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Fintech Task Force
AI Working Group
The International Organization of Securities Commissions (IOSCO)
28006 Madrid
Spain

CFA Institute's Public Comment re: IOSCO – Artificial Intelligence in Capital Markets: Use Cases, Risks, and Challenges (CR/01/2025)

Dear Fintech Task Force – AI Working Group,

CFA Institute[1] is writing this public response to the above-mentioned IOSCO Consultation Report.[2] CFA Institute speaks on behalf of its members and advocates for investor protection, market integrity, and professionalism, before standard setters, regulatory authorities, and legislative bodies worldwide. We focus on issues affecting the profession of financial analysis and investment management, education and competencies for investment professionals, and on issues of fairness, transparency, and accountability of global financial markets.

We welcome the consultation's focus on developing a shared understanding among members of the core issues, risks, and challenges that the use of complex artificial intelligence (AI) technologies pose to IOSCO's core objectives – namely, investor protection, market integrity, and financial stability. We believe that this shared understanding is foundational to creating a harmonized, global approach to AI regulation in our industry. We applaud the decision of the Fintech Task Force to make the AI Working Group (AIWG) a dedicated working group in 2024 given the importance for regulators and the industry of keeping abreast of current and prospective uses of AI in financial products and services.

Executive Summary

This Consultation is noteworthy in its comprehensive assessment of the implications of the various uses of AI technologies for market integrity and investor protection. We appreciate the opportunity to provide feedback on this important document.

CFA Institute supports the creation and adoption of rules and regulatory standards that improve market structure, transparency, and fairness for all investors with the intent to expand

[1] **About CFA Institute**. CFA Institute is the global association of investment professionals that sets the standard for professional excellence and credentials. The organization is a champion of ethical behavior in investment markets and a respected source of knowledge in the global financial community. Our aim is to create an environment where investors' interests come first, markets function at their best, and economics grow. There are almost 200,000 CFA charterholders worldwide in more than 160 markets. CFA Institute has nine offices worldwide and over 160 loca l societies. In the U.S., it has more than 84,000 members and 51 societies. For more information, visit https://www.cfainstitute.org/ or follow us on LinkedIn.

[2] The Board of the International Organization of Securities Commissions, Artificial Intelligence in Capital Markets: Use Cases, Risks, and Challenges Consultation Report.(March 2025), available at CR/01/2025 Artificial Intelligence in Capital Markets: Use Cases, Risks, and Challenges

investment industry professionalism. CFA Institute Research and Policy Center (RPC)[3] transforms research insights into actions that strengthen markets, advance ethics, and improve investor outcomes for the ultimate benefit of society. The RPC harnesses CFA Institute expertise along with a diverse, cross-disciplinary community of subject matter experts to conduct cutting-edge research and advance the profession's understanding of the latest developments in data analytics, technology, and automation.[4]

CFA Institute publication "Creating Value from Big Data in the Investment Management Process"[5] used a multimethodological approach[6] to assess the key risks, challenges, and opportunities that the use of AI and big data technologies presented to the investment industry. In a related project, the CFA Institute Automation Ahead series[7] provides practical, worked examples of how some of these technologies can be used to automate repetitive tasks and enhance investment processes. These publications are part of RPC's continuing research on digital transformation in the investment industry.[8] Thus, the perspectives and insights contained in this Comment Letter are provided against the backdrop of rigorous and sustained research on AI use in the investment management process.

Much of our research align with the risks, issues, and challenges related to AI use cited by respondents in the IOSCO Member/SRO and AMCC surveys and outlined in the Consultation. For example, compliance, data privacy, and data leakage – all cited by participants in our 2024 study – are covered in the section on "Malicious Uses" in the Consultation. Similarly, AI/Generative AI models not being explainable, the shortage of relevant skills, and data quality were found to be key concerns to CFA Institute study participants and were also covered in the sections on "AI Models and Data Considerations" and "Interactions between Humans and AI" of the IOSCO report.

We seek to add value in those areas where our research extends the findings of the IOSCO report or introduces additional considerations not covered by IOSCO. Accordingly, this

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[3] **About the Research and Policy Center**. CFA Institute Research and Policy Center brings together CFA Institute expertise along with a diverse, cross-disciplinary community of subject matter experts working collaboratively to address complex problems. It is informed by the perspective of practitioners and the convening power, impartiality, and credibility of CFA Institute, whose mission is to lead the investment profession globally by promoting the highest standards of ethics, education, and professional excellence for the ultimate benefit of society. For more information, visit https://rpc.cfainstitute.org/en/.

Please visit https://rpc.cfainstitute.org/ for publications and supplementary materials.

[4] In addition to the above-mentioned technological focus, the RPC's work covers three other thematic areas, namely: strengthening capital market resilience, providing new insights into the future of the investment profession, and advancing the industry's thinking on sustainability challenges.

[5] CFA Institute "Creating Value from Big Data in the Investment Management Process: A Workflow Analysis" (13 January 2025), https://rpc.cfainstitute.org/research/reports/2025/creating-value-from-big-data-in-the-investment-management-process.

[6] From February to April 2024, CFA conducted a cross-sectional global survey of CFA Institute members and a series of roundtable sessions that drew international panels of C-suite executives, industry practitioners, and regulators.

[7] CFA Institute publications related to automation in the investment industry are available on the Research and Policy Center (RPC) site: https://rpc.cfainstitute.org/research/the-automation-ahead-content-series.

[8] In recent years, CFA Institute has published several reports that consider big data and AI in the investment industry. For example: "Investment Professional of the Future" (13 May 2019), https://rpc.cfainstitute.org/research/surveys/investment-professional-of-the-future discussed key roles and skills for future investment teams against the backdrop of technological transformation;

"AI Pioneers in Investment Management" (30 Sep 2019), https://rpc.cfainstitute.org/research/reports/ai-pioneers-in-investment-management described how some investment organizations were incorporating artificial intelligence and big data into their investment processes; and

"Future State of the Investment Industry" (06 September 2023), https://rpc.cfainstitute.org/research/reports/2023/future-state-of-the-investment-industry outlines the transformative potential of AI and big data technologies.

Comment Letter focuses on three of the broad risk areas identified through surveys of IOSCO and AMCC members, namely:

i. AI models and data considerations;
ii. Human-AI interactions; and
iii. AI, financial stability and systemic risk.

AI models and data considerations

We concur with the broad conclusions of the Consultation on this topic. We take the opportunity to share our perspectives on model opacity and explainability, as well as an adjacent topic that was not covered in the IOSCO Report – digital finance.

- **Model Opacity and Explainability**

  Our findings and those of IOSCO underscore the difficulty of explaining complex AI decisions. For instance, our research shows that the complexity and opacity of AI models ("black box" effect) to be second biggest organizational risk and governance issue, after data privacy protection.[9] Many investment professionals see model explainability as essential to ensuring accurate and reliable AI models, given the importance of these models to a wide range of functionalities, including business development, portfolio construction, financial modeling, and risk management. Likewise, IOSCO notes that. deep learning models (LLMs) are often so complex that their outputs cannot be easily interpreted or explained. We agree with the Consultation Report that improving transparency – or at least managing the risks from opaque models – is essential to protect investors and maintain accountability.

  However, we believe that the articulation of these risks in the Consultation Report is too narrowly focused on LLMs, as the problem of AI model complexity is fundamental to all deep learning models.[10] CFA Institute upcoming publication on AI explainability[11], which builds on earlier work[12]. is designed to help finance and investment professionals navigate real world ethical challenges arising from the use of multiple AI and big data technologies. We seek also to stimulate discussion among our core audiences – practitioners, c-suite executives, policymakers/regulators – around effective ways to augment the collaboration between human and machine and embed the human-in-the-loop principle in the design of AI systems.

- **Data Quality, Bias, and Fairness**

  IOSCO's report identifies data bias (non-representative or skewed datasets) as a key risk that can lead to unfair or discriminatory outcomes for investors. Similarly, our research flags data quality issues as a major challenge to AI adoption. We agree that if AI systems are trained on biased or low-quality data, they can produce biased recommendations or decisions, potentially harming certain investor groups or favoring

[9] CFA Institute "Creating Value from Big Data in the Investment Management Process: A Workflow Analysis" (13 January 2025), https://rpc.cfainstitute.org/research/reports/2025/creating-value-from-big-data-in-the-investment-management-process.

[10] Some of the layers in the deep learning models are hidden, which is where the computational processing takes place. The greater the number of hidden layers, the greater the computer's ability to process larger and more complex sets of data.
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[12] CFA Institute, "Ethics and Artificial Intelligence in Investment Management: A Framework for Professionals" (14 October 2022), https://rpc.cfainstitute.org/research/reports/2022/ethics-and-artificial-intelligence-in-investment-management-a-framework-for-professionals.

certain products inappropriately. Ensuring greater data diversity and integrity may help to prevent the perpetuation of biases in financial services.

- **Digital finance**

  The risks and challenges related to digital finance – specifically Distributed Ledger Technology (DLT) and tokenization – has not been covered in the IOSCO Consultation Report. While this may reflect the nascent nature of this technology group, we believe that a risk assessment of AI technologies in our industry should include this group.

  CFA Institute adopted a progressive and investor-centric approach to the research on digital finance.[13] For example, our publication, "An Investment Perspective on Tokenization Part I"[14] is the first in a two-part series of publications that evaluates tokenization in investment management. We find that, while tokenization can potentially enhance portfolio management efficiency, the development of DLT and tokenization present significant challenges and risks that must be addressed by regulators and industry participants. Challenges include technical complexity barriers, security issues, and investor protection considerations. DLT-specific risks, such as fraud and malicious attacks, can significantly impact the general population, who may lack the technical knowledge to fully appreciate these risk s. Broader-based financial education on DLT and tokenization can support regulatory initiatives aimed at investor protection and market integrity.

  Additionally, we find inconsistencies across jurisdictions in how regulators address tokenized assets. The borderless nature of blockchains allows investors to invest in assets outside their jurisdiction or client categorisation, posing another challenge for regulators. To address these issues, we recommend the creation of a standardized policy framework – one that requires collaboration between various jurisdictions and regulatory bodies. Furthermore, we believe that a successful implementation of tokenization requires a balanced tradeoff between fostering innovation and ensuring adequate consumer protection measures. To this end, Part II of our series will cover the development of regulatory structures around tokenized assets in various jurisdictions, including the United States, the United Kingdom, the EU, Singapore, and Hong Kong SAR.

Interactions between humans and AI

We concur with the broad conclusions of the Consultation on this topic. We take the opportunity to share our perspectives on talent scarcity, technology oversight, .and evolving regulatory frameworks.

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[13] The following is a retrospective of the research we have built on the subject at CFA Institute during the last two years: "Cryptoassets: Beyond the Hype" (04 January 2023), https://rpc.cfainstitute.org/research/reports/2023/cryptoassets-beyond-the-hype, presented a general assessment of the crypto asset sector and delved into three of the most critical issues we had identified at the time: valuation, fiduciary duty, and custody;

"CFA Institute Global Survey of Central Bank Digital Currencies" (25 July 2023), https://rpc.cfainstitute.org/research/surveys/2023/survey-central-bank-digital-currencies, analyzed the development of central bank digital currencies and expressed the views of the CFA Institute membership on key considerations related to these instruments' risks and design features; and

"Valuation of Cryptoassets: A Guide for Investment Professionals" (28 November 2023), https://rpc.cfainstitute.org/research/reports/2023/valuation-cryptoassets, provided a deep-dive analysis of the most prevalent quantitative methods for valuing digital instruments and processes based on distributed ledger technology.

[14] CFA Institute "An Investment Perspective on Tokenization Part I: A Primer on the Use of Distributed Ledger Technology (DLT) to Tokenize Real-World and Financial Assets (January 2025), https://rpc.cfainstitute.org/sites/default/files/docs/research-reports/tokenization_part-i_online-1.pdf.

- **Insufficient oversight and talent scarcity**

  We agree with IOSCO's position that firms using AI should bolster their internal governance to manage model risks. In addition, IOSCO cautions that if risk management and governance is unable to keep pace with rapid AI evolution, such processes may become ineffective against emerging risks. The consequences for ineffective supervision of an AI system include faulty decision-making, security breaches, and harm to investors and the market. CFA Institute's work reinforces the importance of oversight: for example, a CFA Institute Research Foundation monograph urges rigorous model validation as a critical process to ensure AI-driven investment strategies remain reliable and robust over time.[15]

  Our research and the IOSCO report identify the skills gap resulting from a shortage of AI and data experts in firms. A March 27, 2025 AI roundtable hosted by the U.S. Securities and Exchange Commission (SEC) identified the skills gap as a resourcing risk that impacted both regulators and practitioners.[16] We adopt a broader perspective on this issue. Specifically, we believe that the skills needed to effectively harness AI technologies in the finance sector are *hybrid* skills – professionals with sufficient expertise in technology and broader, systemic market issues. Our perspective is bolstered by a consensus of participants in our 2024 roundtables (executives, practitioners, and regulators) who expressed concern that this under-resourcing of appropriately skilled professionals inhibited investment firms from fully and safely adopting AI. Furthermore regulatory roundtable participants deemed the skills gap the biggest impediment to supervisory technology (SupTech).[17]

  A solution to this pervasive problem may lie in the creation of T-shaped teams, which combine investment expertise, innovation, and technology application across investment strategies or processes.[18] Although the structure of the future investment team is still evolving, there is movement toward hybrid skillsets, as well as enhanced collaboration as discussed in CFA Institute publication "The Future of Work in Investment Management."[19]

- **Technology overreliance (technology and automation bias)**

  A shared theme of the IOSCO report and our research is the danger of technology overreliance, (also known as algorithmic appreciation), where users are more likely to follow recommendations from the AI over the recommendations of a human expert. Algorithmic appreciation occurs under many decision-making conditions and across a variety of estimation and forecasting tasks (Logg, Minson, and Moore 2019), and it may lead to user overconfidence in the AI-generated output. The presence of algorithmic appreciation increases the complexity of regulatory compliance, because

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[15] CFA Institute Research Foundation "Investment Model Validation: A Guide for Practitioners" (27 June 2024), https://rpc.cfainstitute.org/research/foundation/2024/investment-model-validation

[16] U.S. Securities and Exchange Commission "SEC to Host Roundtable on Artificial Intelligence" (28 February 2025), https://www.sec.gov/newsroom/press-releases/2025-48.

[17] SupTech involves digitizing reporting and regulatory processes to achieve a more efficient and proactive monitoring of risk and compliance at financial institutions. See Dirk Broeders and Jermy Prenio, "Innovative technology in financial supervision (suptech) – the experience of early users," Bank for International Settlements (2018). https://www.bis.org/fsi/publ/insights9.pdf.

[18] For more details, see CFA Institute, "T-Shaped Teams: Organizing to Adopt AI and Big Data at Investment Firms" (Charlottesville, VA: CFA Institute, 2021). https://rpc.cfainstitute.org/-/media/documents/article/industry-research/t-shaped-teams.pdf.

[19] CFA Institute "The Future of Work in Investment Management: Skills and Learning" (July 2022). https://rpc.cfainstitute.org/research/surveys/future-of-workcontent.

regulatory supervision may have to extend beyond the individual to the technology itself.

We echo the Consultation's warning that over-reliance on AI outputs can lead to investor and market harm if humans abdicate too much control or fail to intervene when the AI errs. Our research also aligns with respect to the role of human judgment in decision-making – financial professionals should remain "in the loop" to monitor AI-driven processes and correct or override them as needed. This alignment reflects a view that AI should augment, not replace, human decision-making in sensitive financial contexts.
Once again, CFA Institute's position on this topic may slightly diverge on the extent of the framing of this risk. Page 43 of the Consultation report states that: "*targeted use of GenAI tools could lead users to develop a personalized "relationship" with the AI tool and make users more likely to follow advice or disclose personal information.*" However, algorithmic appreciation is not restricted to generative AI technologies but apply also to the broader category of AI applications.

The concept pre-dates the advent of modern generative AI and is more likely linked to the tendency of humans to have greater confidence in the expertise of the machine over that of a human expert.[20] As such, one of the solutions could be to train users (at all levels) to understand the capabilities and limitations of the technologies.

- **Evolving regulatory frameworks**

  IOSCO observes that regulatory responses to AI in finance are still evolving, with some authorities trying to apply existing rules and others crafting bespoke AI-specific regulations. We agree that as AI technologies advance, regulatory frameworks may need to evolve in tandem to cover new risks. Discussions with policy experts and practitioners highlight that a lack of international coherence in AI regulation is a challenge, with different jurisdictions taking different approaches creating uncertainty for global firms. Greater coordination or consistency in AI policies will be important to ensure market integrity across borders.

  We also advocate for separate policy and regulatory approaches to address risks relevant to the sophisticated (professional) investor versus a non-professional investor (retail clients and individuals). This issue may become increasingly relevant as the focus of AI scams appears to have shifted from corporations to individuals.[21]

AI, financial stability and systemic risk

The IOSCO report touches on key issues relating the risks of AI to the financial industry. This includes the systems effect of AI where multiple financial institutions using AI in their investment decisions could lead to potential "herding" effects, increasing concentration risk in specific asset classes and points of market failure. We also consider the systems effect in upcoming research on a piece of complex systems, but the further consideration by the IOSCO report on "collusion" or "scheming" of AI systems is not covered in our report and represents a further avenue of potential future research. Also, the report highlights key points regarding the quality of data used and the biases of AI models impacting financial stability. This is important for generative AI but also when using any other AI and machine learning methods.

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[20] See Logg, Jennifer M., Julia A. Minson, and Don A. Moore. "Algorithm appreciation: People prefer algorithmic to human judgment." Organizational Behavior and Human Decision Processes 151 (2019): 90-103.
[21] This issue was raised during a panel discussion at the U.S. Securities and Exchange Commission's Artificial Intelligence roundtable held on March 27, 2025.

The IOSCO report provides details on advanced AI techniques, particularly for Large Language Models (LLMs), where prompt engineering and Retrieval-Augmented Generation (RAG) can be used to tailor and improve LLM performance on specific financial tasks at a low computational cost. Such methods are covered in the CFA Institute's Automation Ahead series.[22] However, the report does not acknowledge that these tools may not be fully utilised by the whole financial system. In practice, only a few firms can fully use LLMs even with these advanced tuning methods to develop robust investment strategies as proprietary datasets are required for back-testing, advanced AI teams need to be hired to implement the latest models and sufficient capital should always be available to manage the substantial costs of maintaining and updating these systems. The growing inequality in AI capabilities across institutions may lead to an 80/20 situation (the "Pareto Principle"), where 80% of the significant benefits under AI will only be concentrated in 20% of institutions. Therefore, regulators must manage the potential fragmentation in the financial system, which can have repercussions for the real economy.

Another aspect in the report that could be elaborated on is the chosen objective for which AI is used for decision-making. Within the financial system, even if objectives are clearly defined, there exists a conflict between the goals of different institutions; for instance, maintaining financial stability as the objective for one regulator (typically, prudential regulation) may not align with the fiduciary duties enforced for firms to protect the financial interests of their clients and shareholders by another regulator (typically, conduct-focused securities markets regulation).

Using an example by Danielsson et al. (2023)[23] with Battleship, from a macro perspective, the AI system might conclude that the optimal tactic to win is to sacrifice all but one of its ships to maximize the manoeuvrability of the remaining ship. However, while this approach may be theoretically sound for the AI, a human would account for the micro constraints and not allow widespread failure, even if the surviving entities become more resilient by objective. The macro-micro consideration in financial regulation is an important discussion that regulators are having across many areas of finance, e.g., the regulation of non-bank financial institutions, specifically investment funds and the consequences for imposing liquidity management tools in a fire-sales event is research we are working on at CFA Institute. Hence, AI used to inform policy decisions needs a clear objective and constraints, where constraints for the case of regulators should account for the objectives of other regulators that conflict. If constraints are not defined, there can be a high divergence in regulation assisted with AI that can potentially increase financial instability.

The report mentions synthetic data, using generative AI methods where large and diverse datasets can be quickly produced. We believe this is an important issue at CFA Institute, where we are providing a research piece on the landscape of synthetic data, and particularly the use of Generative-Adversarial Networks (GANs) to generate synthetic data sets. Such methods can be highly advantageous for regulators. As in the case of stress testing, synthetic data can represent different scenarios which financial institutions are exposed to, and these results can help inform future regulation. While some methods for generating synthetic data have been established, e.g., Monte Carlo methods and Bootstrapping,[24] there is a high risk that should be acknowledged with using generative AI methods because of the high uncertainty using "black box" models where outputs are probabilistic. If the probability for which the synthetic data generated cannot be quantified, then regulators are at risk of constructing scenarios that could justify unnecessary liquidity and capital constraints,

[22] https://rpc.cfainstitute.org/research/the-automation-ahead-content-series
[23] Danielsson, J. and Uthemann, A., 2023. On the use of artificial intelligence in financial regulations and the impact on financial stability. *arXiv preprint arXiv:2310.11293*.
[24] https://rpc.cfainstitute.org/sites/default/files/-/media/documents/article/rf-brief/investment-model-validation.pdf

increasing the financial risk for individual institutions. Hence, synthetic data or models which use synthetic data must also be compared with non-synthetic data-based methodologies. This should be adopted as standard practice such that synthetic data used for policy decisions are always grounded.

For future steps, the IOSCO report discusses the importance of education in AI and providing the tools that investors and practitioners can use. At CFA Institute, we agree on helping to educate and provide materials for the financial industry, leading to the creation of the CFA Research and Policy Center (RPC) Labs.[25] This platform adopts the "think-and-do-tank" of the CFA Institute RPC, providing a space where practitioners can keep up with the latest research and implement these AI and data science tools in their workflows. RPC labs will be open source with data and code, contributing to transparent and verifiable research for the financial industry. We would be happy to demonstrate its applications to the Fintech Task Force and/or the AI Working Group, if useful.

Conclusion

Given the fast-moving AI landscape, CFA Institute agrees with IOSCO's sentiment that collaboration among industry stakeholders will be essential. The sentiment aligns with our policy perspective that industry and regulators should work together to share insights and formulate best practices. We look forward to the second phase of the IOSCO report, which we hope will include additional tools and/or recommendations to guide members on AI oversight.

In the meantime, we would like to offer IOSCO and the FinTech Task Force AI Working Group any assistance you may feel useful. We are a member of the Affiliated Member Consultative Committee (AMCC) and, in such capacity, we could bring to these discussions elements of our research as and where appropriate or deemed purposeful. Our team of research analysts focusing on technology developments as well as related policy implications is growing and we would be interested of course in sharing our findings with IOSCO and the AMCC members.

Sincerely,

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[25] https://rpc.cfainstitute.org/themes/technology/rpclabs