ARTIFICIAL INTELLIGENCE IN FINANCIAL MARKETS: A COMPARATIVE STUDY OF INDIA'S REGULATORY FRAMEWORK AND THE EUROPEAN UNION'S AI ACT

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"I believe it is the most transformative technology of our time, on par with the internet and mass production of automobiles."[1] — Gary Gensler, then Chair, U.S. Securities and Exchange Commission

ABSTRACT

Artificial intelligence (AI) now sits at the core of trading, advisory, credit and surveillance functions in financial markets, raising risks of opacity, bias, herding and concentration that traditional securities regulation was not built to address. This article compares two very different regulatory responses: the European Union's Artificial Intelligence Act, a binding, horizontal and risk-tiered statute, and India's incremental, sector-led approach, anchored in guidance from the Securities and Exchange Board of India (SEBI), the Reserve Bank of India (RBI) and the Ministry of Electronics and Information Technology (MeitY). It argues that neither model is complete. The EU framework offers legal certainty but leaves activities such as algorithmic trading largely outside its high-risk list, while India's flexibility comes at the cost of enforceability and uniformity. The article concludes by proposing a calibrated approach for India, built on statutory backing for SEBI's AI rules, risk-based tiering and clear accountability for AI-driven outcomes.

Keywords: artificial intelligence; securities regulation; EU AI Act; SEBI; algorithmic trading; FREE-AI; comparative law

[1] *Gary Gensler, Chair, US Securities and Exchange Commission, 'Isaac Newton to AI', Remarks before the National Press Club (17 July 2023).*

I. INTRODUCTION

Financial markets were some of the first to embrace automation, yet today's form of artificial intelligence (AI) is fundamentally different, not just more advanced. Machine-learning systems currently produce trading signals, assess credit pricing, customise investment recommendations, identify fraud and money laundering among customers, and assist regulators in identifying market misconduct. The Financial Stability Board has cautioned that these applications can amplify reliance on third parties, market interconnections, and model risk.,[2] while the International Organisation of Securities Commissions (IOSCO) has catalogued the resulting threats to market integrity and investor protection.[3]

Jurisdictions have addressed these issues in remarkably diverse ways. The European Union (EU) implemented Regulation (EU) 2024/1689, known as the Artificial Intelligence Act (AI Act), which is the inaugural comprehensive and legally binding horizontal AI regulation globally.[4] In contrast, India has intentionally opted not to implement a separate AI law. It depends instead on current laws, industry regulators, and advisory guidelines.[5]

This article examines if India's sector-led approach sufficiently safeguards investors and market integrity in comparison to the EU's risk-based framework, and explores what both systems might learn from one another. Sections II to V examine the applications and hazards of AI, along with the frameworks in India and the EU, and provide a comparison; SectionsVI and VII present suggestions and wrap up the discussion. The article employs a doctrinal and comparative approach and articulates the law as it was on 3 November 2026. The Securities and Exchange Board of India (SEBI) serves as the securities regulator for India.

II. AI IN FINANCIAL MARKETS: USES AND RISKS

A. Where AI Is Used

AI is employed in at least five interconnected areas of securities markets: (i) high-frequency

[2]*Financial Stability Board, The Financial Stability Implications of Artificial Intelligence (14 November 2024).*
[3]I*nternational Organization of Securities Commissions, Artificial Intelligence in Capital Markets: Use Cases, Risks, and Challenges, Final Report (March 2025).*
[4]*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence [2024] OJ L 2024/1689 (AI Act).*
[5]*Ministry of Electronics and Information Technology (MeitY), India AI Governance Guidelines (5 November 2025) (MeitY Guidelines).*

and algorithmic trading and execution; (ii) portfolio management, robo-advisory, and research generation; (iii) risk pricing and credit assessment; (iv) onboarding clients, know-your-customer (KYC), and anti-money-laundering measures; and (v) monitoring by regulators and exchanges. SEBI's working group discovered that exchanges, brokers, and mutual funds have already implementedAI and machine-learning models for purposes like customer support, security, pattern recognition, KYC, and order execution.[6]

B. The Risk Profile

Five risks appear repeatedly in the literature and in regulatory documents. The first issue is opacity: intricate models are hard to clarify, which hampers oversight and the provision of explanations to impacted clients. The second issue is bias: models developed using unbalanced data may consistently disadvantage certain borrowers or investors. The third aspect is herding: when numerous companies depend on comparable models or data, their joint responses can increase volatility. The fourth aspect is concentration: relying on a few model or cloud providers leads to single points of failure. The fifth is a responsibility gap, where companies blame negative results on 'the algorithm'. The 2025 paper by SEBI outlines all of these risks,[7] and they reflect the concerns voiced by the FSB and IOSCO.

III. INDIA'S REGULATORY FRAMEWORK

A. Soft Law at the Centre

India does not have a horizontal AI law. The MeitY Guidelines dated 5 November 2025 outline a 'techno-legal' strategy backed by voluntary initiatives and digital public infrastructure, advocating for specific changes to current laws rather than the creation of a new AI Act[8]. They adopt seven guiding principles, or 'sutras', from the Reserve Bank of India's FREE-AI report and suggest establishing institutional structures, such as a coordinating AI Governance Group and an AI Safety Institute, yet they impose no mandatory requirements and no consequences. The Guidelines are grounded in previous ethical initiatives by NITI Aayog.[9]

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[6] *SEBI, Consultation Paper on Guidelines for Responsible Usage of AI/ML in Indian Securities Markets (20 June 2025) (SEBI Consultation Paper).*
[7] *SEBI Consultation Paper (n 6)*
[8] *MeitY Guidelines (n 5)*
[9] *NITI Aayog, Responsible AI for All: Approach Document for India, Part 1: Principles for Responsible AI (February 2021).*

B. SEBI: The Most Developed Sectoral Response

India's approach is most developed in the securities market, mainly due to SEBI's extensive and technology-agnostic statutory mandate. Section 11(1) of the Securities and Exchange Board of India Act, 1992 assigns SEBI the responsibility of safeguarding investors and overseeing the securities market.[10] Section 12A forbids manipulative and deceptive tools, while the PFUTP Regulations ban fraudulent and unfair trading practices, regardless of whether the action is executed by an individual or an algorithm.[11] Liability for an AI-driven violation therefore attaches to the regulated entity under existing law, and no new statute is needed for that proposition.

SEBI's measures related to AI have been gradual. A memo dated 4 January 2019 mandated that market intermediaries must disclose the AI and machine-learning applications and systems they utilise or provide.[12] In February 2025 SEBI issued a framework on the safer participation of retail investors in algorithmic trading, which makes brokers accountable for algorithms offered through their interfaces and requires algorithms to be identifiable.[13]

The key advancement is the SEBI Consultation Document dated 20 June 2025. It suggests guidelines for model governance, investor safeguarding and transparency, testing, equity and bias, as well as data security and privacy. It proposes a layered strategy, featuring a less stringent framework for internal applications that don't directly impact clients, and advises on controls for particular risks such as herding, concentration among generative-AI providers, interpretability, and unchecked model behaviour.[14] Notably, it records the concern that market participants may try to shift responsibility to AI providers, and it maintains that responsibility for compliance remains with the regulated entity.

As of 3 November 2026, these principles have yet to be released as final binding guidelines, over sixteen months following the consultation. Media coverage of the SEBI Chairman's

[10] *Securities and Exchange Board of India Act 1992, s 11(1).*
[11] *SEBI (Prohibition of Fraudulent and Unfair Trade Practices relating to Securities Market) Regulations 2003, regs 3–4 (PFUTP Regulations).*
[12] *SEBI, Circular SEBI/HO/MIRSD/DOS2/CIR/P/2019/10, Reporting for Artificial Intelligence (AI) and Machine Learning (ML) applications and systems offered and used by market intermediaries (4 January 2019).*
[13] *SEBI, Circular on Safer Participation of Retail Investors in Algorithmic Trading (4 February 2025).*
[14] *SEBI Consultation Paper (n 6)*

comments on 10 October 2026 suggests that tiered regulations with human oversight and 'kill switch' features are anticipated soon.[15]

C. The RBI's FREE-AI Framework

The RBI's FREE-AI Committee presented its report on 13 August 2025. It expresses seven principles: trust as the basis, prioritizing people, favouring innovation over limitation, fairness and equity, accountability, design for understandability, and safety, resilience, and sustainability. These are backed by six strategic foundations. The report suggests AI policies approved by the board, enhanced internal and external audits of AI systems, and incident reporting by regulated organisations.[16] Its influence is striking, since MeitY later adopted the same sutras for cross-sectoral use. Financial regulation has, in effect, shaped national AI policy.

D. Data Protection and the Constitutional Backdrop

The Digital Personal Data Protection Act, 2023 (DPDP Act) regulates the handling of personal data by data fiduciaries, which encompasses banks, brokers, and AI developers.[17] The constitutional foundation is Puttaswamy, where the Supreme Court stated that any violation of privacy must meet the criteria of legality, legitimate purpose, and proportionality.[18] However, the DPDP Act lacks an equivalent to Article 22 of the EU's General Data Protection Regulation (GDPR), which limits decisions made exclusively through automated processing that have a significant impact on individuals.[19] An investor refused a product by an automated system therefore has no statutory right to human review in India.

E. Assessment

India's approach possesses genuine advantages. It is adaptable, leverages industry knowledge, and prevents confining a developing technology within inflexible legal classifications. It equally possesses vulnerabilities. The majority of AI-related tools serve as recommendations

[15] *Outlook Money, 'Sebi to Issue AI/ML Guidelines for Capital Markets: Mandatory "Kill Switch" and Human Oversight Framework Explained '(October 2026).*
[16] *RBI, Report of the Committee on Framework for Responsible and Ethical Enablement of Artificial Intelligence (FREE-AI) in the Financial Sector (13 August 2025).*
[17] *Digital Personal Data Protection Act 2023 (Act 22 of 2023).*
[18] *Justice K S Puttaswamy (Retd) v Union of India (2017) 10 SCC 1.*
[19] *Regulation (EU) 2016/679 [2016] OJ L119/1, art 22.*

rather than enforceable regulations. Responsibility is distributed among SEBI, the RBI, MeitY, and the Data Protection Board without a unified coordinating body.

IV. THE EUROPEAN UNION'S AI ACT

A. Architecture of the Act

The AI Act came into effect on 1 August 2024 and is implemented in stages. It utilises a risk-focused pyramid. Practices with unacceptable risks are not allowed (Article 5); high-risk systems, as outlined in Article 6 and Annex III, have significant obligations; specific systems like chatbots and synthetic-content creators have transparency responsibilities(Article 50); while the rest remains mostly unregulated. General-purpose AI models are governed separately under Chapter V. The Act possesses extraterritorial authority, as it applies to providers and deployers in third countries if the system's output is utilised within the Union.[20] Prohibitions have applied since 2 February 2025 and general-purpose AI obligations since 2 August 2025.[21]

B. Relevance to Financial Markets

Annex III categorises high-risk AI systems that assess the creditworthiness of individuals or determine their credit scores (excluding systems for detecting financial fraud), along with those employed for risk evaluation and pricing in life and health insurance.[22] Providers of high-risk systems are required to apply risk management (Article 9), data governance (Article 10), technical documentation (Article 11), record-keeping (Article 12), transparency (Article 13), human oversight (Article 14), and standards for accuracy and robustness (Article 15) as part of a quality management system (Article 17). Deployers, such as banks, must utilise systems as directed, provide skilled human supervision, and oversee operations (Article 26), while certain entities must conduct a fundamental rights impact assessment (Article 27). Penalties reach €35 million or 7 per cent of worldwide annual turnover for prohibited practices, and €15 million or 3 per cent for most other infringements.[23]

Crucially for market oversight, the Act does not classify algorithmic trading, robo-advisory, or market monitoring as inherently high-risk. A trading algorithm is identified only if it falls under

[20] *AI Act (n 4), art 2(1).*
[21] *AI Act (n 4), art 113.*
[22] *AI Act (n 4), Annex III, points 5(b)–(c).*
[23] *AI Act (n 4), art 99(3)–(4).*

an Annex III category. Algorithmic trading is primarily regulated by the Markets in Financial Instruments Directive (MiFID II) along with its technical standards, which mandate robust systems and controls, testing before deployment, and a 'kill 'feature.[24] The Act's prohibition on manipulative techniques that materially distort behaviour and cause significant harm may, however, reach certain retail-facing platforms.[25]

C. Integration with Financial Supervision

The Act aims to align with current financial regulations. Financial institutions that must adhere to internal-governance standards under EU financial-services regulations are considered to meet the quality-management requirement and the deployer monitoring responsibility by complying with these regulations, while national financial supervisors serve as market oversight authorities for AI systems utilized by regulated entities.[26] The European Securities and Markets Authority (ESMA) has indicated that companies offering investment services are accountable for their AI usage under MiFID II, including the obligation to act in the client's best interest, regardless of whether tools are developed internally or sourced from external providers.[27] Concentration risk is addressed separately through the Digital Operational Resilience Act, which supervises critical ICT third-party providers.[28]

D. The Digital Omnibus and Revised Timeline

The Act's timetable has already been revised. The Commission proposed a 'Digital Omnibus on AI 'on 19 November 2025, and the Parliament and Council reached provisional agreement on 7 May 2026.[29] Formal adoption followed in mid-2026. High-risk obligations for Annex III systems, which include credit scoring, now apply from 2 December 2027 rather than 2 August 2026, and those for AI embedded in regulated products from 2 August 2028.[30] Prohibitions and general-purpose AI obligations were not postponed.

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[24] *Directive 2014/65/EU [2014] OJ L173/349, art 17; Commission Delegated Regulation (EU) 2017/589 [2017] OJ L87/417.*
[25] *AI Act (n 4), art 5(1)(a).*
[26] *AI Act (n 4), arts 17(4), 26(5) and 74(6).*
[27] *ESMA, Public Statement on Artificial Intelligence (AI) and investment services (30 May 2024).*
[28] *Regulation (EU) 2022/2554 [2022] OJ L333/1.*
[29] *Gibson Dunn, 'EU AI Act Omnibus Agreement: Postponed High-Risk Deadlines and Other Key Changes '(27 May 2026).*
[30] *Taylor Wessing, 'The EU Digital Omnibus on AI: What the Political Deal Means '(May 2026). Readers should confirm the final dates against the text published in the Official Journal.*

V. COMPARATIVE ANALYSIS

A. A Side-by-Side View

Table 1 summarises the principal points of difference between the two frameworks as they apply to financial markets.

Feature	European Union (AI Act)	India (sector-led framework)
Legal nature	Binding horizontal regulation (Regulation (EU) 2024/1689)	No AI statute; MeitY Guidelines, RBI FREE-AI report and SEBI proposals are largely non-binding
Regulatory method	Risk tiers: prohibited, high-risk, transparency-only, minimal	Sectoral and principle-based; SEBI proposes a tiered, purpose-based approach
Financial use cases	Credit scoring and life/health insurance pricing are high-risk (Annex III)	Covered through SEBI, RBI and IRDAI supervision of regulated entities
Algorithmic trading	Not high-risk per se; governed by MiFID II and RTS 6	Governed by SEBI's algorithmic trading framework and PFUTP Regulations
Accountability	Provider and deployer duties; financial supervisors act as AI authorities	Regulated entity remains responsible (proposed); no AI-specific liability rule
Transparency and review	Articles 13, 14 and 50; GDPR Article 22 on automated decisions	Disclosure proposed by SEBI; no statutory right to human review
Penalties	Up to €35m or 7% of turnover (prohibitions); €15m or 3% (other breaches)	Existing SEBI Act and RBI powers; no AI-specific penalty scale
Extraterritorial reach	Yes, where output is used in the Union (Article 2)	Limited; follows general jurisdictional rules
Status (Nov 2026)	High-risk rules deferred to 2 Dec 2027 (Annex III) and 2 Aug 2028 (Annex I)	SEBI final guidelines awaited

Table 1: EU and Indian Approaches to AI in Financial Markets

B. Principle of Convergence

Regardless of their varying legal structures, both systems are based on shared principles. Management governance, human supervision, equity and bias management, documentation and traceability, along with security are emphasised in the EU's Articles 9 to 15, SEBI's proposed guidelines, and RBI's principles. SEBI's suggested tiered approach, which separates client-facing applications from internal uses, reflects the proportionality principle of the AI Act. In both systems, the regulated company retains responsibility regardless of whether it created or purchased the model.

C. Variation in Enforceability and Certainty

The EU provides legal clarity. Duties are outlined, consequences are stipulated, and oversight authority is designated. The expense is the burden of compliance and inflexibility: the Omnibus postponement demonstrates that even a well-crafted law can exceed the criteria required for its execution. India provides adaptability and swiftness, yet its structure is primarily advisory. A company that neglects the RBI's guidelines encounters supervisory disapproval, lacking a specific legal penalty, while a company adhering to SEBI's unofficial principles does so of its own accord. This poses the danger of inconsistent adoption and regulatory loopholes, particularly among smaller intermediaries and fintech companies that operate in the space between regulators.

D. Common Deficiencies

Neither framework completely addresses the market-wide risks associated with herding and model concentration. The EU's AI Act focuses on individual systems and assigns systemic risk to financial-sector regulation, while India's suggestions on herding and concentration are still merely recommendations. Neither framework completely addresses the liability issue. The EU assigns civil liability for AI to distinct frameworks, whereas India's stance is based on overarching principles of agency and the statutory responsibilities of the regulated entity. In the context of Indian securities law, a key issue is how SEBI will establish intent or negligence when a model's reasoning cannot be reconstructed, considering that the PFUTP Regulations were created with human behaviour in focus.

E. Judicial Perspectives

Judicial systems have started to provide what laws have failed to deliver. In SCHUFA, the Court of Justice of the European Union determined that creating a credit score may constitute an automated decision under Article 22 GDPR when a third party relies heavily on it, meaning scoring companies cannot evade responsibility due to the lender's formal choice.[31] In *Dun & Bradstreet Austria*, it recognised that a person subject to such a decision may demand an explanation of the procedure and principles actually applied.[32] Indian courts have not yet addressed AI-driven market behaviour, but current regulations offer guidance. The Supreme Court has acknowledged that in civil cases, securities fraud is assessed based on the preponderance of probabilities and can be deduced from circumstantial evidence.[33] and in *Rakhi Trading* it inferred the manipulative character of trades from their pattern and surrounding circumstances.[34] These methods would enable SEBI to assign responsibility for algorithmic wrongdoing even if a model's decision-making cannot be replicated, while Puttaswamy's proportionality assessment would regulate intrusive data-driven oversight.

VI. RECOMMENDATIONS

Initially, grant legal authority to SEBI's principles. SEBI ought to transform its consultation document into mandatory regulations using its rule-making authority under section 30 of the SEBI Act, ensuring that obligations can be enforced and appealed to the Securities Appellate Tribunal.

Secondly, implement a refined risk-tiering framework. India does not have to replicate the EU's Annex III. It must recognize 'high-impact 'applications tailored to its markets, including client advisory, credit evaluations, algorithmic trading, and automated monitoring, while imposing graded responsibilities on each, maintaining SEBI's suggested leniency for back-office instruments.

Third, establish non-transferable responsibility. Regulations must clearly indicate that a regulated entity, along with a designated senior officer, is responsible for AI outputs, regardless of the risk allocation set forth in a contract with a vendor. This would transform the principle

[31] *Case C-634/21 SCHUFA Holding (Scoring) EU:C:2023:957 (CJEU, 7 December 2023).*
[32] *Case C-203/22 CK v Dun & Bradstreet Austria GmbH (CJEU, 27 February 2025).*
[33] *SEBI v Kishore R Ajmera (2016) 6 SCC 368.*
[34] *SEBI v Rakhi Trading (P) Ltd (2018) 13 SCC 753.*

in the consultation document into a binding regulation and eliminate the 'the algorithm did it ' justification.

Fourth, ensure the entitlement to human evaluation. Policymakers ought to contemplate a specifically defined right for investors and borrowers to receive significant information regarding, and human evaluation of, negative decisions made exclusively by automated methods, either via SEBI and RBI regulation or by modifying the DPDP Act.

Fifth, tackle focus and group behaviour. SEBI and the RBI ought to evaluate the supervision of vital third-party AI and cloud service providers, responsibilities for incident reporting, and routine algorithmic assessments to identify interconnected actions, utilising insights from the EU's Digital Operational Resilience Act.

Sixth, organise and ready. A permanent inter-regulatory forum must coordinate SEBI, RBI, IRDAI, and MeitY, bolstered by regulatory sandboxes and enhanced supervisory capacity. Indian companies catering to EU clients ought to start aligning their systems with the AI Act, as its extraterritorial clause might apply to them

VII. CONCLUSION

The EU's AI Act and India's industry-focused strategy are two valid yet insufficient responses to the same issue. The EU has opted for stability and a structured framework, yet its risk assessment allows essential market functions like algorithmic trading to fall under previous financial laws, and its timeline has been challenging to adhere to. India has opted for agility and sector-specific knowledge, but it still needs to translate solid principles into actionable regulations. India would benefit more from not adopting the EU model completely, but rather maintaining its sector-focused approach while incorporating legal enforcement: mandated SEBI regulations, tiered and risk-adjusted responsibilities, clear accountability for AI results, and safeguards for individuals impacted by automated choices. AI in financial markets won't wait for ideal regulations, and a framework that is transparent, balanced, and enforceable will benefit both innovation and investors more than relying solely on guidance or prescriptions.

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