International organisations leading the way in artificial intelligence – the next frontier for capital markets

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Digitalisation and artificial intelligence (AI) have shifted from pilots to production across finance. Electronic and increasingly automated trading, cloud-native infrastructure, and machine learning are rewiring how liquidity forms, risks are priced, and operations scale. For public institutions and international financial institutions, this shift is not merely about adopting new tools – it is about preserving market integrity and trust as automation expands and humans increasingly supervise, rather than perform, many workflows. Regulatory momentum, including on risk-based frameworks and model governance standards, is catalysing improved data foundations, auditable AI lifecycles, and stronger controls: the preconditions for safe, impactful innovation.

Impact of AI on financial markets already significant

European Stability Mechanism views

Given its involvement with market players, the European Stability Mechanism (ESM) has observed the impact of AI on capital markets along several dimensions, including market functioning, data-driven decision-making, and operational efficiency.

Electronic trading, increasingly coupled with AI, has improved market functioning by supporting such processes as order routing, high-frequency operations, and short-term price prediction. In the market for sovereign and supranational bonds, electronic transactions have risen markedly in recent years. For instance, the electronic trading share in ESM and European Financial Stability Facility bonds has increased to 60% from around 40% in terms of traded volumes and to 80% from around 55% in terms of number of executed trades.[1]

Recent studies show that AI also helps inform decision making and improve efficiency. In portfolio management, the European Securities and Markets Authority (ESMA) highlighted the benefit of using AI to enhance market intelligence by analysing unstructured data, including earnings calls, news, and social media to help detect sentiment shifts, idiosyncratic risks, and event-driven opportunities earlier than with traditional methods.[2]

AI also presents significant opportunities to improve operational efficiency by automating tasks related to trade execution, post-trade processes, and compliance. The European

Central Bank has estimated that AI may reduce execution costs by 20%–30%. AI can also enhance anti-money laundering and know your customer screening, lowering costs while enabling scalability.

At the same time, the growing use of AI introduces a number of risks for capital markets. These include the potential amplification of market volatility through procyclical or correlated trading strategies, or reduced transparency and explainability of investment decisions. Cybersecurity and operational vulnerabilities may also increase as reliance on complex digital infrastructures deepens.

World Bank Group views

The World Bank Group (WBG) Treasury realises efficiencies through the deployment of AI in four areas, three as a frequent issuer in capital markets and one as an investor.

First, AI has helped streamline the collection, standardisation, and reporting of data used for the World Bank's Impact Reports. Second, AI is being used to identify and target investors whose investment guidelines allow for the purchase of certain types of issuances. Third, an AI tool (SHASTRA) helps the World Bank digitise data from dealer term sheets to create a digital copy to use for automating trade booking. Finally, AI is used to extract data from issuer bond documents to validate data procured from third-party data providers. Errors detected through this tool (ASTRA) are already enhancing investment returns by reducing potential overdraft costs.

All four tools were developed in-house within six to nine months, and all leveraging tools are already available to the teams. This demonstrates both the power of AI and the flexibility it offers. As an international organisation with strong governance and procurement policies, it would have typically taken the World Bank several months just to review and procure these types of tools from outside vendors. These innovations have not only reduced costs but also empowered World Bank's teams to focus on higher-value activities.

The road ahead

The coming two years will bring faster markets, smarter operations, and tighter oversight, alongside new risks.

AI is expected to significantly accelerate trading of securities, market speed, and potentially volatility as algorithmic and generative AI-driven strategies become more prevalent.

At the same time, AI will reshape investment and portfolio management, with asset managers using it to analyse unstructured data, enhance forecasting accuracy, and automate research workflows.

Capital market operations, from bond issuance to post-trade processes, will increasingly rely on AI-enabled automation and growing adoption of distributed ledger technologies, [3] supporting more efficient issuance and settlement processes.

All these changes are unfolding under a rapidly tightening regulatory framework, with the European Union's AI Act and related initiatives pushing firms to strengthen oversight, data governance, and explainability of their AI systems.

Innovation in practice

Solutions from the ESM

A representative milestone in the ESM's shift towards AI is marked by its recent joint research initiative with the University of Luxembourg on the application of advanced AI techniques to address critical challenges. The initiative consists of three projects that aim to harness AI to improve the efficiency, accuracy, and quality of the ESM's bond issuance process.

The improved bond issuance project seeks to automate key steps in the bond issuance process to make execution smoother and more efficient.

The market intelligence project will help retrieve and summarise information from regular reporting and accumulated data, namely market research and trading knowledge, to provide faster and more insightful market commentary.

The causal methods project will investigate methods that could potentially identify drivers of market movements.

AI is also modernising the ESM's internal financial practices. Through the deployment of AI models on an internal cloud infrastructure across the institution, the ESM is streamlining workflows, reducing manual effort, and enabling staff to focus on higher value analytical and strategic tasks. AI enhances deliverable quality through data-driven insights and helps democratise access to complex economic and market data – for example through experimentation with a data layer chatbot designed to simplify internal data retrieval and analysis.

The ESM also built an AI tool, "Frankie", named after the dog of the most senior staff member, that acts as an extra team member assessing the requests of banks' proposals and recommendations on the next bond transactions. It allowed the ESM to process large quantities of data and give recommendations. But, it also failed at times to replicate human intelligence, like understanding non-traditional market operations.

Within the ESM's Chief Financial Officer department, AI such as GitHub Copilot is used to support coding and development in various programming languages such as Python. This has had huge success and generated time savings.

Finally, the ESM has been a strong proponent of the wholesale digital euro and working together with the Eurosystem on future financial transactions under the new digital euro infrastructures.

Solutions from the WBG Treasury

The WBG Treasury is using AI across treasury functions to improve compliance monitoring and institutional knowledge management. AI-based tools transform dense client investment agreements into structured, searchable information, making it faster and more consistent to verify obligations, limits, and mandates. Agentic AI is also being explored through internal copilots and conversational tools that make policies, market insights, and operational guidance more accessible.

A defining feature of the WBG Treasury's approach is its commitment to keeping humans firmly in the loop. Early experience confirms that while AI excels at processing large volumes of information and identifying patterns, context and judgment remain essential, particularly in high-stakes financial environments. AI outputs are treated as inputs for decisions, not decisions themselves: reviewed, questioned, and refined by experienced professionals, with accountability remaining clearly with people.

This philosophy is brought to life through Project Promissa,[4] a distributed ledger technology for managing formal promissory written commitments by governments to provide funding to multilateral development banks. Such promissory notes have long been managed through paper-based processes. By deploying such a distributed ledger technology tool, the WBG Treasury is reimagining how these commitments are issued, recorded, and tracked in a dematerialised and tokenised manner, while preserving the legal safeguards, governance standards, and fiduciary discipline that underpin global development finance.

Two institutions on the cusp

Taken together, the ESM and the WBG Treasury demonstrate how mission-driven institutions can turn AI from an abstract concept into durable market impact: modernising issuance, deepening market intelligence, strengthening controls, and building digital infrastructure that supports transparency and trust. Their collective experience shows that thoughtful, governed innovation can help reshape financial ecosystems better suited to an increasingly digitised and automated future.

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Footnotes

[1] ESM, “Electronic trading – a boost to ESM bond market resilience, 25 November 2024, internal ESM data based on secondary trading observed by primary dealers

[2] ESMA, “Artificial intelligence in EU investment funds: adoption, strategies and portfolio exposures”, 25 February 2025

[3] **Improving Operational Efficiencies through Artificial Intelligence in Capital Markets**

[4] **Project Promissa - Digitizing Development Promises**