rates and the consequent movement in assets and liabilities; and

- Long-term business models of life insurers – Actuaries need to quantify and explain the risk to life insurers of persistently low interest rates and the implications for their business models.

3.6.3 Economic outlook – impact on pension schemes

Risk that the uncertain economic outlook could challenge affordability for pension scheme sponsors or a market move could threaten the pensions system as a whole

The current low interest rate environment has persisted for some years and some pension scheme valuation results are showing deficits. At the same time some sponsor covenants are perceived to be constrained by the economic climate putting a strain on affordability. Uncertainty in the economic outlook can affect decisions of investors including pension schemes and insurers.

Schemes may use investment strategies designed to reduce uncertainty (for example investing in bonds rather than equities) and derisking strategies transferring risk to individual members (for example pension schemes being closed or reducing benefits).

Actuarial advice is central to decisions by pension scheme trustees and sponsors which could influence the development and mitigation of this risk.

We have identified the following hotspots relating to uncertain economic outlook:

- Ability of scheme sponsors to meet their long-term obligations – In the short term, because of forbearance by banks, trustees may be misled into thinking some covenants are stronger than they are and may not consequently be prepared for the increased defaults that often follow as the economy picks up and interest rates rise. In the longer term sponsor covenant may be less certain. Actuaries need to take account of this risk in their advice to trustees;

- Advice to pension trustees – Trustees are advised by a number of advisers (for example funding, investment and covenant advisers) leading to the risk of misunderstanding and poor decisions being made. Trustees need to ensure that their actuarial advisers consider the advice provided by others. Often, as the trusted adviser, actuaries need to support trustees in co-ordinating the different strands of advice they receive; and

- Stress testing of economic assumptions – Trustees need to consider the impact of alternative outcomes of investment assumptions (for example using actuarially based stress testing and scenario analysis) to test sensitivity to economic risks, and make contingency plans for the possibility of extreme adverse outcomes.

3.6.4 Competitive pressures on insurers

Risk that the UK insurance sector's competitive commercial environment, pressures on premium rates and low investment returns may drive firms to seek out too much risk

Continued low investment returns and slow economic growth may result in firms seeking to improve returns by taking on more risk via reduced reinsurance and/or growing the business in current and new territories.

Firms may seek out higher investment returns attracting a significant increase in risk to the asset side of the balance sheet without necessarily having the capital to support this increased level of risk. Actuaries may be asked to advise on transactions involving alternative investments, including capital impacts, which may be outside their experience.

Actuarial work is used in financial planning for insurers, including the modelling of risk-based capital requirements. It informs strategic decisions and capital planning to help mitigate the risk that insurers are not able to meet their liabilities as they fall due.

A highly competitive market can result in firms launching new products with a lack of data, experience or knowledge, using actuarial work in product design, pricing and capital modelling.

We have identified the following hotspots relating to supply and demand for insurance:

- Balance sheet structuring – Changing the appearance of the balance sheet without a change in risk (for example through structuring vehicles), arbitrage of model-based capital requirements or relocation of certain insurance activities offshore to a territory where there may be a more benign regulatory environment increases the risk of insurers holding inadequate capital or investors making decisions based on information that does not reflect the underlying risks. Actuarial work and advice is used to inform structuring decisions. Actuaries need to explain changes in underlying risks; and

- Management actions may not work – Actuarial models use assumptions about the effect of management actions in response to changes in the economic environment (for example within capital modelling). Actuaries may also recommend management actions based on modelling results. Actuaries need to explain the uncertainty concerning management actions taken in times of stress, and any unintended consequences.

3.6.5 Rapid change in the pensions market

Risk that the rapid change in the market due to legislative developments and new initiatives leads to inappropriately designed products

There is great diversity among pension investors who could be individuals in varying circumstances and hence have very different investment needs. It is unlikely that one product or model will fit all.

There are many initiatives changing the retirement savings marketplace. For example:

- Changes to the Institutions for Occupational Retirement Provision (IORP) Directive (the prudential framework designed to secure the retirement income of the EU's citizens) will require an increased emphasis on high quality actuarial work;
- The introduction of Independent Governance Committees and other mechanisms for ensuring value for money potentially involve new roles for actuaries and actuarial work;
- Auto-enrolment reaches millions of new pensions savers providing opportunities for new products with associated risks; and
- Taxation of Pensions Bill changes the relative attractiveness of DB and Defined Contribution (DC) pension arrangements by making DC arrangements more flexible.

This gives rise to innovation in product design. Actuaries and actuarial firms are often involved in advising on new pensions products and plan designs, and may also be asked to advise trustees and employers in relation to transfers, options and incentive exercises for DB scheme members.

We have identified the following hotspot relating to rapid change in the pensions market:

- Legislative developments – These give rise to the risk that options or new products are misunderstood, bring about uncertainty for the public, and may make it difficult to plan. Individuals, pension scheme trustees and their advisers need to understand the implications of changes in the legislative environment for pensions. Actuaries, as trusted pension advisers, need to explain the features and risks associated with the choices becoming available.

Annex 1: Summary of roles and responsibilities in relation to UK actuarial regulation

Body	Roles and Responsibilities relevant to actuarial regulation in the UK	Authority for roles and responsibilities that are relevant to actuarial regulation in the UK are derived primarily from:
The Financial Reporting Council (FRC) is the UK's independent regulator with responsibility for promoting high quality corporate governance and reporting to foster investment.	The FRC issues technical standards for use in actuarial work. It maintains Actuarial Standard Technical Memorandum 1 which specifies methods and assumptions to be used in statutory money purchase illustrations and keeps it under review. It oversees the way the IFoA regulates its members acting in a professional actuarial capacity in the UK and has a reserve power to issue ethical standards in certain circumstances. The FRC operates an independent scheme for investigating the conduct of IFoA members which raise or appear to raise issues affecting the public interest in the UK. The FRC also issues codes and standards for financial reporting, audit and corporate governance matters, which may involve the use of actuaries and actuarial work; and for public interest entities it reviews compliance of corporate reports with accounting standards, and the quality of the work of their auditors. The FRC has a role in the development of international accounting and auditing standards, and is a competent authority under relevant European directives.	Its own constitution and Treasury endorsement of the Morris Review recommendations, the main recommendations being that the FRC should oversee the regulation of the actuarial profession and set technical actuarial standards. Its Memorandum of Understanding (MoU) with the IFoA and references in IFoA materials including its disciplinary scheme. Statutory and regulatory references to the FRC and its standards including in the Companies (Audit, Investigations and Community Enterprises) Act 2004, regulation, and in disclosure regulations under the Pension Schemes Act 1993.
The Institute and Faculty of Actuaries (IFoA) is a leading global professional	The IFoA's roles and responsibilities in the UK include issuing ethical and conduct standards for its members, conferring membership and	Its Royal Charter, rules and bye-laws. References to the IFoA (and its members) in

body for actuaries, and has primary responsibility for the professional regulation of its members in the UK and overseas.	qualifications (including the internationally recognised CERA qualification), issuing practising certificates, setting and monitoring compliance with continuing professional development requirements, and operating a disciplinary scheme for investigating and determining allegations of misconduct. The IFoA requires its members to comply with FRC standards (as well as other regulatory requirements) and responds to FRC recommendations, either by implementing them within a reasonable time or by giving reasons for not implementing them on the basis that those reasons will be published. The IFoA also regulates the conduct of its members operating outside the UK. The IFoA recently consulted on establishing a voluntary quality assurance scheme for actuarial work for organisations which employ actuaries.	legislation and regulation. Its commitments as a member of the International Actuarial Association and the Actuarial Association of Europe. Its regulatory commitments to the FRC, and to the FCA in its capacity as a Designated Professional Body under the Financial Services and Markets Act 2000, including in relation to the licensing and monitoring of exempt professional firms.
The Prudential Regulation Authority (PRA) is the statutory UK regulator with responsibility for promoting the safety and soundness of PRA-authorised persons, including insurers and banks. It also contributes to securing an appropriate degree of protection for insurance policyholders.	The PRA supervises authorised insurers in the UK, and makes rules for insurers, the insurance market at Lloyd's, and actuaries who exercise controlled functions. The PRA approves the appointment of the actuarial function, the with-profits actuary and the Lloyd's Actuary, and has powers to investigate and discipline persons exercising these and other functions. The PRA may appoint or approve the appointment of skilled persons. The PRA also has a role in transfers of insurance business. The PRA approves internal models. The PRA has similar functions in relation to banks, including powers in relation to the development of	Its statutory functions under the Financial Services and Markets Act 2000. Its functions as a competent authority under European legislation. Directions from the Treasury and Bank of England through its Financial Policy Committee. Its obligations under its MoUs with the FCA in relation to co-operation, with-profits and international co-ordination.

	models and the conduct of individuals.	
The Financial Conduct Authority (FCA) is the statutory UK regulator with responsibility for the functioning of regulated financial markets in the UK. It has specific objectives to secure an appropriate degree of protection for consumers, to protect and enhance the integrity of the financial system in the UK, and to promote effective competition in the interests of consumers.	The FCA makes conduct of business rules for a wide range of financial firms, including those that govern the conduct of insurers and financial intermediaries. The FCA has specific supervisory functions in relation to fairness and the treatment of policyholders in business transfers. It has an interest in the work of with-profits actuaries, independent experts (who are often actuaries), and actuarial work supporting product design and pricing. The FCA also has responsibilities in relation to financial crime and markets, including as the listing authority, which may involve the conduct of actuaries and the use of actuarial information. The FCA makes prudential rules for financial intermediaries and oversees the IFoA in its role as a Designated Professional Body.	Its statutory functions under the Financial Services and Markets Act 2000. Its statutory functions under other consumer protection legislation. Its functions as a competent authority under European legislation. Its obligations under its MoUs with the PRA in relation to co-operation, with-profits and international co-ordination.
The Pensions Regulator (TPR) is the statutory UK regulator with responsibility for regulating occupational and directly paid personal pension schemes in the UK. It has statutory objectives and powers in connection with the regulation of pension schemes and the compliance by employers with their automatic enrolment duties but no	TPR is responsible for regulating work-based pension schemes and maximising compliance by employers with their duties and safeguards related to automatic enrolment into pensions. From April 2015, it has an extended role in respect of public service schemes, with responsibility for regulating their governance and administration but not their funding. TPR aims to achieve compliance by educating and enabling those who have responsibility for pensions and by taking enforcement action where it is appropriate. It issues codes and guidance for	Its statutory functions as set out in the Pensions Act 2004 and Part 1 of the Pensions Act 2008, with further functions set out in earlier acts. The exercise of TPR's functions is guided by the statutory objectives: (i) to protect the benefits of members of occupational pension schemes; (ii) to protect the benefits of members of personal pension schemes where direct payment arrangements are in place;

specific brief over the work of actuaries.	trustees, employers and their advisers, including actuaries, and collects and reviews data through scheme returns and specific information requests. It reviews recovery plans and relevant actuarial information for defined benefit schemes and can direct pension schemes as to how to calculate their liabilities and the contributions required. TPR issues notices requiring actions to tackle non-compliance, prohibits trustees who are not judged fit and proper to carry out their appointments and also has powers to appoint trustees to schemes. It can also issue penalties for non-compliance with the relevant legislation and can take action against employers, or individuals, who are attempting to avoid their pension obligations. It operates a clearing procedure for proposed transactions. Its key audiences are trustees, employers, professional advisers, pensions and administration providers, individuals, public service scheme managers and pension boards.	(iii) to reduce the risk of situations arising which may lead to compensation being payable from the PPF; (iv) in relation to DB scheme funding only, to minimise any adverse impact on the sustainable growth of an employer; (v) to maximise employer compliance with employer duties and the employment safeguards; and (vi) to promote, and to improve understanding of, the good administration of work-based pension schemes.

Annex 2: Primary regulatory context of the risks

Risk drivers	Risks selected for co-ordinated consideration and possible action	Primary regulatory context
Inherent factors in actuarial work and its use, such as actuarial techniques used and skills, knowledge and practices of those providing and those relying on the actuarial work.	Modelling 'Group think' Understanding of risk and return	The primary regulators of actuarial work in the UK are the IFoA (qualifications, ethical standards, quality assurance, discipline) and the FRC (technical standards, public interest discipline, oversight of IFoA)
Characteristics of markets in which actuarial work is used – such as processes and incentives that are embedded in the financial sector, individuals' behaviours and decisions, firms' / funds' strategies, business models and financial soundness can all cause poor outcomes for the public interest.	Product design and distribution Investment Financial reporting General insurance reserving Liability management of defined benefit pension schemes	The primary regulators of markets are the FCA (financial markets and corporate governance) and the FRC (corporate governance and reporting to foster investment), while the PRA has a reserve power in respect of prudential risks. The primary sectoral regulators are the PRA (in respect of prudential matters for insurance) and the Pensions Regulator (for pension funds), while retail and market conduct aspects are addressed by the FCA.
Environmental conditions which may affect individuals' behaviours and decisions, and firms' / funds' strategies, business models and financial soundness	Changes in the external environment Low interest rates Uncertain economic outlook Supply and demand for insurance Rapid change in the pensions market	Environmental conditions affect risks of all the regulators – see above

Annex 3: Analysis of hotspots by sector

Generic Risk	Hotspot for co-ordination	Pensions	Life Insurance	General Insurance	Other
Modelling	Insufficient use of stress-testing and scenario analysis	✓	✓	✓	✓
	Internal capital models	✓	✓	✓	✓
	Long-term assumptions	✓	✓	✓	✓
	General Insurance personal lines pricing			✓	
'Group think'	Herding around assumptions and modelling	✓	✓	✓	✓
	'Group think' in investments	✓	✓	✓	✓
	Life expectancy	✓	✓	✓	✓
	Failure to speak up	✓	✓	✓	✓
	Smaller financial institutions	✓	✓	✓	✓
	Lack of diversity of actuaries	✓	✓	✓	✓
Understanding of risk and return	Communications on savings business	✓	✓		
	Retirement income changes	✓	✓		
	Understanding of alternative assets	✓	✓	✓	✓
Product design and distribution	Annuity and retirement income products	✓	✓		
	General Insurance personal lines products and pricing			✓	
	Health and care products				✓
	Product distribution mechanisms		✓	✓	✓
Financial reporting	Estimating insurance liabilities		✓	✓	✓
	Auditing	✓	✓	✓	✓
	Life insurance accounting		✓		
General insurance claims provisions	Influence of actuaries			✓	
	Settlement of general insurance claims via PPOs			✓	
	Provisioning methodologies			✓	
Liability management of defined benefit pension schemes	Transfers out of DB schemes	✓			
	Investment assumptions for closed schemes	✓			
	Special purpose vehicles (SPVs)	✓			
Changes in the external environment	Limits to growth	✓	✓	✓	✓
	Climate change	✓	✓	✓	✓
	Technological shifts and cyber risks	✓	✓	✓	✓
	Not communicating the world has changed	✓	✓	✓	✓
	Retrospective changes or changes in practice	✓	✓	✓	✓
Economic outlook – impact on insurers	Annuity pricing and valuation		✓	✓	✓
	Uncertainty in future interest rate movements		✓	✓	✓
	Long-term business models of life insurers		✓		
Economic outlook – impact on pension schemes	Ability of scheme sponsors to meet their long-term obligations	✓			
	Advice to pension trustees	✓			
	Stress testing of economic assumptions	✓			
Competitive pressures on insurers	Balance sheet structuring		✓	✓	
	Management actions may not work		✓	✓	
Rapid change in the pensions market	Legislative developments	✓	✓		

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