AIFS0087

Written evidence submitted by the Institute and Faculty of Actuaries

Key points

The IFoA welcomes the opportunity to respond to the Treasury Committee's inquiry into the use of AI in Financial Services. The rise of AI offers significant potential to the financial services sector (and indeed wider society), and many of the benefits of AI are already being realised.

Getting the balance right in terms of making the most of AI's upside potential whilst having appropriate mitigants to the downside is relevant to the wider public interest.

AI is becoming increasingly embedded across the financial services sector. Actuaries are particularly involved in developments relating to general/ life/ health & care insurance, pensions, investments, risk management and environmental risk analysis. Over the next decade we expect use of AI to continue to grow, with increasing data availability/ computing power. AI's potential to improve productivity within the financial services sector is also extensive.

There is a challenge from the potentially exponential increase of energy use by AI data centres to lead to a conflict with UK and global climate reduction efforts. These two public policy objectives need to be reconciled.

It is likely that AI will lead to considerable displacement of roles within the financial services sector. There is however scope for individuals to reskill and focus on alternative, value-adding roles, including interpreting AI-generated outputs.

The UK is well-placed to be a leader in responsible AI adoption, provided that regulation balances innovation with robust consumer protections, and ethical guardrails in place. The UK's Fintech ecosystem and globally recognised AI research/ expertise should also help give the UK a comparative advantage.

AI can increase exposure to cyber risk. AI-driven cyberattacks can exploit vulnerabilities at scale and amplify potential impacts through the interconnectedness of systems and devices. Reliance on a small number of AI providers (such as large tech firms) could potentially introduce systemic risks.

AI offers consumers a wide range of benefits including those specific to vulnerable consumers (such as better identification of vulnerability). However, there is a risk of AI replicating existing biases. The ethical oversight of algorithms will be important in this journey.

We favour a broad principles-based, rather than rules-based, approach to AI regulation. We believe it is important there is adherence to global standards to ensure a level playing field.

We believe the IFoA has an important role to play in the debate on the future evolution of AI across the financial

IFoA Response

Introduction

1. The Institute and Faculty of Actuaries (IFoA) welcomes the opportunity to respond to the Treasury Committee's inquiry into the use of Artificial Intelligence (AI) in Financial Services. It is helpful that the Treasury Committee are considering AI in financial services at this time, given the UK Government's Financial Services Growth & Competitiveness Strategy.

2. The rise of AI offers significant potential to the financial services sector (and indeed wider society), and many of the benefits AI can offer are already being realised. To the extent that the financial services sector is leading the charge on AI, there are lessons to be learned for the development of AI tools more broadly across the wider economy.

3. We believe the focus of this inquiry is also helpful, in considering both the benefits of AI, but also the potential downside. AI can generate or exacerbate a range of challenges. Getting the balance right in terms of making the most of AI's upside potential whilst having appropriate mitigants to the downside is relevant to the wider public interest.

4. In developing our response to the inquiry, we have drawn upon input from across our wider Data Science community. This community includes members of our Data Science Board and AI Ethics Working Party.

5. It is important to note that, as for any IFoA response, we have considered the Treasury Committee's inquiry from an independent, public interest perspective. In doing so we have taken a broad perspective on the public interest, considering the impact of AI on current and future financial services consumers, and society as a whole.

General Comments

6. AI has significant potential to promote innovation across a range of areas in which our members practise, including general/ life/ health & care insurance, pensions, investment and risk management. However, as it delves ever deeper into our lives, AI raises significant questions over ethics and the public interest. These are challenges the IFoA has been considering for over 150 years.

7. It could be said that actuaries are the original data scientists, and data science remains an integral and indispensable aspect of the actuarial profession today. Actuaries analyse data, form judgements and advise financial service firms. These core functions will remain key as AI evolves, with the rise of AI expanding the toolkit available to actuaries. Actuaries' existing skills in critical thinking, ethics, judgement and understanding model limitations will be particularly important when applied in an AI context.

8. Anticipating the importance of AI and data science to financial services, in 2016 the IFoA established a separate working group focusing on data and modelling problems. This community has developed into a board consisting of four pillars (research, professionalism and ethics, engagement, lifelong learning).

9. The IFoA published a Risk Alert on AI in September 2023. The Risk Alert acknowledged that there are significant opportunities for actuaries and their firms using AI, both in existing and potentially new domains. It also flagged that with the rapidly accelerating profile, development, and use of AI, it is important that our members carefully assess the potential risks, and apply their skills in an ethical manner, and consider the wider public interest. The Risk Alert also noted that the use of AI in actuarial work may amplify existing risks and introduce new risks, with this needing to be appropriately managed and mitigated.

10. We also completed a thematic review on data science/ AI in March 2024. Key conclusions from this review included:

    - increased capacity, availability, and profile of data science and AI tools all feeds into a rapidly changing environment;
    - there is an increasing level of actuarial involvement in AI and data science across a range of domains, and also plans to further increase usage;
    - the IFoA supports its members through standards and guidance, lifelong learning, and support for volunteers;
    - there are wide-ranging opportunities to collaborate in data science and AI, seeking out new avenues to influence future paths. There is extensive ongoing IFoA volunteer activity, supported by IFoA executive teams, which helps drive this.

11. In late 2024 we issued updated guidance for our members focused on ethical and professional use of data science and AI. The guidance recognises recent advances in AI techniques and capacity, with new and enhanced risks and opportunities resulting from this.

12. Given the above, and the importance of collaboration, we believe that the IFoA has an important role to play in the debate on the future evolution of AI across the financial services sector. We welcome the opportunity for further engagement with policymakers to provide actuarial expertise in the evolution of financial services in an AI-dominated world.

13. We hope the Treasury Committee finds our response to this inquiry helpful and constructive. We would be delighted to discuss our response with the Committee, including in any potential oral evidence sessions.

14. The IFoA has done extensive work on the challenge of climate change, particularly in our latest paper on planet solvency[1]. One challenge with AI is its extensive energy use, and a key public interest consideration is reconciling the upside of AI, with its challenge to achieving climate goals. These potentially conflicting objectives need to be managed. The International Energy Agency (IEA) recently predicted in its report *Energy and AI* that AI consumption for global data centres could double from a 2024 figure of 415 TWh (terawatt hours) to 945 TWh by 2030. The IEA suggests remedies such as locational flexibility, use of renewables and operational flexibility might mitigate this to an extent, but it represents a major energy usage challenge[2].

15. We note that the Bank of England's Financial Policy Committee (FPC) also noted potential risks of AI in core decision-making of banks, insurers and financial markets, along with operational risks in relation to AI service providers and the external cyber threat environment. The risks identified in the FPC's report[3] include the reliance on a small number of AI providers, conduct-related risks by relying on AI models, the risk that market participants inadvertently act collectively, and the increased capability of malicious actors through their use of AI.

16. For completeness, our response covers both narrow AI (primarily data science and machine learning) and Generative AI (GenAI), unless otherwise specified.

17. We have responded to the questions within the inquiry where we have specific points to raise.

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[1] See: https://actuaries.org.uk/news-and-media-releases/news-articles/2025/jan/16-jan-25-planetary-solvency-finding-our-balance-with-nature/

[2] See: https://datacentremagazine.com/technology-and-ai/iea-asks-how-is-ai-reshaping-global-energy-demand

[3] See: https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-in-focus/2025/financial-stability-in-focus-artificial-intelligence-in-the-financial-system.pdf

Treasury Committee Questions

Question 1: How is AI currently used in different sectors of financial services and how is this likely to change over the next ten years?

Question 1.1a: Are there particular areas of financial services that are adopting AI more quickly and at higher rates of penetration than others?

18. AI is becoming increasingly embedded right across the financial services sector, with varying levels of coverage. Examples where actuaries are particularly involved in AI development include:

    - **general insurance**: AI models enhancing underwriting, claims processing, and fraud detection;
        - granular datasets and predictive analytics improving pricing, risk segmentation, and customer retention;
        - AI models also help with customer segmentation and target marketing campaigns in a more tailored way, to meet customer needs;
    - **health & care insurance**: AI models are being used to develop personalised disease management programmes, helping both the customer with the management of their health, and the insurer in containing their claims outgo;
    - **life Insurance**: more granular mortality and longevity predictions; underwriting triage adds efficiency;
    - **pensions**: AI can help analyse investments, assess long-term risk scenarios, assist in fraud detection and improve member engagement by providing personalised insights into retirement savings;
    - **investments:** AI is being used to assess large volumes of market and unstructured data such as news articles, emails, earnings call transcripts, social media posts and multimedia files;
        - this can detect patterns, optimize and dynamically adjust asset allocations, assist in fund management decisions and personalise investment strategies;
    - **risk management**: monitoring and assessing large quantities of data and articles, to help inform risk managers on issues that may impact risk management strategies;
    - **environmental risk analysis**: AI models assess climate risks, catastrophe modelling, and Environmental, Social, and Governance (ESG) impact analysis, helping financial firms manage sustainability risks.

19. AI is being used widely across the financial services sector to prepare financial statements, automating many manual processes and developing audit trails.

20. One downside of greater reliance on AI both in financial services (but also more generally) is potential loss of important expertise, if AI replaces humans in too many areas.

21. Over the next ten years we can envisage that:

    - AI adoption will likely continue to accelerate due to increasing data availability, computing power, multimodality (text, audio, image, video), and the use of autonomous AI agents;
    - Fintech firms will likely continue to be at the fore in AI adoption due to their agility and tech-driven models;

    - further tech giants will likely enter the insurance/ general financial sector and compete with incumbent/ traditional players;

- AI-driven investment tools will enhance personalised investment planning and portfolio optimisation;

- financial service firms will likely adopt AI-driven Regulatory Technology (RegTech), enabling better compliance, automated reporting and real-time risk identification.

Question 1.1b: Are Fintech firms better suited to adopting AI?

22. In the Fintech industry, many startup firms have a focus on software development. Fintech firms may therefore be better-suited to adopting AI, where they have strong technical coding expertise. Building, maintaining and improving AI tools/ models requires technically-proficient software engineering skills. Furthermore, Fintech firms are often quite agile in nature.

23. Fintech firms often operate using a cloud-based approach. This can be easier to integrate with AI systems compared with traditional financial institutions using legacy systems, that are often difficult to retire.

Question 1.1c: What percentage of trading is driven by algorithms/artificial intelligence?

We do not have any points to raise in answer to this question.

Question 1.2: Are financial services adopting AI at a faster rate than other sectors in the economy?

24. As explained in the Treasury Committee's background context to this inquiry, Bank of England figures published recently show that 75% of (financial services) firms are already using AI, with a further 10% planning to use it over the next three years. It is plausible that financial service firms have adopted AI at a greater rate than other sectors, not least due to the structured data-driven nature of the industry but also due to competitive pressures. However, the existence of legacy systems may slow down the pace of adopting AI for some firms within the sector.

Question 2: To what extent can AI improve productivity in financial services?

Question 2.1: Where are the best use cases for AI? Which particular transactions may benefit from AI?

25. In theory, AI has significant potential to improve productivity within the financial services sector, subject to the limitations considered elsewhere in this response. Possible AI applications are quite extensive. Current and prospective examples include:

    - automating time-consuming, routine, 'low risk' tasks (e.g. timesheets, meeting notes, model documentation), thus freeing-up individuals for more value-adding/ impactful work;

    - automating repetitive tasks (e.g. claims processing, underwriting, data cleansing and assembly, compliance checks, reserving, claims analytics, experience studies);

    - AI-powered text or voice customer chatbots to attend to basic customer inquiries, perhaps using human oversight for more complex or material queries;

    - fraud and anomaly detection in financial transactions;

    - more efficient customer service by better identifying customer needs, including '24/7' customer service, when the customer wants it;

- enhancing efficiency in the delivery of regulated financial advice, through better compliance controls and streamlined processes;
- development of personalised user-interfaces with products and services;
- improved understanding of product protection gaps, and identification of cheaper products, more accessible to a wider population;
- AI-powered investment tools helping individuals better engage with their long-term savings and pension investments;
- model coding allowing firms to replace legacy systems and large numbers of spreadsheets with more efficient, better-governed systems;
- more refined risk assessment in insurance pricing (already quite embedded), extending to capital modelling and reserving;
- large organisations can use AI to improve consistency across their internal reporting, and adherence to group standards;
- AI-driven regulatory solutions automating contracts and analysing regulatory text;
- upskilling employees by using GenAI as a tutor, including on AI content.

Question 2.2: What are the key barriers to adoption of AI in financial services?

26. There is a range of potential barriers impeding the adoption of AI in financial services. Key barriers include:

    - **cost** - AI transformation projects can often be expensive, with costs arising in relation to consultancy advice implementation, IT infrastructure and staff training;
    - **workforce training and adaptation** - AI integration necessitates upskilling financial professionals; which requires investment in terms of time as well as cost;
    - **data quality and availability** - AI models require high-quality, unbiased data if to be used with confidence;
    - **regulatory uncertainty** - firms may be cautious to embark on AI development due to unclear AI governance frameworks;
        - concern that regulators may be lagging behind developments in AI technology;
    - **regulatory burden** - it is important that any AI regulatory framework balances proportionate risk management with encouragement of innovation;
        - a further potential regulatory burden would be conflicting or duplicating AI regulatory requirements;
    - **culture** - some firms may be less innovative than others. For example, some insurers have lost ground to Fintech firms;
        - fear of the unknown, including such as cyber threats, potential data leaks by giving own data away to an external AI-provider;
        - another fear is of ethical issues, owing to misunderstanding of the nature of such issues and how AI interacts with them;

- **market consolidation** - legacy portfolios and processes need to be integrated before improving them using AI;
    - non-cloud-based systems typically take longer to integrate AI technology;
    - the insurance sector is often still heavily reliant on Excel spreadsheets;
- **explainability and interpretability concerns -** 'Black-box' AI models lack inherent transparency, making regulatory approval difficult *(see section 4.1 of Reference [1]);*
- **variability of output** - GenAI models outputs are by nature variable and from time to time include hallucinations;
    - significant effort can be spent on techniques like Retrieval Augmented Generation (RAG), prompt engineering and on appropriate safeguards and screens to prevent inappropriate output, and to 'ground' the output.

Question 2.3: Are there areas where the financial services should be adopting GenAI with little or no risk?

27. It would be difficult to eliminate risk completely in adopting AI, particularly GenAI. However, GenAI is likely to be lower risk when used to automate simple tasks (such as generating meeting minutes, model documentation or summarised information).

Question 2.4: Are there likely to be job losses arising from AI in financial services and if so, where?

28. It is quite likely that AI will lead to considerable displacement of roles within the financial services sector. AI has significant potential to replace administrative and manual processing jobs. However, there could be scope for individuals to reskill and focus on alternative, value-adding roles, including in interpreting AI-generated outputs.

29. There is also significant potential for the rise of AI to create new roles in model governance, risk management and AI ethics - subject to appropriate training being provided. Data and model requirements around interpretability, explainability and transparency will require highly qualified multi-disciplinary experts with a high-level understanding of all aspects of AI (e.g. algorithms, processes, results and governance).

Question 2.5: Is the UK's financial sector well-placed to take advantage of AI in financial services compared to other countries?

30. The UK is well-placed to be a leader in responsible AI adoption, provided that regulation balances innovation with robust consumer protections and ethical guardrails in place. The UK's Fintech ecosystem and globally recognised AI research/ expertise should also help give the UK a comparative advantage.

31. The development of open finance (the potential offered by extending open banking more widely across financial services) is also relevant to the UK's aspirations to be a global leader in AI. AI has significant potential to 'turbo charge' the expansion of open finance and build on the success of open banking. The need to harness technology and support innovation is particularly important given consumers' growing digital capability in recent years.

Question 3: What are the risks to financial stability arising from AI and how can they be mitigated?

Question 3.1: Does AI increase the risks relating to cybersecurity?

32. AI can increase both a firm and its client's exposure to cyber risk. AI-driven cyberattacks can exploit vulnerabilities at scale, and amplify potential impacts through the interconnectedness of systems and

devices. This could be mitigated by upgrading cyber resilience standards, enhancing AI-driven cybersecurity measures and appropriate training to users of AI tools.

33. There are also cyber risks arising from using open-source AI models which can have hidden vulnerabilities or malicious code.

Question 3.2: What are the risks around third-party dependencies, model complexity, and embedded or 'hidden' models?

34. Financial service firms need to consider the risks associated with relying on third party AI providers, including risks relating to security and compliance. Given the application of AI tools to a firm's client/ wider data, appropriate data governance will be key.

35. Where firms buy AI tools from an external provider for use in their business, they may not have full clarity over the complexity/ data/ parameterisation et al. This potentially increases third party dependency concerns. Furthermore, not all models produce readily explainable results.

36. Using third party AI tools also runs the risk that the tool provider 'harvests' the client firm's data. Robust and clearly understood contracts will be key mitigant here.

37. Reliance on a small number of AI providers (such as large tech firms) can introduce systemic risks. Mitigations to such systemic risk could include performing independent AI audits and regular reviews to prevent hidden biases and systemic risks. AI models could also be subjected to stress tests and explainability requirements.

Question 3.3: How significant are the risks of GenAI hallucination and herding behaviour?

38. GenAI hallucination - i.e. where an AI model produces outputs that are not grounded in reality, despite seeming coherent or convincing - is a significant concern, despite generative AI models increasing in sophistication. Hallucination can arise where data inputs are incomplete or inaccurate, highlighting the need for appropriate data controls and governance.

39. GenAI hallucination could reduce the benefit of any AI application where a result that is 'largely correct' is not good enough - this is certainly the case in a financial services context. Apparent efficiencies in using AI could be offset where GenAI outputs are having to be interrogated - with workarounds necessary - to counteract hallucinatory impacts[4].

40. More generally, financial models trained on similar data may lead to market instability and herding behaviours. Developments using Reinforcement Learning from Human Feedback (RLHF) aim to overcome such issues; RLHF is a machine learning technique which is trained using direct human feedback.

Question 3.4: Are the risks of having AI tools used in the financial sector concentrated in the hands of a few large tech companies? To what extent do the AI financial market tools rely on social media outlets? E.g. trading algorithms using social media posts?

41. The creation of suitable bespoke AI/Large Language Models would likely be beyond even the largest of financial service firms, so there is then a need to use external providers. Fewer providers of AI tools would mean fewer algorithms on the market, which increases the risk of herding behaviour. This could be mitigated by regulatory approval and monitoring of models used in financial services, and potentially intervention to help ensure there is a wider choice of models. However, such intervention needs to reflect the global nature of AI and the environment in which large tech firms operate.

[4] There is further detail on this issue within The Deep Research problem — Benedict Evans.

42. A counterpoint is that while there may currently be (say) five external AI model providers, this exposure is less concentrated than the current reliance on (Microsoft) for Excel operating systems and base programmes.

43. There is an emerging trend for larger insurers to move away from publicly available AI (such as ChatGPT) to more bespoke solutions, trained on their own data. For now, bespoke AI solutions are less affordable for smaller insurers.

44. AI trading algorithms leveraging social media sentiment risk amplifying volatility driven by misinformation. Using social media posts for product pricing could raise questions around ethics, fairness and discrimination against protected characteristics.

Question 4: What are the benefits and risks to consumers arising from AI, particularly for vulnerable consumers?

Question 4.1: What benefits to consumers might arise from using AI in financial services? For example, could AI be used to identify and provide greater assistance to vulnerable consumers?

45. AI's potential upside is wide-ranging. We highlight the following benefits, already being realised:

    - greater accuracy in risk assessment due to greater availability of data. For some consumers assessed as having a 'lower risk' profile, this could mean lower insurance premiums;
        - the potential here needs however to be balanced against retaining an 'appropriate' degree of pooling of risk;
        - what is appropriate pooling of risk is a key societal question;
    - insurance and wider financial service products becoming more of an holistic service, e.g. by motivating people to take more exercise or eat more healthily via fitness trackers, with the incentive of a reducing insurance premium;
    - greater data cleansing and hence data quality/ transparency. If understanding of data improves with better data quality, this could help reduce bias in data, which should ultimate benefit consumers;
    - greater affordability and accessibility of financial advice by making processes more efficient, personalised and compliance-driven;
    - AI-powered tools could help consumers engage more effectively with their long-term pension savings and investments;
        - for example, personalized financial planning driven by AI insights (including account management, expense tracking and credit score management);
    - AI-powered tools could also help detect financial fraud.

46. As technology advances, it is plausible that the degree/ value of beneficial impact may slow down. An AI algorithm may be akin to a 'gold mine' at outset, but successive developments may offer refinement rather than revolution.

47. Vulnerable consumers need not necessarily miss out on the potential benefits listed above. However, AI could also offer some specific benefits to vulnerable customers. For example:

    - AI could be used to help identify vulnerabilities by analysing data and identifying patterns on a real-time basis. This could help improve customer service and compliance;

- it should however be recognised when reliance on AI is appropriate here;
    - flagging potential vulnerability is helpful;
    - subsequently relying on a chatbot to engage with the vulnerable customer may be less appropriate;
    - voice recognition software can be counter-productive in the context of vulnerable customers. Where such a customer has an 'atypical' voice, this might erroneously flag fraudulent activity;

- AI could also improve engagement with consumers, depending on their vulnerability;
    - for example, by using more accessible language, or engagement suited to specific neuro-diverse conditions[5];

- although a general benefit of AI is early detection of fraud and financial exploitation (as above), this may be particularly important in relation to vulnerable consumers if they are more susceptible to exploitation.

Question 4.2a: What is the risk of AI increasing embedded bias?

48. AI could potentially be associated with discriminatory decisions, including in respect of individuals with vulnerabilities or with protected characteristics. This could be due to historic, inaccurate or unrepresentative datasets: flawed 'training' data could reinforce discriminatory practices. However, it is important to note that insurers have been familiar with this issue, and managing it for some decades; it is an issue that pre-dates the rise of AI.

49. Such discrimination could lead to consumer detriment generally, and not just in relation to individuals with vulnerabilities or protected characteristics. Even if such bias were inadvertent, it does not lessen any consumer harm.

50. Consumers could be impacted by automated decisions they do not fully understand or cannot readily challenge.

51. One potential mitigant of bias in models/ data would be for firms to undertake robust testing (including comparison with alternative models). There may however be a limit on how much testing can be accomplished every time a model is updated. The development of proportionate industry best practice could be useful here.

52. Mitigating bias often requires using protected attributes in the mitigation process*, (see Reference [2]).* This data may not always be collected by firms and exploring potential solutions to address this challenge would be beneficial.

53. In relation to AI-driven sales processes, robust controls will be necessary to reduce the risk of mis-selling of financial products, particularly to vulnerable consumers.

[5] The Group for Autism, Insurance, Investment and Neurodiversity (GAIN) has highlighted the benefits of AI for disabled and neurodiverse individuals. GAIN have worked with a contact automatization company. AI can read contracts to those who are visually impaired. For those with autism, AI can be used to narrow down specific questions and to repeat and remind them of where they are in the consumer product journey.

Dr. Vina Theodorakopoulou, a Supervisory Board member and Individual Member Lead at GAIN, wrote a 'Think' article for the IFoA on valuing neurodiversity in the workplace which touched on AI. Her piece promoted the benefits of AI and advocated for ensuring professionals developed a deep understanding of AI technologies and their potential impacts in order to promote the ethical use of AI. She concluded that industry-wide efforts to promote ethical AI and accountability should be inclusive, starting from the individual employee and extending to leadership and organisational policies.

54. More generally, wider risks to consumers arising from the application of AI to financial services could include:

    - an increase in financial exclusion. This is a potential downside of the greater accuracy in risk assessment listed in the benefits above;
        - if an AI-driven risk assessment led to certain consumers being regarded as 'high risk', it could lead to expensive or unaffordable financial service products, increasing financial exclusion;
    - modelling risk: an AI model so complex that it becomes opaque to model users/ owners. This then impacts consumers in relation to the explainability of decisions made by the model;
    - firms use AI outside their 'zone of competence' and inadvertently open themselves up to a range of unintended consequences;
        - this is plausible given the rate of technological progress in AI, or where there is a dependency on external parties in procuring AI infrastructure;
        - this risk is relevant to consumers if there is an unintended adverse impact on them.

Question 4.2b: Is AI likely to be more biased than humans?

55. There is a risk of AI replicating existing biases to achieve the commercial objectives assigned. AI may also be more biased through indirect discrimination where it is able to derive a protected characteristic from other features, for example using post code as a proxy for ethnicity, height as a proxy for gender or determining gender from driving behaviour *(see section 3.1. of Reference [1]*)

56. Care is required in any attempts to correct bias, as it could potentially backfire[6].

57. Conversely, AI tools could potentially help identify, and call out, bias in a less subjective way, and more quickly than if attempted by humans.

Question 4.3: What data sharing would be needed to make AI more effective in financial services, and will there be a need for legislative change to achieve that?

58. Increased use of AI requires robust data security to protect customer information, to address data privacy concerns arising from both financial service firms and their customers.

59. Supporting Federated Learning techniques would be helpful. Federated Learning is an approach to train AI models whilst maintaining data privacy. Large and cleansed datasets needed to train AI models are largely available at industry-level. Insurers are generally unwilling to share their data with other firms (for commercial and also data privacy reasons), and this can stifle innovation, as researchers and emerging firms do not have real data to validate new models. The IFoA's *Machine Learning and Reserving in GI Working Party* has been developing a technique Federated Learning which allows insurers to pool together and use their collective data for training larger Machine Learning models, without actually sharing the data.

Question 4.4: Are there any current or future concerns around data protection and AI in financial services?

60. A number of current concerns which may become more pressing as AI becomes ever-embedded include:

[6] See recent experience with Google's image generator (Why Google's 'woke' AI problem won't be an easy fix - BBC News)

- consumers may not be fully aware of the type and extent of personal data used in product pricing processes;
- AI may be used to launch more sophisticated cyberattacks;
- data retention - data required to back AI-powered systems must be backed by clear data governance policies;
    - care should be taken to ensure that data is deleted securely and that it is not retained longer than regulation requires.

Question 4.5: What sort of safeguards need to be in place to protect customer data and prevent bias?

61. A comprehensive data governance framework with corresponding controls is necessary to protect consumer data, and also reduce the risk of bias. Such a framework could include:
    - an 'Ethics by Design' approach, incorporating ethical principles into the model/ data developmental processes;
    - clear accountability and mandatory bias testing for AI models;
        - testing for bias may be more challenging for firms where they use proprietary third-party tools, compared to using in-house (non AI) models;
    - requirement for transparency in AI-driven decisions including explainability to consumers;
    - minimum standards and disclosure requirements in communicating AI decisions to clients;
    - clear consumer redress mechanisms for AI-driven decisions;
    - robust compliance measures to prevent mis-selling and scams targeting vulnerable consumers.

Question 5: How can Government and financial regulators strike the right balance between seizing the opportunities of AI but at the same time protecting consumers and mitigating against any threats to financial stability?

Question 5.1: Are new regulations needed or do existing regulations need to be modified because of AI?

62. We favour a broad principles-based, rather than rules-based approach to AI regulation. A key challenge is simply the (great) pace of evolution of AI technology. It is plausible that increasingly fewer people will be familiar with the latest technology as it emerges. The pace of evolution also means that a dynamic approach to AI regulation is necessary, although taking a principles-based approach should be better able to keep up with the pace of AI development.

63. In our view the UK's existing conduct and prudential regulatory framework is sufficiently broad that it could be adapted to encompass AI development - if a principles-based approach is adopted. Such an approach would also be key in any associated regulatory definition of AI: an overly specific definition would run the risk of becoming quickly out of date; it could also create potential loopholes.

64. One necessary task in developing the UK's current regulatory framework to be fit for purpose for AI will be to consider potential and material gaps in AI regulation. An advantage to developing the existing framework is that it should help avoid conflicting or duplicate regulatory requirements.

65. There is a balance to be struck in terms of specific AI-regulation, against adjustment of existing regulations to an AI-world. It is important to focus on how AI tools are used in different contexts, for

example in relation to regulation relating to consumer fairness or financial inclusion. Principles-based and outcomes-focussed regulation may be more appropriate.

66. It is also important that any AI regulatory framework balances proportionate management of risk with encouraging innovation. Building and maintaining firm and consumer trust in AI is crucial.

67. The regulatory sandbox framework has a role to play in facilitating innovation in a responsible manner.

68. It would be unfortunate if AI regulation had the effect of placing some practitioners at an advantage over others.

69. A further key point is that AI and hence AI regulation are global in nature. It would be unfortunate if disproportionate AI regulation put the UK at a disadvantage; it is important there is adherence to global standards to ensure a level playing field.

70. It could be argued that globally, we are all on a journey in developing proportionate AI regulation. Furthermore, it should be recognised that current geopolitical headwinds may have a particular bearing on global AI/ AI regulation in the short term.

71. Financial service firm governance frameworks are also relevant to AI regulation. For many firms, we would expect their governance structures could be readily adapted to include AI. However, we would also expect firms - particularly within their second and third line of review teams - to ensure their AI governance were adequate before any material extension in their use of AI. Smaller firms may benefit from greater support in ensuring their governance arrangements were appropriate.

72. Understanding the application of AI - including ethical issues and its impact on the firm's customers - is important in avoiding conduct risk and other unintended consequences of firms' use of AI. Moreover, data governance is an important foundation for future modelling activity, supporting trust in the use of AI.

73. A firm's AI governance may be augmented through the requirement for relevant members of a firm's staff to have appropriate knowledge, skills and training when embarking on AI projects. Such training should include an ethical dimension.

Question 5.2: Will Government and regulators need additional information, resources or expertise to help monitor, support and regulate, AI implementation in financial services?

74. The actuarial skillset - including critical thinking, judgement, risk management and understanding model limitations - is particularly relevant to the development of AI, not only within the financial services sector, but also right across society. We believe the IFoA, and actuaries more generally have an important role to play in the debate on the future evolution and regulation of AI.

75. Collaboration between relevant professions and disciplines will also be key, as AI has a broad reach both within individual firms and across their respective sectors. Given the UK's strength in AI research, multilateral engagement spanning academia, industry, Government and regulators has a role to play. In addition, collaboration will need to have an international dimension, both to learn from other jurisdictions and to avoid regulatory misalignment on AI.

76. A final point is worth reiterating. Although it is important that Government and regulators consider responsible use of AI, this should be balanced with encouraging, rather than stifling innovation. Minimising consumer detriment and ensuring financial services products are aligned to consumers' needs are important, but fostering innovation in AI is also in the wider public interest.

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References

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