Cambridge
Centre
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UNIVERSITY OF
CAMBRIDGE
Judge Business School

AI in Financial Markets: Regulatory Perspectives and Future Trends

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University of Luxembourg

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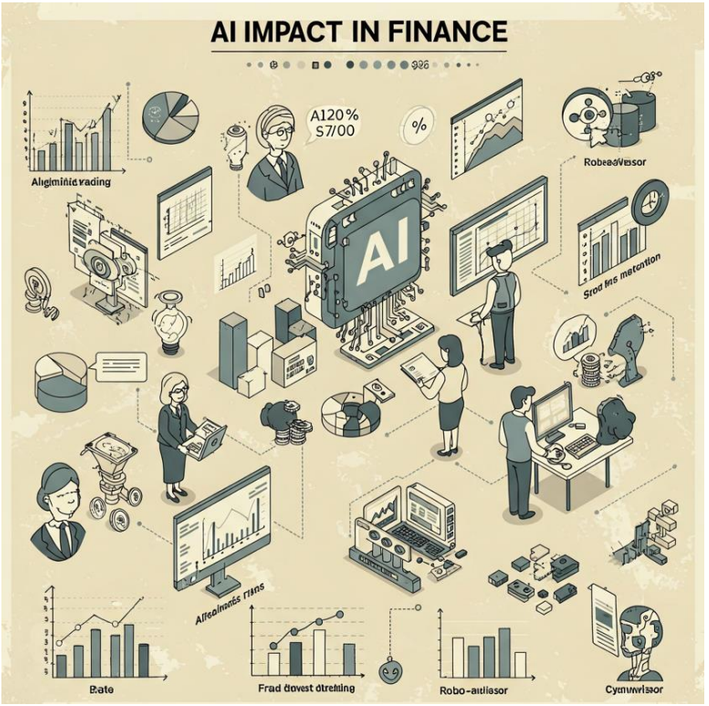
Introduction

Transformative Impact on Financial Markets

- Redefining Risk & Stability
- Potential Democratization of Financial Services
- Real-time Data Processing & Impact on Markets
- Work & Automation
- Competition, Competitiveness & BigTech
- Compliance & Regulation



Introduction

Regulatory Landscape & Future Trends

Historical Regulated Technology Trends in Financial Services – Not here for the first time!

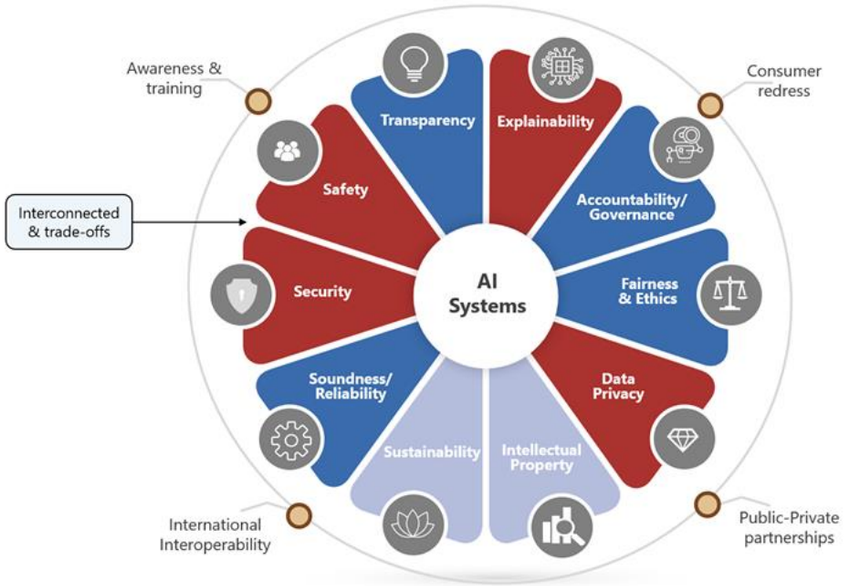
- **Electronic Trading (E-Trading)**: Regulated to ensure fairness, prevent manipulation, and manage systemic risk
- **Digitisation of Banking**: Regulations regarding data security, privacy, and record-keeping
- **ATM's and electronic funds transfer:** Regulation surrounding the secure transfer of funds, and consumer protection
- **Development of credit cards:** Regulations regarding consumer credit, and fraud prevention

Introduction

Regulatory Landscape & Future Trends

The Current Regulatory Imperative – Outcomes are key

- **Market Stability & Integrity**: Ensuring AI does not contribute to financial instability
- **Data Protection & Privacy**: Compliance with GDPR, CCPA, and other frameworks.
- **Bias & Fairness in AI Models**: Preventing discriminatory outcomes in lending and trading (eg senior manager regime)



Incoming Regulatory Trends – Constantly evolving

- **AI-Specific Regulations**: Global regulators focusing on responsible AI use & decision-making
- **Cross-Border Regulatory Coordination**: International efforts to harmonise AI regulations in finance.
- **Development of sandboxes and regulatory innovation hubs:** Test AI in a controlled environment before full-scale deployment.

Current AI Applications in Financial Services

Most promising AI use case examples.

What is the common thread?

Industry	Function	Description	Value delivered
Banking 	Sales and service	Customer service agents receive quick and comprehensive information on all aspects of products, policies and processes from a variety of sources	– Greater agent efficiency – Increased response accuracy – Quicker response time
Capital markets 	Client servicing/ investment management	Firms use AI models to create investment portfolios, offer financial assistance and provide clients with real-time insights and trading recommendations	– Enhanced client satisfaction and retention – Competitive advantage
Payments 	Fraud management and detection	Pre-emptive fraud detection includes technologies that can proactively seek and identify suspicious behaviour or anomalous events before fraudulent transactions[2]	– Improved fraud protection for customers – Enhanced customer experience by minimizing false positives
Insurance 	Claims	The automation of claims and customer document processing[3]	– Improved workflows – Greater agent efficiency – Streamlined document collection and validation
Across financial services 	Risk management and underwriting	Prediction of fraudulent transactions, more effective underwriting processing and risk scoring	– Reduced internal and external risk – Better protection of data – Improved underwriting processing times – Greater accessibility to established credit scoring and evaluation
	Technology development	Streamlining the software development life cycle, from writing code to automation testing[4] as well as understanding and decommissioning of legacy code environments	– Improved workflow and accuracy – Increased efficiency – Shorter development cycles – Reduction in technology debt

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Global Regulatory Landscape

Current state of AI regulation in financial services

- **Tech-Neutral Approach**: Most jurisdictions apply existing financial laws (e.g., risk management, consumer protection, and cybersecurity) to AI, rather than crafting entirely new AI-specific financial regulations
- **Emerging AI-Specific Regulations**: Some jurisdictions, like the EU (AI Act) and Brazil, have introduced AI-specific legal frameworks that explicitly regulate AI applications in finance
- **Current regulatory approaches:**

Industry Self-governance

• There are a range of AI ethics documents and councils that have been set up by large technology firms or affiliated organizations. E.g. Google, Microsoft, IBM

Soft Law (Including Technical Standards)

•These are non-binding country-led instruments on AI governance adopted in intergovernmental fora such as OECD, G20 and UNESCO.

Regulatory Sandboxes

•Controlled and time-bound environments for development and testing of new products and technologies, improving regulators understanding.

Hard Law

•These are country-led binding legislation establishing concrete obligations and consequences for AI development and use. This can be **Horizontal** or **Sectoral**.

Global Regulatory Landscape

Cross-Regulatory considerations

It is still evolving!

Regional comparison of regulatory approaches -

European Union (EU)

- Application of horizontal legislation without differentiation by sector
- Categorisation of AI systems into different risk levels (unacceptable, high, limited, and minimal) and imposes corresponding regulatory requirements.
- Emphasis on human rights, ethical considerations, transparency, and accountability

United States (US)

- Approach is more fragmented and market-driven, with a focus on sector-specific regulation.
- Emphasis on promoting innovation and economic growth.
- Geopolitical dynamics, between a focus on AI safety and risk versus a focus on innovation

United Kingdom (UK)

- A "pro-innovation" approach, with a focus on existing regulatory frameworks in sectoral context.
- Emphasis on principles-based regulation, giving regulators flexibility to apply them to specific sectors.
- Principles: Safety, security and robustness; Appropriate transparency and explainability; Fairness; Accountability and governance; Contestability and redress.

Asia-Pacific (APAC)

- Region has varying approaches.
- **China:** Technology-specific and aimed at controlling AI development. Emphasis on data control and algorithmic governance.
- **Japan**: Focus on collaborative governance, with active participation from industry, academia, and government. Emphasis on ethical guidelines and promoting responsible AI development.

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State of FinTech – what does the market say?

Our research is confirming the widespread role of AI, the market participants' view of the risks and the impact on the future:

Key Findings:

- AI adoption is widespread, with **80% of fintechs using it across multiple domains**. The main reason for AI adoption is to enhance customer experience, with **91% of fintechs having either implemented or have future planning.**

- Hence, **83% of fintechs citing AI improved the customer experience and 49% indicating the benefits are significant.** Furthermore, **AI adoption is largely drove profitability in fintechs**. This effect was felt more in AEs than EMDEs.

- **A significant majority of fintechs (between 70% and 85%) considered all risks associated with AI adoption in finance to be moderate to very high. Data breach and privacy concerns ranked highest**, highlight the growing threat of AI-driven fraud. The trend was consistent across regions.

- Despite challenges, **AI is seen as the top industry driver (74%) for the next five years.**

Future Evolution and Emerging Trends

AI Agents & Autonomous Systems

- **What**: Algorithms that can learn and act independently—applied in trading, robo-advisory, etc.
- **Opportunities**: Increases efficiency, scalability, and continuous market operations
- **Risks**: Autonomous decision-making could amplify market volatility if agents behave in unforeseen ways and cause consumer harm

Federated Learning & Privacy-Preserving AI

- **What**: Training machine learning models across multiple decentralized servers or devices holding local data, thus avoiding raw data pooling.
- **Opportunities**: Preserves sensitive financial/customer data while leveraging broader, collective insights
- **Risks**: Requires robust encryption and consistent data governance to prevent inadvertent data leakage or manipulation

Quantum Machine Learning

- **What**: Combination of quantum computing with machine learning algorithms to potentially solve complex problems faster than classical computers.
- **Opportunities**: Advanced simulation and data processing potentially offering more advanced insights and findings
- **Risks**: Technology maturity, competition dynamics and similar risks to AI developments

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Conclusions

AI in financial markets is evolving rapidly with region-specific regulatory responses

Common threads include safety, fairness, and transparency in AI adoption

There is an ambition for convergent global standards over the long term, open questions whether that will happen

AI is widely adopted in fintechs, enhancing customer experience and profitability, but also raising concerns about systematic risks and consumer impact

<u>AI is a horizontal technology and will require a cross-regulatory, joint response, both domestically and internationally.</u>