Navigating AI and the cloud

1. AI and cloud trends and opportunities

1.1 The fast uptake of AI in finance

A regulator noted that the widespread adoption of cloud computing and artificial intelligence (AI) is leading to a growing reliance on data analysis in the financial services sector. This is evident across various financial activities such as credit scoring, financial advice, investment in securities, and risk analysis. These technologies are used by financial institutions to streamline and automate operational processes, thereby improving efficiency, and increasingly to support front office functions.

The regulator added that AI is no longer a source of hype but an integral part of daily life and business operations. AI is fast-evolving and many use cases are starting to appear. It is encouraging also that the potential of AI is starting to be recognised in society. Only three years ago, university students were prohibited from using generative AI (Gen AI) tools; now they are taught how to maximize the use of these tools. Firms and supervisors must deal with AI in a way that enhances competitiveness and efficiency while not creating harm. AI presents significant opportunities, as highlighted in the Draghi report, but there is still much to learn about managing and harnessing its potential.

An industry representative emphasised that the rapid adoption of AI in finance is unique. Firms are now using it on a daily basis. There was fear of an 'AI winter' after the initial hype, but there continues to be strong demand for taking advantage of ongoing AI developments.

Another industry speaker agreed that the pace of AI development has accelerated significantly. While some firms have been working on AI applications for more than two decades, the broader industry is also reaching a turning point. This shift is driven by the combination of secure, cost effective and scalable computing power, advanced algorithms and mathematical breakthroughs, allowing for results that seemed unimaginable just a few years ago. As the initial hype around AI begins to fade, attention is moving toward the practical implementation and real-world applications of AI tools likely to leverage the transformative potential of AI.

A public representative stressed that there needs to be a stronger emphasis on the practical implementation of AI systems in Europe, beyond the current focus on AI regulation and R&D to leverage AI's full potential in real world applications.

1.2 AI's transformative potential in finance and the wider economy

An industry speaker outlined four key benefits of AI and machine learning (ML) in the financial sector. First, AI is significantly enhancing the fight against financial fraud. For instance, with AI tools a major payment industry company is able to detect three times more fraudulent transactions while reducing its false positive rate tenfold. Secondly, AI is accelerating analysis and decision making. Hedge funds are using AI solutions to analyse a wide variety of data from different domains to improve the quality and speed of decision making. Thirdly, insurance companies are using AI systems to aggregate different types of risk data, including geospatial, environmental, and financial risk data, to improve their risk assessments. Finally, AI is enhancing productivity and the personalisation of customer service.

Another industry representative stated AI is not the solution to a single problem; it is a technology that has the potential to bring value across organisations in a wide range of areas as diverse as cybersecurity, risk management, legal services and data rights management. AI tools can be used to drive internal efficiency and interoperability, improve customer service and interaction and enhance the quality of products by providing broader data context. For example, customer support can be enhanced by deploying AI-powered chat services, which ensure more consistent responses and better service quality.

A strategic and structured approach must therefore be taken to AI, starting with an identification of the specific problems that AI can solve for the markets and activities in which firms operate. These may include for example accessibility (AI can for instance solve language barriers); the ability to spot relationships and trends in data that traditional analytical methods miss (e.g. to detect anomalies or unusual patterns); and enhanced timelines (ensuring that the right people receive the right information at the right time).

A Central Bank official agreed that AI has transformative potential. The biggest impact might be outside the financial sector, but the sector will feel the effects. The use of AI could bring a wide range of tangible benefits and opportunities, such as better prediction of settlement failures in money markets and improved cyber defence to fight increasingly sophisticated cyber attacks, also using AI.

A public representative commented that the potential impact of AI on competitiveness must also be considered, beyond productivity and customer-related improvements. The Draghi report highlights that increased computational capacity provides a unique opportunity to lower the cost of products and services supported by AI. Europe has the necessary computing infrastructure to lead in AI, with three of the 10 largest supercomputers in the world and world class computing infrastructure in several member states. This could be a competitive advantage in the deployment of AI in the financial sector. In this regard, the European Commission's proposal to open up computing capacity to start ups, SMEs and the broader AI community is very welcome.

2. Challenges and risks related to AI implementation

2.1 Challenges in AI implementation

An industry speaker pointed out that the challenges tied to Gen AI must be tackled to avoid repeating the issues that arose with machine learning (ML) during its hype in 2017. ML models struggled to outperform traditional statistical models that had been refined over decades, leading to disappointment within the financial sector. To prevent similar outcomes with Gen AI, some key implementation challenges need to be addressed. These include concerns about data protection and the need for investment in educating people about the stochastic nature of Gen AI and how to mitigate its 'black box' risks. Moreover, Gen AI solutions should be designed to ensure explainability and to prevent misuse. Large institutions will also need to implement strong control mechanisms to manage potential risks, such as employees inadvertently sharing data outside the organization when using Gen AI systems in a private capacity. Despite these challenges, the potential of Gen AI is vast, and avoiding the technology is not an option. While there may be some eventual disappointment, this is a typical phase in any innovation cycle.

A public representative outlined six key challenges related to AI implementation. First, data security and data protection are crucial. Second, consumer trust is vital, which is linked to digital literacy. It is still difficult for most users and regulators to really understand AI and to distinguish between AI and ML systems. If citizens have insufficient digital skills, the AI strategies implemented by the industry and the regulatory efforts of the authorities will not be effective. Third, there is a need for transparency and accountability. Fourth is ensuring fairness and avoiding discriminatory patterns. Lastly, AI should supplement human expertise rather than replace it. AI is a tool, not a replacement for human experience.

2.2 Risks associated with AI use

A Central Bank official noted that the risks posed by AI can be divided into firm specific (microprudential) risks and broader systemic (macroprudential) risks. At a firm specific level, data bias and quality are key concerns, as they can lead to inaccurate or flawed outputs or 'hallucinations' if not properly managed. Other sources of firm specific risk include AI model explainability, governance, accountability and the increased reliance of financial institutions on critical third parties (CTPs) such as cloud providers. There are also major risks related to cyber attacks, market manipulation and collusion.

At a macroprudential level, there are four main areas of concern. First, there is interconnectedness risk, which occurs when multiple players are vulnerable to common weaknesses in the same AI models. Secondly, there is incentive alignment risk, which occurs when one firm's actions encourage herding behaviour among other players, leading to increased risk exposure to common risks. Thirdly, there is 'outcome ignorance' risk, which happens when firms do not understand the broader impacts and interactions of AI driven decisions on the ecosystem, leading to unintended consequences such as correlated trading decisions. Lastly, there is 'rational exploitation' risk in which players seek to exploit imbalances in the financial sector such as arbitrage opportunities, which may potentially amplify risks or shocks across the system. These macro level risks cannot be understood simply by adding up the AI related risks of individual firms, but require a system or market-wide approach to risks.

A public representative added that AI has the potential to boost productivity and competitiveness significantly, but it will cause harm if insufficient efforts are made to develop the necessary skills to manage and understand it effectively.

3. Progress in the implementation of AI frameworks and principles

3.1 Implementation of the European AI Act

A regulator pointed out that several European regulations have been set out to govern the use of AI and govern the data that supports it: the AI Act, the Data Act, the Digital Operational Resilience Act (DORA) and the Financial Data Access (FiDA) proposal. The implementation of the AI Act, which takes a cross sectoral and risk based approach to AI use, is underway. By the end of 2024, unacceptable AI risk will be prohibited. By September 2025, codes of practice for Gen AI systems will need to be fully operational.

EIOPA is currently working on secondary legislation and guidance to implement the AI Act in the insurance sector, which will be ready for consultation in early 2025. There is also work underway on AI application guidance at the international level led by Basel. In the financial sector, the AI Act will mainly impact high risk AI systems[1]. Lower risk AI systems will be covered by existing sectoral financial legislation such as Solvency II. This means that high risk systems used for life and health insurance will be covered by both the AI Act and Solvency II. The coordination of horizontal AI legislation with sector specific rules will require supervisors to produce guidance; concrete proposals on this subject are expected by early 2025.

A public representative welcomed the progress made under the AI Act and the Data Act. AI development needs to be secure, customer friendly and business friendly while fostering a robust data economy. The three main

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1. Two types of AI systems are considered 'high risk' in the financial sector due to their potential impact on individuals' financial well-being and the integrity of financial markets: (i) AI systems intended to be used to evaluate the creditworthiness of natural persons or establish their credit score, with the exception of those AI systems used for the purpose of detecting financial fraud; (ii) AI systems intended to be used for risk assessment and pricing in relation to natural persons in the case of life and health insurance.

priorities for European legislation are: promoting innovation and growth through clear regulations; improving efficiency to lower costs for consumers; and, most importantly, protecting consumers.

An industry representative explained that their firm's framework of responsible AI principles is guided by the regulatory requirements as well as the firm's own internal policies and best practices. These layers were combined with principles for data management and model selection to create a framework which ensures that decisions made about AI systems and models are transparent and accountable.

3.2 AI regulatory approaches in other jurisdictions and international alignment

A Central Bank official explained that the Bank of England has been engaging closely with the industry to evaluate the UK's existing regulatory framework for AI. To facilitate collaboration and exchange of knowledge between public and private sectors, an AI Public-Private Forum was established. This forum focuses on assessing the benefits, risks, and use cases of AI within the financial services industry, as well as providing insights into regulatory needs. In addition to the forum, the Bank is considering the establishment of an AI consortium, which would bring together a broader range of industry participants and experts to conduct in-depth research, discuss emerging AI technologies, and contribute to the Bank's policy-making on AI deployment.

The UK regulatory toolkit has been deemed adequate for the current uses of AI, but the more important question is about whether it is sufficient for future applications. The current toolkit includes a critical third party (CTP) regime for systemic third party suppliers, tools such as stress tests to assess resilience to cyberattacks and a set of operational resilience requirements for banks, insurers and infrastructures including impact tolerances for outages.

An industry speaker observed that there is broad agreement across jurisdictions on the core principles to apply to AI systems in terms of fairness, transparency and human oversight and the need to develop AI safety institutions to ensure the application of safety standards before deployment.[2] However, jurisdictions are approaching the regulation of AI in quite different ways. In the UK, AI governance is managed under the Senior Managers and Certification Regime (SMCR), which is a framework for improving accountability and governance within financial institutions, whereas the EU AI Act bans certain applications of AI and imposes strict rules on high risk models. In the US, states have different approaches to AI principles. Colorado's regulatory framework provides a detailed definition of fairness, while California is still debating the question of accountability for AI malfunctions. There will eventually be alignment on the ban of inacceptable practices related to AI at the international level, but divergent approaches to permitted AI systems will create frictional costs for

international firms. These inconsistencies make compliance across multiple jurisdictions expensive and hinder innovation. Greater international alignment in AI regulations is needed to reduce these frictional costs and promote a more conducive environment for innovation.

4. Further questions and policy priorities for an effective implementation of AI

4.1 Possible need for more specific AI requirements

A Central Bank official stated that determining whether the current policy tools will be sufficient to address the future challenges posed by AI requires a deeper understanding of AI. The Bank of England is working with public and private sector partners to assess key channels of risk to financial stability so that any future decisions about AI policymaking are well informed, and it is contributing to discussions in international forums accordingly. Areas that are currently being assessed include: explainability issues; the systemic risks of outcome ignorance, herding, and rational arbitrage exploitation; and clarifying how the current CTP regime, which is geared towards a small group of systemic CTPs, will work for AI tools, which in many cases rely on smaller or niche CTPs. Important issues also include the implications for cyber risk of combining AI and quantum computing towards encryption code breaking; the potentially destabilising effects of deepfakes on financial markets; and accountability for AI-based decisions where the functioning of AI tools is not fully understood. Finally, authorities will have to consider whether the current technology agnostic approach to regulation can be sustained or whether AI specific rules will be needed in the future.

A regulator agreed that it is important to decide whether regulation can remain technology agnostic with the advent of AI. With the introduction of the EU's AI Act, there is a shift towards a more technology specific regulation, which is a trend that has also been seen in the international dialogue. There is also a new AI application paper, which includes rules on outsourcing and vendor models. It remains to be seen whether more specific regulations are required to address the complexities of AI systems used by financial institutions. It will also be important to determine whether financial entities using third party AI tools should simply treat them as outsourced services or be held accountable for understanding how their output is produced.

An industry speaker noted that current discussions about AI models and architecture treat AI use as a specific activity, but in reality, AI is supporting existing financial activities. AI must be integrated into existing frameworks rather than treated separately, which requires considering the interplay between existing rules and those applying

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2. The establishment of the UK's AI Safety Institute (AISI) was one of the outcomes of the AI Safety Summit held at Bletchley Park in November 2023. The summit led to the signing of the Bletchley Declaration in which 28 countries, including the US and China, committed to international collaboration on AI safety. The AISI will act as a global hub for testing AI models and is intended to address safety concerns by evaluating AI systems before and after deployment.

to AI. There is a challenge around determining which AI driven tasks and use cases rely on traditional deterministic models and which ones should rely on newer data driven probabilistic models.

4.2 Responsible and risk based AI implementation

An industry speaker stated that the implementation of AI, like any new technology, is fundamentally a question of risk management and change management. AI must be used in an effective and safe way. Implementing 'responsible AI' should be the way forward, which means thinking about accuracy, fairness, security and privacy. Transparency will be key to this approach. This allows users to make informed and risk based decisions about which services to use. Traditional assurance models, such as those based on common criteria, cannot keep up with the rapid pace of AI model training because they involve analyzing a fully baked model at a given point in time, which may take up to a full year, when models evolve on a daily basis, as they are progressively trained. The companies developing AI systems also have a responsibility to customers and broader society. AI development should be aligned with international standards and AI assurance should be risk based and flexible rather than overly prescriptive. There are services that can mitigate the hallucinations and harmful content produced with AI. The goal is to make responsible AI easy to implement taking a risk-based approach.

Another industry representative emphasised the importance of adopting a risk based approach to AI use in the financial industry. Trust in AI systems must be ensured, particularly regarding the quality and source of data. The data and information that AI systems process and produce must be appropriately validated when systems are being designed. AI systems must be designed to provide reliable outputs. The core principles put forward in regulatory frameworks such as DORA can help to ensure that there is sufficient data integrity and governance.

A public representative suggested two areas for further regulatory work. A clearer definition of customer control is needed to ensure that consumers understand how their data is used and analysed by AI. Secondly, the introduction of consent and opt out mechanisms will allow customers to make informed decisions about the use of their data. These measures are crucial for building consumer trust. A regulator agreed on the importance of ensuring that AI systems are fair and non discriminatory and that there are checks on data quality.

4.3 Maintaining critical skills and human oversight in AI

An industry representative highlighted the need to cultivate critical thinking skills alongside the use of AI. People working in the industry will not understand how the fundamental tools and processes work if they are not trained on them and do not have experience of using them manually. This level of knowledge and skills must be maintained to allow users and supervisors to understand when AI outputs are accurate or misleading and how the output is being produced.

A regulator agreed that there is a risk of losing knowledge and skills if people rely too heavily on AI tools. There is also a need to ensure that both the EU economy and citizens benefit from AI.