

INTERNATIONAL JOURNAL FOR LEGAL RESEARCH AND ANALYSIS



Open Access, Refereed Journal Multi-Disciplinary
Peer Reviewed

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ANALYSIS ISSN 2582-6433 welcomes contributions from all legal branches, as long as the work is original, unpublished and is in consonance with the submission guidelines

Algorithmic and High-Frequency Trading: Do India's Existing Regulations Ensure a Level Playing Field?

– Aditya Ballolli

Abstract

The rise of High-Frequency Trading (HFT) and algorithmic trading in India, commanding over 40% of NSE volumes, presents a dual challenge to the level playing field and market stability. This essay analyzes SEBI's regulatory response, particularly following the NSE co-location scandal which exposed unfair access and potential market manipulation. It contends that SEBI's two-phase reform structural changes like multicast data feeds and random server allocation to ensure fairness, and proactive measures like algorithm approval, kill switches, and AI-based surveillance for stability has successfully bolstered the market against flash crashes and systemic risks. However, the essay concludes that while these interventions have mitigated extreme inequalities and enhanced resilience, perfect fairness remains elusive due to inherent structural advantages for resourced players. SEBI has thus pragmatically shifted to fostering a controlled competition, ensuring the market is significantly more stable and transparent, even if not equally then perfectly equal.

Keywords: SEBI, High-Frequency Trading (HFT), Algorithmic Trading, NSE Co-location Scandal, Level Playing Field, Market Stability, Flash Crash.

(I) Introduction

The Indian securities market has changed the way it is. The hue and cry of the open trading pit has been replaced by the sound of the silent co-located servers. High-speed High-Frequency Trading (HFT) and more broadly, algorithmic trading (algo-trading) have shifted into the mainstream of the money markets in India, as a niche strategy. They have today more than 40 per cent of overall light in the National Stock Exchange (NSE), with a substantial percentage in the derivatives market, often in excess of 50 per cent.¹ The dilemma is twofold. One, it undermines fairness in the marketplace, because speed and complexity of automated trading may bring about flash crashes and facilitate high-speed manipulation of the market-price (as a result of which the principle of the level playing field articulated in Section 11(2)(b) of the SEBI Act, 1992).²

¹ Rajan Lakshmi and Vedala Naga Sailaja, 'A study on high-frequency trading, technology and regulations in India' 2021 11(1) *Int J Financial Services Management* 45.

² Securities and Exchange Board of India Act 1992, Preamble.

The topic of this essay is whether the reaction of SEBI particularly following the notorious NSE co-location scandal has indeed ensured fairness and stability. It contends that the overall result of the technological regulation by SEBI has led to the reduction of systemic risks on a broad scale, but has not collaborated holistically to guarantee the provision of fairness. As a matter of fact, regulation by SEBI has also moved beyond the desire to achieve absolute equality to the practical management of inequality, one that prevents outrageous privileges but does not assume that races that are characterised by speed should all have a starting line at the same point.

(II) Fairness and the NSE Co-Location Scandal

The Indian securities regulation basis is the so called level playing field, which is based on morality and legal grounds. It is codified in the SEBI Act, 1992 and worked out, the SEBI (Prohibition of Fraudulent and Unfair Trade Practices relating to Securities Market) Regulations, 2003 (PFUTP Regulations).³ These regulations prohibit any act or device that is “fraudulent or deceptive.”⁴

The first-level regulators also have a statutory obligation under the Securities Contracts (Regulation) Act 1956 (SCRA) and the SECC Regulations, 2012, to ensure fairness and transparency through the first-level for example stock exchanges.⁵ The NSE co-location scandal was therefore not a mere market misconduct but also institutional indifference on such responsibilities. This is allegedly preferential treatment of certain brokers in the trading infrastructure of NSE between 2010 and 2014. This was to happen mainly using the two mechanisms: There were also brokers who could connect to a less-crowded server and therefore, have access to the exchange order-matching engine at a faster rate.

The Tick-by-Tick (TBT) data feed broadcasted market information at a sequence and allowed the brokers who were the first to be connected to get information a few microseconds before others.⁶ This little time saving had gigantic impact. A large buy order may be identified by a broker several milliseconds before, buying the stock and reselling it later at a larger price and essentially front-running the market. This was against the PFUTP Regulations of prohibiting devices that are deceptive. Following a probe that took several years, SEBI, under the mandate

³ SEBI (Prohibition of Fraudulent and Unfair Trade Practices relating to Securities Market) Regulations 2003.

⁴ *ibid*, reg 3(a).

⁵ Securities Contracts (Regulation) Act 1956, s 9; see also SEBI (Stock Exchanges and Clearing Corporations) Regulations 2012, reg 29.

⁶ *In the matter of National Stock Exchange of India Limited* (SEBI, Adjudication Order No PB/AK/2019/04, 30 April 2019) §8.1.1.

of Section 11 and 11B of SEBI Act, administered harsh penalties. It fined the NSE ₹687 crore together with 12% per year interest, that is, the profits are made due to the unfair practice of co-location, and banned it for six months in the capital market in 2019.⁷ Though the amount of the penalty was later amended by the Securities Appellate Tribunal (SAT), it affirmed the conclusion made by SEBI that NSE had not given due diligence and fair access.⁸ SEBI itself was compelled by the episode to revise its role to be not only as a service to technological innovation but also as a more supervisory, sceptical regulator who was interested in maintaining integrity in an increasingly automated marketplace.

(III) The Growing Threat of Systemic Risk

Although fairness was a factor in the case of co-location, market stability when exposed to HFT was an even greater challenge. Using algorithms to carry out most trades, instead of humans, renders a scenario where crashes can occur suddenly and out of control quite realistic.

The most dramatic warning is the 2010 U.S Flash Crash. U.S. stock indices fell and regained their value within an hour cutting and restoring trillions of dollars. It happened in the case of an interaction between the automated sell algorithm of one of the mutual funds and a group of HFT systems that increased the sell-off.

The other example was in 2012 when the Knight Capital lost 450 million dollars in 45 minutes because of a rogue algorithm that mistakenly purchased high and sold low.⁹ Both cases demonstrated that a rogue algorithm could put a company out of business or a whole market in a state of panic in minutes.

In addition to such accidents, HFT also allows manipulation of price, which directly violates the Regulation 4(2) of the PFUTP Regulations, against false or misleading appearance of trading and price manipulation.¹⁰ Some major techniques are: 1. Spoofing: in making spurious orders to deceive other people about the demand or supply. 2. Layering: an advanced form of spoofing that has several false orders. 3. Quote Stuffing: flooding the market with the order to slug competitors with their data processing. India recorded its own alarm in October 2012, when the NIFTY 50 index crashed almost 16 per cent in a few seconds, as an algorithm

⁷ *ibid* §11.4.1.

⁸ *National Stock Exchange of India Ltd v Securities and Exchange Board of India* (SAT Appeal No 244 of 2019, 14 June 2021).

⁹ Thomas Peterffy, 'A Rare Look at the Future of Trading' (Wall Street Journal, 22 September 2012) <https://www.wsj.com/articles/SB10000872396390443847404578008453910546948> accessed 30 October 2025.

¹⁰ SEBI (Prohibition of Fraudulent and Unfair Trade Practices relating to Securities Market) Regulations 2003, reg 4(2)(a), 4(2)(e).

triggered by a broker went on a frenzy with 59 faulty orders, the damage to which was only averted by circuit breakers.¹¹

(IV) SEBI's Regulatory Response: From Punishment to Prevention

Faced with injustice as well as unpredictability, the regulatory development at the SEBI took place in two general stages.

Phase 1: site Fairness (Post Co-location Reforms)

SEBI laid emphasis on differentiating and structural reform after the co-location fraud. It punished NSE hard, and came up with a 2018 circular on Algorithmic Trading and Co-location based on which it introduced mandatory technical overhaul.¹² Fair Data Dissemination is where NSE discontinued its sequential TBT feed in favour of a multicast feed so as to provide simultaneous delivery of market data to all co-located users then, Random Allocation of servers to brokers. To avoid the desire of brokers to choose the faster server we randomly allocated it so that each had a single server. Such actions broke down the previous structure of privilege, which re-established that no member of the structure could purchase a head start by law.

Phase 2: Resiliency (Technological Risk Controls) Building.

This realization prompted SEBI to implement a framework of proactive technological risk controls, moving beyond punitive measures to prevent new crises. These mandatory safeguards include the prior approval and stress-testing of all trading algorithms by exchanges, the installation of emergency kill switches for brokers to instantly deactivate malfunctioning systems, and the enforcement of Order-to-Trade Ratio (OTR) controls to financially penalize manipulative strategies like spoofing and layering. Furthermore, leveraging its authority under the SEBI Act, the regulator has mandated the use of artificial intelligence for real-time market surveillance to detect suspicious trading patterns, thereby creating a multi-layered defines system designed to ensure market integrity and stability. Cyber-Resilience Framework of SEBI issued a comprehensive model cyber-resilience requirement in 2017 requiring all Market Infrastructure Institutions (MIIs) such as the exchange, clearing house and the depository to conduct live disaster recovery exercises and perform comprehensive cybersecurity audits

¹¹ 'Nifty 50 Flash Crash: A 16% Plunge in Seconds' (Business Standard, 5 October 2012) https://www.business-standard.com/article/markets/nifty-crashes-16-in-flash-trade-112100500151_1.html accessed 29 October 2025.

¹² SEBI, 'Strengthening of the regulatory framework for Algorithmic Trading & Co-location' (Circular No SEBI/HO/MRD/DP/CIR/P/2018/62,7 April 2018) https://www.sebi.gov.in/legal/circulars/apr-2018/strengthening-of-the-regulatory-framework-for-algorithmic-trading-and-co-location_38586.html accessed 31 October 2025.

(SEBI, 2017).¹³ These reforms combined to change the stance of SEBI, which is no longer reactive investigation but proactive risk management, and which has created control over the technological core of the market.

(v) Conclusion: The Managed Race

Going back to the main question that is, has SEBI provided a level playing field? The answer is nuanced. SEBI has been very effective on its regulatory design on systemic stability. Pre- approvals, kill switches, OTR punishments, and future-thinking surveillance have bolstered the Indian markets against disastrous algorithmic breakdowns. The market today stands stronger and is in a better position to absorb flash crashes or rogue algorithms than it would have been a decade ago. The aspect of fairness is however flawed. The move taken by SEBI against NSE denounced its resolve to market integrity under Section 11B of SEBI Act. The transition to multicast feeds and randomised servers fixed up the most glaring inequalities. But still, there are structural inequalities. Small or retail investors will never be as competitive as firms that are able to pay high co-location charges, low-latency network, and high-end quantitative traders.

The ideal of the level playing field, even in a restored form, is impossible to realise perfectly on practice. Rather, SEBI has been contented with a controlled competition race; a market where speed and sophistication can be competing on equal footing within open and controlled lines. Such pragmatic model reflects changing philosophy of SEBI is technological innovation cannot be halted but it has to be guided. The message that the regulator wants to send to HFT firms is unintentional and obvious, though, you can compete in the speed, not in the fraudulent endeavours. Through a mixture of deterring, structural remedies and real-time monitoring, SEBI has created a marketplace which is not entirely, but significantly fair, transparent and stable. The capital markets in India are now at a level of balanced speed- an appreciation that now the digital era does not give the law any prolonged time, but a fair deal that every micro- second matters.

¹³ SEBI, 'Cyber Security & Cyber Resilience framework for Stock Exchanges, Clearing Corporations and Depositories' (CircularNo

SEBI/HO/MRD/CIR/P/2017/109,

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