
Artificial Intelligence (AI) in the Financial Markets: Potential Benefits, Major Risks, and Regulators Trying to Keep Up

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Introduction: Rapid Evolution, Potential Benefits, and Huge Risks of Abuse and Instability.

- The field of artificial intelligence (“AI”) is exploding. As the headlines proclaim, the race is on in the private sector to be the most successful AI company, with huge amounts of money driving the rush to be the leader in the field. The push to incorporate AI into banking and other financial markets is equally intense. Spending by financial services companies on AI now exceeds spending on AI in all other industries, even tech.¹ Wall Street megabanks are the drivers of this growth. For example, the five largest investment banks filed 94 percent of AI-related patents between 2017 and 2021, published two-thirds of the AI research papers, and accounted for half of AI investments.² Experts expect that financial institutions’ spending on AI will continue to expand, doubling from 2023 to 2027 and topping \$400 billion.³
- Sophisticated computer programs are playing an increasingly prominent role in finance. Some applications have already become old news. Examples include high-frequency trading algorithms used by large proprietary trading firms to profit at the expense of other investors lacking the same trade execution technology or access to market data. So-called robo-advisers have also been in play for some time, claiming to offer computer-generated, low-cost, and high-quality investment advice with a minimum of conflicts of interest.⁴ As these

¹ See Justin Kloczko, *Hallucinating Risk*, CONSUMER WATCHDOG 2 (Jan. 2024), <https://consumerwatchdog.org/wp-content/uploads/2024/01/Hallucinating-Risk.pdf>.

² See *The Evident AI Innovation Report*, EVIDENT INSIGHTS 2 (July 2023), https://evidentinsights.com/reports/evident_ai_innovation_report?id=eae8795d70.

³ Jeff Kearns, *AI’s Reverberations Across Finance*, INTERNATIONAL MONETARY FUND (Dec. 2023), <https://www.imf.org/en/Publications/fandd/issues/2023/12/AI-reverberations-across-finance-Kearns>.

⁴ See generally Mihir A. Desai, *What the Finance Industry Tells Us About the Future of AI*, HARV. BUS. REV. (Aug. 9, 2023), <https://hbr.org/2023/08/what-the-finance-industry-tells-us-about-the-future-of-ai>; William Magnuson, *Artificial*

AI technologies are refined and new ones are developed, AI advocates highlight the potential benefits, including greater efficiency in financial services, lower costs, and better financial outcomes for clients.

- However, along with utopian promises of faster, more efficient, and lower cost processes that will supposedly benefit consumers, companies, and the entire economy loom the increasingly intense risks of fraud, discrimination, market crashes, and illegal activity that is increasingly difficult to identify and control with the use of AI. AI applications in finance present serious risks to investors, markets, and financial stability by exacerbating existing channels of instability and creating new ones.⁵ They are powerful tools for predatory exploitation, fraud, and other illegal conduct. Moreover, the ability of AI to augment or replace advisers and other fiduciaries who are seeking to serve the best interests of clients remains unclear. And among the most threatening scenarios are market crashes and data breaches on a massive scale.
- The dangers promise to intensify. The industry's goal now is to improve the power, sophistication, and speed of AI systems to the point that they can, in essence, think for themselves. This in turn has generated concerns that AI may ultimately, unless carefully controlled and regulated, pose existential threats to a wide range of human activities and institutions, including those in finance. As SEC Chair Gensler recently warned, with this new generation of technology, if widely shared across markets and jurisdictions, comes the threat of a massive financial crisis in the years ahead.⁶ In fact, given the extraordinary power that AI is rapidly gaining, there's no question that the risks of AI will increase; the open question is whether its benefits will increase as well and outweigh the enormous risks. One thing is certain: The old Silicon Valley motto of “move fast and break things” simply cannot apply here. The stakes are simply far too high, especially as AI proliferates in the financial sector and the financial markets.
- Regulators have begun taking a few initial steps to address the use of AI in finance, largely amounting to policy statements, guidance, and consumer advisories (as described in the appendix below). In a few areas, including the SEC's proposal on predictive data analytics, substantive standards are emerging. But much more needs to be done much more quickly to

Financial Intelligence, 10 HARV. BUS. L. REV. 337, 341 (2020); Tom C.W. Lin, *The New Financial Industry*, 65 ALA. L. REV. 567, 567 (2014).

⁵ See, e.g., Jon Danielsson & Andreas Uthemann, *How AI Can Undermine Financial Stability*, CENTRE FOR ECONOMIC AND POLICY RESEARCH (Jan. 22, 2024), <https://cepr.org/voxeu/columns/how-ai-can-undermine-financial-stability>; Alena Brynjolfsson & Erik Brynjolfsson, *The Intelligence Paradox: AI May Make Markets Less Rational*, WALL ST. J. (Jan. 31, 2024), <https://www.wsj.com/articles/the-intelligence-paradox-ai-may-make-markets-less-rational-8fadffeb>; Ghiath Shabsigh & El Bachir Boukherouaa, *Generative Artificial Intelligence in Finance: Risk Considerations*, International Monetary Fund (Aug. 2023), <https://www.imf.org/en/Publications/fintech-notes/issues/2023/08/18/Generative-Artificial-Intelligence-in-Finance-Risk-Considerations-537570>.

⁶ Declan Harty & Steven Overly, *Gensler's warning: Unchecked AI could spark future financial meltdown*, POL. PRO (Mar. 19, 2024).

keep pace with AI's evolution so that investors; all financial markets, from securities to banking and derivatives; and overall financial stability are protected. AI's growth trajectory and penetration into all corners of the financial industry demands a new approach to regulation, one that effectively incorporates agile and forward-looking regulatory frameworks and a focus on consumer protection, ethics, transparency, accountability, and financial stability.⁷

The Bottom Line: Stronger Regulation, Enhanced Accountability, and Additional Resources.

- Without strong, forward-looking regulation in place, the dangers and abuses associated with AI are likely to outweigh the gains it can provide. As a general matter, the interventions needed to reduce the risks of AI “are likely quite different than the traditional interventions in finance.”⁸
- Affirmative standards and requirements must be in place, ranging from mandatory pre-launch testing, evaluation, and monitoring of the technology by firms to transparency with regulators and clients when problems or incidents arise. Disclosure alone regarding the risks of AI will not suffice, as disclosure has proven to be wholly inadequate by itself to protect investors, especially where highly technical issues are involved, as they will be to an unprecedented degree with AI.
- To deter abuses of AI technology by bad actors, enforcement capabilities, tools, and sanctions must be dramatically increased throughout the financial industry.
- At the same time, regulatory agencies will need substantially more resources and expertise to keep pace with the efforts of a well-funded and highly motivated private sector to develop ever more advanced AI systems, especially those with applications in finance. Setting aside the technology firms like Google and others, consider that JP Morgan (like most other large banks) is heavily investing in AI, “spending what CEO Jamie Dimon has said is ‘hundreds of millions of dollars per year’ on AI efforts across the bank.”⁹ The bank reportedly spent \$15

⁷ See, e.g., Jeff Pedowitz, *AI In Financial Services Will Require Robust, Transparent Regulation*, AM. BANKER (Dec. 12, 2023), <https://www.americanbanker.com/opinion/ai-in-financial-services-will-require-robust-transparent-regulation>; Barry Quinn, Fearghal Kearney & Abhishek Pramanick, *How Will Artificial Intelligence Affect Financial Regulation?*, ECONOMICS OBSERVATORY (Oct. 18, 2023), <https://www.economicsobservatory.com/how-will-artificial-intelligence-affect-financial-regulation>.

⁸ Magnuson, 10 HARV. BUS. L. REV. at 377.

⁹ Jeremy Kahn, *JPMorgan Chase tops first-of-its-kind ranking of A.I. progress in banking*, FORTUNE (Jan. 26, 2023), <https://fortune.com/2023/01/26/jpmorgan-chase-tops-first-of-its-kind-ranking-of-a-i-progress-in-banking/>.

billion on technology and data in 2023¹⁰ and has developed an entire research arm devoted to AI,¹¹ creating synthetic data sets to use for modeling.

What Is AI?

- While definitions vary somewhat depending on the context or the specific agency addressing AI, President Biden’s October 2023 executive order,¹² which sets forth the Administration’s core principles for dealing with AI, captures the essential elements of the term:

[A] machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments.

- The term covers existing systems that can process vast amounts of data extremely rapidly and execute tasks based on that analysis. It also encompasses the next generation of technology enabling these programs to think and exercise judgment as humans do. For example, the SEC incorporated this concept in the definition that it set forth in its proposal on the challenges posed by predictive data analytics: “the capability of a machine to imitate intelligent human behavior.”¹³ The Financial Stability Board (“FSB”) defines AI as the theory and development of computer systems able to perform tasks that traditionally have required human intelligence.¹⁴
- Thus, the consensus view is that artificial intelligence is a broad field, comprised of several components, including machine learning, neural networks, deep learning, and natural language processing.

Potential Benefits

- AI applications at financial firms fall into several basic categories, including:
 - internal operations—AI allows firms to improve their portfolio and balance sheet management, compliance, underwriting, fraud detection, and client identification;

¹⁰ Catherine Leffert, *JPMorgan Chase aims to create \$1.5 billion in value with AI by year-end*, AM. BANKER (May 30, 2023), <https://www.americanbanker.com/news/jpmorgan-chase-aims-to-create-1-5-billion-in-value-with-ai-by-year-end>.

¹¹ JP Morgan, *ARTIFICIAL INTELLIGENCE RESEARCH* (last visited Mar. 19, 2024), <https://www.jpmorgan.com/technology/artificial-intelligence>.

¹² Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (Oct. 30, 2023), <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/>.

¹³ Conflicts of Interest Associated with the Use of Predictive Data Analytics by Broker-Dealers and Investment Advisers (July 26, 2023), <https://www.sec.gov/files/rules/proposed/2023/34-97990.pdf>.

¹⁴ Financial Stability Board, *Artificial Intelligence and Machine Learning In Financial Services* (Nov. 1, 2017), <https://www.fsb.org/wp-content/uploads/P011117.pdf>.

- trading enhancements—AI allows firms to use market analysis for proprietary trading, algorithmic trading, data analysis, portfolio management, predictive analytics, and market sentiment analysis, as well as trading recommendations and client advice; and
- actual client interactions—AI allows firms to provide customer service around the clock and can offer customers improved fraud prevention and cybersecurity.¹⁵
- The use of AI technologies has the potential to benefit investors, consumers, and financial markets with:
 - greater efficiency, lower cost, and improved access to customized financial services;
 - enhanced compliance and risk management;
 - improved financial performance and outcomes, with some positing a future where properly programmed AI offers the ideal financial guide, providing fully-informed, completely objective financial advice.
- Examples - Securities
 - Lower costs and better customer service: AI might lead to firms having more efficient operations, which can lead to cost savings for investors and customers.¹⁶ For example, robo-advisers provide automated investment advice with the prospect of charging lower fees. Chatbots and virtual assistants provide automated responses to customer inquiries.¹⁷
 - Enhanced access to customized research, products, and services: AI should be able to analyze customers' investing behavior and past inquiries and provide them with hopefully useful customized content. This content could include research on specific investment products or asset classes, which can be delivered to customers via email, the firm's website, or mobile apps. AI also allows securities firms to develop real-time, holistic customer profiles.¹⁸ Thus, AI has the potential to allow firms to do a better job of identifying the investment opportunities that match an investor's preferences, profile, and risk tolerances.¹⁹
 - Greater investment returns, trade quality, and compliance efforts: AI can identify trading patterns and predict price movements of specific products or asset classes. Investment advisers incorporate these investment strategies into their client

¹⁵ Matthew Finio & Amanda Downie, *What is AI in finance?*, IBM (Dec. 8, 2023), <https://www.ibm.com/topics/artificial-intelligence-finance>.

¹⁶ Conflicts of Interest Associated with the Use of Predictive Data Analytics by Broker-Dealers and Investment Advisers, *supra* note 13.

¹⁷ Monica Hovsepien, *The Benefits and Risks of AI in Financial Services*, FORBES (Dec. 26, 2023), <https://www.forbes.com/sites/forbesfinancecouncil/2023/12/26/the-benefits-and-risks-of-ai-in-financial-services/?sh=4a29c6ce965b>.

¹⁸ FINRA, ARTIFICIAL INTELLIGENCE (AI) IN THE SECURITIES INDUSTRY: A REPORT FROM THE FINANCIAL INDUSTRY REGULATORY AUTHORITY (June 2020), <https://www.finra.org/sites/default/files/2020-06/ai-report-061020.pdf>.

¹⁹ Conflicts of Interest Associated with the Use of Predictive Data Analytics by Broker-Dealers and Investment Advisers, *supra* note 13.

portfolios to try to generate better returns. Firms also use machine learning for order routing, price optimization, best execution, and optimal allocation of block trades.²⁰ And AI allows firms to have better compliance and risk-management functions.²¹

- Examples - Banking

- Automating tasks: Algorithmic trading, payment routing, client authentication, and document processing.
 - Most banks—from Wall Street megabanks to smaller community banks—employ technology to automate common tasks that previously were handled by humans. For example, JP Morgan regularly employs more than 300 AI applications, including those that process payments and move money across the globe.²² But, this activity is not limited to the megabanks; survey data from community banks reports that two thirds of respondents consider technology that enables e-signature and remote deposit capture as “extremely important” or “very important,” but unlike the megabanks, these capabilities are outsourced to a third-party by 99% of respondents.²³
- Predicting outcomes: Product recommendations, robo-advice, risk management scoring, compliance, fraud detection, customer analytics, deposit run prediction, and enhanced cybersecurity.
 - Many of the patents that the Wall Street megabanks are seeking are for use with assessing investments, analyzing securities, and predicting stock prices. For example, Goldman Sachs is seeking to patent AI that will synthesize virtually all the data a trader would need to predict stock prices and another to predict a hedging portfolio.²⁴ Similarly, Bank of America’s AI platform called Glass helps sales and trading employees filter large amounts of data to uncover market patterns and anticipate client needs.²⁵ Meanwhile, many banks use AI to monitor massive amounts of data from real time retail payments to predict fraud or reactions to economic trends to predict loan default.²⁶

²⁰ FINRA, ARTIFICIAL INTELLIGENCE (AI) IN THE SECURITIES INDUSTRY, *supra* note 18.

²¹ FINRA, ARTIFICIAL INTELLIGENCE (AI) IN THE SECURITIES INDUSTRY, *supra* note 18; Tom C.W. Lin, *Artificial Intelligence, Finance, and the Law*, 88 FORDHAM L. REV. 531, 546 (2019).

²² JP MORGAN CHASE & CO., ANNUAL REPORT 20, (2022), <https://www.jpmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/investor-relations/documents/annualreport-2022.pdf>.

²³ See, e.g., Conference of State Bank Supervisors, *2023 CSBS Annual Survey of Community Banks* 13,18 (Oct. 2023), <https://www.csbs.org/sites/default/files/2023-09/CSBS%202023%20Community%20Bank%20Survey%2010.04.2023.pdf>.

²⁴ Justin Klockzko, *supra* note 1, at 2.

²⁵ Miriam Fernández, CFA, *AI in Banking: AI Will Be An Incremental Game Changer*, S&P Global (Oct. 31, 2023), <https://www.spglobal.com/en/research-insights/featured/special-editorial/ai-in-banking-ai-will-be-an-incremental-game-changer>.

²⁶ *Id.*

- Generating products or services: Hyper personalized products and advice; chatbots for customer service; software engineering.²⁷
 - Several of the largest banks are employing large language models to provide generative AI capabilities despite the technology’s high potential for harm and tendency to “hallucinate” by presenting false information as fact. For example, JPMorgan has applied for a trademark called Index GPT that would provide financial recommendations, and a patent that would match companies with investors, while Wells Fargo is using generative AI to help decide what to disclose to regulators.²⁸
- Examples – Commodities and Derivatives
 - Risk Management in commodities trading: AI can thoroughly analyze market trends and news, enhancing predictive analytics capabilities. It can help in crafting optimized trading strategies, which is crucial in the often unpredictable commodity sectors like oil and gas. By employing AI, traders can detect and interpret complex patterns in vast datasets and real-time market information, leading to more informed and timely decisions. AI automates the scanning of textual data, identifying risk-related insights from news articles and social media, which can significantly impact commodity prices. AI in risk management not only streamlines the decision-making process but also improves the accuracy and speed of risk assessment, thus offering a strategic edge in the fast-paced commodities market.²⁹
 - Accelerated Product Innovation: AI can help develop new financial products and services rapidly, demonstrating the potential for AI to streamline product development cycles in the derivatives market.³⁰

Potential Harms

- One of the critical elements of AI that President Biden highlighted in his 2023 Executive Order is that:

AI reflects the *principles of the people who build it, the people who use it, and the data upon which it is built.*³¹
- This highlights the tension that exists between the potential for useful innovation and profit that are propelling the development of AI and the imperatives of investor protection, market

²⁷ *Id.*

²⁸ Justin Klockzko, *supra* note 1, at 2-3.

²⁹ Ali R., *AI in Commodities & Derivatives Trading* (Apr. 2, 2023), <https://www.linkedin.com/pulse/ai-commodities-derivatives-trading-ali-h-rizvi/>.

³⁰ Kirsten Hyde, *Generative AI gaining traction in derivatives markets: Panellists at FIA Expo discuss how they are using AI*, FIA (Oct. 4, 2023), <https://www.fia.org/marketvoice/articles/generative-ai-gaining-traction-derivatives-markets>.

³¹ Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence, *supra* note 12.

stability, and equal opportunity that must always be the guideposts for financial innovation. In reality, a long list of potential harms comes with AI.

- Some of these harms are not unique to AI, but the use of such technology can heighten or intensify the risk and the scope of harm. They fall into at least three categories.
 - First, some risks are **inherent to the technology**, including flawed programs, inadequate testing, incomplete or biased data inputs, deficient oversight, and insufficient data privacy protections. In addition, even sophisticated automated processes can cause or accentuate market disruptions, like those experienced during the 2010 Flash Crash, as they have historically had a limited capacity to adjust to market conditions and trends and by definition are only prepared to react to a discrete set of outcomes. To the extent that AI has the ability to vastly increase the capacity to adjust to different outcomes and apply truly sophisticated judgments and decisions in light of rapidly evolving market events, it has the potential to mitigate some of these risks. However, it is unlikely they can ever be entirely eliminated and, therefore, AI could actually generate larger and more far-reaching catastrophes than the Flash Crash.
 - Second, other risks arise from **the way AI is deployed**. These risks range from the use of AI in criminal schemes, such as sophisticated identity theft, to more subtle forms of misuse, abuse, and predation. For example, some firms use trading prompts that are described as being favorably tailored to clients based on AI analysis of their investing needs but in reality are tailored to the financial institution's desire to maximize profits at the expense of their clients.³²
 - Third, other risks are the **indirect consequences** of reliance on AI. These include labor force displacement for positions that are replaced by AI's capabilities and even environmental impacts from the use of extensive AI computing systems that have an elevated carbon footprint.
- Examples – Securities
 - Conflicted advice: Robo-advisers employ algorithms to provide investment advice, in theory matching the financial products available to the investor and the attributes of the investor using the robo-adviser. The problem is that firms may use a biased matching or ranking algorithm. The algorithm may be programmed to prioritize what is best for the firm rather than investors, including investments that allow the firm to receive more compensation than it would have had the algorithm chosen other investments.³³

³² See generally Dennis M. Kelleher, Jason Grimes, and Andres Chovil, *Securities—Democratizing Equity Markets With And Without Exploitation: Robinhood, Gamestop, Hedge Funds, Gamification, High Frequency Trading, And More*, 44 W. NEW ENG. L. REV. 51 (2022).

³³ Better Markets Comment Letter to SEC re Conflicts of Interest Associated with the Use of Predictive Data Analytics by Broker-Dealers and Investment Advisers (Oct. 10, 2023), https://bettermarkets.org/wp-content/uploads/2023/10/Better_Markets_Comment_Letter_SEC_Conflicts_of_Interest_Predictive_Analytics.pdf.

- Exploitative trading behavior: High-frequency trading firms use computer algorithms to detect imminent price moves in the market and act on those moves to reap vast profits in small increments at the expense of investors.
- Fraud: Investors are susceptible to AI-based fraud and scams. Firms may market their services to investors based on their use of AI, with claims that investors can't lose because the firm's investment strategy is backed by the use of artificial intelligence.³⁴ Firms can also use AI to create “deepfakes” to deceive investors.³⁵
- Market disruption: The use of AI may also pose challenges where trading and execution applications are designed to act autonomously. Unforeseen situations such as unusual market volatility, natural disasters, and geopolitical changes may arise and create situations where the AI model no longer makes reliable predictions, resulting in rapid and irrational price moves that destroy massive amounts of investor wealth.³⁶
- Investor manipulation and predatory conduct: AI may allow firms to prompt investors to invest in ways that are good for the firm but not for the investor. Younger investors are particularly susceptible to electronic prompts that encourage certain investing behavior.³⁷
- Examples – Banking
 - Bias: AI can incorporate biases that can lead to customer discrimination on credit decisions and financial inclusivity. Examples include interaction bias, where AI absorbs bias from the users it interacts with; latent bias, due to correlations inherent in datasets; and selection bias—which occurs when datasets over or underrepresent certain groups. It can also facilitate intentional targeting of groups most vulnerable to exploitation and tailor products, services, and messaging in a way that extract wealth from vulnerable populations.
 - Data risks: The potential exists for huge concentration of data at a few large private companies (known as critical third-party providers), increasing the potential damage from a data breach. Additionally, banks may violate customers' privacy rights by inadvertently, and without specific consent, gathering publicly available customer data for profiling and prediction. Data constraint risks occur because some internal and customer data is private and confidential. Its use to train generative AI models can therefore be risky as it may unintentionally expose data externally.

³⁴ Press Release, SEC, *SEC Charges Two Investment Advisers with Making False and Misleading Statements About Their Use of Artificial Intelligence* (Mar. 18, 2024), <https://www.sec.gov/news/press-release/2024-36>.

³⁵ FINRA, *Artificial Intelligence (AI) and Investment Fraud* (Jan. 25, 2024), <https://www.finra.org/investors/insights/artificial-intelligence-and-investment-fraud>.

³⁶ FINRA, *ARTIFICIAL INTELLIGENCE (AI) IN THE SECURITIES INDUSTRY*, *supra* note 18.

³⁷ Better Markets Comment Letter to SEC re Conflicts of Interest Associated with the Use of Predictive Data Analytics by Broker-Dealers and Investment Advisers, *supra* note 33.

- Fraud: Malicious actors can weaponize generative AI, for example by creating deep fakes to fraudulently open new accounts or generate phishing content. AI can enable voice cloning, evade image recognition and voice biometrics, and create ransomware attacks.
- Examples – Commodities and Derivatives
 - Market manipulation and stability: AI algorithms can exacerbate market volatility and lead to financial crises. Their ability to execute derivatives transactions at high speeds and volumes can cause rapid market fluctuations. The lack of understanding of interconnected market dynamics by AI algorithms could inadvertently trigger massive sell-offs or purchases, destabilizing markets.
 - Influence on commodity pricing: In the commodities market, AI has the potential to alter market dynamics unpredictably through predictive analytics based on social media sentiment analysis, which could affect and distort commodity prices.³⁸
- Examples – Broader Financial System
 - Third-party data provider challenges: While some financial companies may have the financial and technical resources to develop proprietary models or use proprietary data, others may choose to pool resources or purchase data and models from vendors. This leads to potential challenges with data sovereignty and security, especially if it is stored in the cloud and the physical data facilities are in another jurisdiction. Furthermore, when humans are no longer responsible for specific decisions such as approving a credit application or issuing investment recommendations, it may be impossible to attribute responsibility for choices (including mistakes or discriminatory actions), creating problems in the event of legal actions against financial firms.
 - Labor force disruption: AI increases the potential for accelerated job displacement for skills that are replaced by AI functionality within financial services and many other sectors. Companies must recognize the need for new skills and then implement training so that employees are able to use AI appropriately.
 - Environmental impact: AI (particularly technology that uses large-scale computer modeling programs) is highly energy-intensive and can have a direct impact on a company's carbon emissions or other pollution measures.
 - Unwarranted validation: Finally, AI gives false comfort from “a veneer of objectivity”³⁹ to AI activities: “AI not only replicates human biases, it confers on these biases a kind of scientific credibility. It makes it seem that these predictions and judgments have an objective status.”

³⁸ HedgePointGlobal, *Artificial Intelligence (AI) in Commodity Markets: What could change?* (May 22, 2023), <https://hedgepointglobal.com/blog/artificial-intelligence-ai-commodities/>.

³⁹ Christina Pazzanese, *Ethical concerns mount as AI takes bigger decision-making role in more industries*, THE HARVARD GAZETTE (Oct. 26, 2020), <https://news.harvard.edu/gazette/story/2020/10/ethical-concerns-mount-as-ai-takes-bigger-decision-making-role/>.

APPENDIX: EARLY STEPS BY FINANCIAL REGULATORS TO ADDRESS AI

- Securities
 - In August 2021, the SEC issued its “*Request for Information and Comments on Broker-Dealer and Investment Adviser Digital Engagement Practices, Related Tools and Methods, and Regulatory Considerations and Potential Approaches; Information and Comments on Investment Adviser Use of Technology to Develop and Provide Investment Advice*,” Exchange Act Release No. 92766, 2021 WL 3860242 (Aug. 27, 2021), <https://www.sec.gov/files/rules/other/2021/34-92766.pdf>.
 - On July 26, 2023, the SEC issued its proposed [Predictive Data Analytics rule](#), an important step towards eliminating conflicts of interest in technology applications that can affect investor interactions.
 - In August 2023, the SEC announced an enforcement action against the perpetrators of a pyramid scheme that duped investors by claiming that the defendants were developing a suite of computer applications using artificial intelligence, <https://www.sec.gov/litigation/litreleases/lr-25809>.
 - In March 2024, the SEC charged two investment advisers with making false and misleading statements about their use of artificial intelligence, <https://www.sec.gov/news/press-release/2024-36>.
- Banking
 - In August 2021, the [Bank for International Settlements](#) issued a report explaining that many existing financial regulations are durable and general enough to be applied in a technology-agnostic way, but it specifically goes further to emphasize that AI brings a range of unique challenges and complexities that demand a coordinated global response.
 - On June 1, 2023, six federal agencies (FRB, OCC, FDIC, CFPB, FHFA and National Credit Union Association) proposed a rule implementing [quality control standards for automated real estate valuation models](#) used by mortgage originators and secondary market issuers for valuing collateral. Better Markets commented [here](#).
 - The [October 30, 2023 Executive Order](#) required the U.S. Treasury to issue a public report on best practices for financial institutions to manage AI-specific cybersecurity risks within 150 days of the Executive Order (by March 28, 2024).
 - Despite global and national regulators highlighting the extreme risks of AI and the need for urgent action by policymakers to catch up, at the January 2024 [Responsible AI Symposium](#), leaders from the Fed, FDIC, OCC, and CFPB stated that [regulators have the tools to address AI risks](#), with existing rules and tools such as those that apply to consumer protection, third party entities, and model risks.
- Commodities and Derivatives
 - On January 25, 2023, the CFTC issued a [consumer advisory](#) about AI investing scams, reporting that fraudsters are making claims, often amplified by social media platforms, that AI-assisted investment tools can generate huge returns for investors. The CFTC is also actively exploring the development of regulations and guidance for the use of AI in its regulated markets. On January 25, 2024, it released a [request for comment](#) on the

- definition of AI, its applications—such as trading, risk management, and compliance—and its risks—such as market manipulation, fraud, and bias.
- On January 8, 2024 the CFTC’s Technology Advisory Committee convened a [public meeting](#) to discuss the White House’s Executive Order regarding AI and its implications for the derivatives sector.
 - On March 15, 2024, the Market Risk Advisory Committee’s Future of Finance subcommittee [further explored](#) the risks tied to the increased use of AI in the global derivatives markets.
 - The CFTC’s Subcommittee on Emerging and Evolving Technologies of the CFTC’s Technology Advisory Committee is expected to provide a detailed report that explains AI’s functions and its expected influence on the financial industry.
- Financial Consumer Protection
 - In May 2022, [the CFPB released a circular](#) explaining that creditors using AI “in any aspect of their credit decisions must still provide a notice that discloses the specific principal reasons for taking an adverse action.” Following up on this notice, [a September 2023 CFPB circular](#) asserts that creditors relying on AI models to make credit decisions must provide applicants subject to adverse actions with “specific” notices explaining the “principal reason(s) for the adverse action.”
 - A [June 2023 CFPB report on Chatbots in finance](#) warns financial institutions that they “risk violating legal obligations, eroding customer trust, and causing consumer harm when deploying chatbot technology.”
 - In September 2023, the CFPB issued [Guidance on Credit Denials by Lenders Using Artificial Intelligence](#).
 - Joint Initiatives
 - In April 2023, several agencies issued an [Interagency Enforcement Policy Statement on “Artificial Intelligence.”](#) This Interagency Statement was joined by the CFPB, DOJ’s Civil Rights Division, the Equal Employment Opportunity Commission, and the Federal Trade Commission, with a focus on unlawful discrimination.
 - Attendees at the international [AI Safety Summit in November 2023](#) issued a declaration recognizing the scope of AI’s infiltration into nearly every part of human’s daily life, the enormous potential it has to transform and enhance well-being, peace, and prosperity but also the significant risks that it poses to human rights, transparency, fairness, accountability, safety, ethics, bias mitigation, regulation, privacy, and data protection. Attendees agreed on a cooperative agenda to identify AI safety risks, build a shared scientific and evidence-based understanding of these risks, and sustain that understanding as capabilities continue to increase. They also agreed to build risk-based policies across countries to ensure safety in light the risks, collaborating as appropriate with activities such as developing frontier AI capabilities, appropriate evaluation metrics, tools for safety testing, and scientific research.

- In December 2023, for the [first time the Financial Stability Oversight Council \(“FSOC”\) identified AI as a vulnerability in the financial system](#), saying “AI offers potential benefits, such as reducing costs and improving efficiencies, identifying more complex relationships, and improving performance and accuracy. However, the use of AI can introduce certain risks, including safety-and-soundness risks like cyber and model risks.”
- On January 17, 2024, the SEC, Congressional representatives, and public interest advocates participated in a [summit](#) hosted by Public Citizen to discuss the importance of protecting our financial system from a crisis caused by AI, stopping investment firms and banks from overselling AI products to retail investors, and preventing conflicts of interest linked to AI. See *also* Public Citizen [recommendations](#).
- The FSOC is partnering with the Brookings Institute to host a [conference in June 2024](#) that will bring together public- and private-sector thought leaders to discuss potential systemic risks posed by AI in financial services, explore the balance between encouraging innovation and mitigating risks, and share insights on effective oversight of AI-related risks to financial stability.



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