ON LEGAL REGULATION OF ALGORITHM-DRIVEN INSTITUTIONAL INVESTORS FROM A TRANSACTION-CENTRIC PERSPECTIVE

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I. INTRODUCTION

General Secretary *Xi Jinping* emphasized that the path of distinctive financial development in China must adhere to a people-centered value orientation, serving the real economy as its fundamental purpose. 'As the lifeblood of the real economy, finance plays a crucial role in serving the real economy, which is not only its duty but also a fundamental measure to prevent financial risks. If finance becomes overly focused on self-circulation and self-inflation, it will become a tree without roots or water without source, and sooner or later, it will lead to a crisis. China's finance must stick to its duty of serving the real economy, promote high-quality development, and must not deviate from reality.'[1] In fact, algorithm-based automated decision-making has widely penetrated the securities market under the support of financial technology, and some institutional investors have developed algorithm-driven trading, creating a 'financialized' orientation detached from the real economic fundamentals.

Financial technology has made some institutional investors heavily reliant on algorithms for automated decision-making and transaction execution, turning them into algorithm-driven players. Algorithm-driven trading involves using computer-generated algorithms for trading, employing 'limited, definite, and effective' methods designed for computer programs to solve problems and facilitate programmatic investment.[2] Typical representatives include high-frequency trading and passive investment,[3] with main features including (1) algorithm-driven trading. It is a sophisticated form of automated decision-making and execution that utilizes computer programs to track market fluctuations and execute trades rapidly.

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1 THE INSTITUTE OF PARTY HISTORY AND LITERATURE OF THE CPC CENTRAL COMMITTEE, XI JINPING'S DISCOURSES ON FINANCIAL WORK, at 15 (Central Party Literature Press, 2024).

2 ROBERT SEDGEWICK & KEVIN WAYNE, ALGORITHMS, at 1 (Xie Luyun trans., Posts & Telecom Press, 2012).

3 The *Administrative Measures for Program Trading in the Securities Market (Trial)* defines program trading as the act of automatically generating or issuing trading instructions through computer programs for securities trading on stock exchanges.

(2) Homogeneity of investment strategies. For example, passive investment funds that use algorithms to achieve index balancing are algorithm-driven institutional investors that track indices, and their index-investment strategies have a high degree of homogeneity. (3) Lack of human participation. Through preset procedures, algorithm applications address the instability of human decision-making and execution, which are characterized by relative objectivity and efficiency,[4] and are capable of achieving automated and standardized trading.

This article defines transaction-centric investment as decisions predominantly steered by algorithms, relying on market cues while overlooking the specific condition of the underlying assets. Transaction-centric investments are distinct from one-off or isolated market gambling, speculative activities, and short-term investments, which, although linked to fundamentals, exhibit limited duration. It fundamentally diverges from fundamental investment, which emphasizes the real economic backdrop behind the digital code, encompassing the company's business strategy, corporate stewardship, dividend policy, and financial health, all of which influence investment decisions.

The main representatives of algorithm-driven institutional investors are passive investment funds and high-frequency trading institutions. Passive investment funds continually enhance their index investment capabilities by relying on algorithms, thereby becoming the largest institutional investors across multiple markets in terms of scale, market share and growth rates. High-frequency trading is programmatic trading supported by algorithms and is capable of generating, sending, and executing orders in an extremely short period. It is characterized by a high number of daily declarations and cancellations, as well as an order-holding time that does not exceed one trading day.[5]

This study explores the growing influence of passive investment funds and high-frequency trading institutions on market dynamics by leveraging algorithm-driven strategies. Recently, legal research on institutional investors has shifted its focus towards strengthening their fiduciary duties, especially within the realm of corporate governance. This encompasses the proper exercise of voting rights, guaranteeing that fund managers prioritize their clients' interests, and examining the role

4 Zhang Linghan, *Research on the Right of Algorithmic Explanation for Business Automated Decision-Maki*ng, 3 Science of Law 65 (2018).

5 EQUITY MARKET STRUCTURE LITERATURE REVIEW PART II: HIGH FREQUENCY TRADING, at http://www.sec.gov/marketstructure/research/hft_lit_review_march_2014.pdf (Last visited on November 26, 2025).

of institutional investors in maintaining market stability. Representative studies delve into the surge of institutional investors and the subsequent shareholder activism, fostering the cultivation of shareholder democratic awareness, reinforcing shareholder sovereignty principles, and motivating shareholders to actively engage in corporate governance.[6] Empirical research underscores that publicly offered and private funds exhibit distinct approaches to corporate governance, with publicly offered funds assuming a positive role in curbing the tunneling behavior of controlling shareholders and improving corporate governance levels.[7] Introducing voting advisors can enhance institutional investor participation in corporate governance,[8] thereby redefining their fiduciary duties.[9] To address the short-termism exhibited by some institutional investors, the board of directors should adopt more proactive intervention measures.[10] In addition, research has focused on and discussed the legal regulatory framework for high-frequency trading in securities and futures markets.[11] Building upon the aforementioned studies, this article delves deeper into the application of algorithms, ultimately leading to the gradual formation of algorithm-driven institutional investors centered around trading activities, which has reconstructed the securities market regulatory order and requires a response at both the theoretical and institutional levels.

II. THE FORMATION OF TRANSACTION-CENTRIC INVESTMENT BY ALGORITHM-DRIVEN INSTITUTIONAL INVESTORS

Algorithm-supported automated decision-making has become a pivotal force in algorithm-driven trading. In terms of investment strategies, the technological application of algorithms, such as evolutionary algorithms and reinforcement learning, has been pivotal in optimizing portfolio management and trading strategies within the financial and insurance sectors. Institutional investors, driven by these advancements, are prominent in forming

6 Feng Guo & Li An'an, *The Investor Revolution, Shareholder Activism and Structural Changes in Corporate Law*, 2 Science of Law 112 (2012).

7 Gong Haochuan & Xi Chao, *Institutional Investors: Dancing with Shackles*, 5 Qinghua Law Review 111 (2021).

8 Guo Li & Zhao Yijun, *Legal Regulation of Voting Advisors for Institutional Investors: Exploration and Reference in the United States and the European Union*, 1 Journal of Comparative Law 152 (2019); Zhang Zixue, *Introduction and Regulation of Institutional Investor Voting Advisors*, 4 Journal of CUPL 150 (2022).

9 Wang Xinyi, *Reflection and Reconstruction of the Fiduciary Duty System of Institutional Investors in China: From the Perspective of the Introduction of Duty of Care*, 6 Studies in Law and Business 126 (2017).

10 Hou Dongde, *Governance of Short-Termism by the Board of Directors*, 6 China Legal Science 133 (2018).

11 Xing Huiqiang, *Legal Research on the Supervision Framework of High-Frequency Trading in the Securities and Futures Market*, 5 China Legal Science 156 (2016).

transaction-centric investments, which are totally different from fundamental investments centered on fundamentals and dependent on human participation.

A. Representative Algorithm-Driven Institutional Investors

Institutional investors can be divided into active and passive investment funds according to their investment philosophy. Passive investment funds are institutional investors that refrain from actively trading stocks to influence the management decisions of the listed companies. They aim to achieve returns comparable to market indices through low turnover rates, a diversified investment portfolio, and minimal costs,[12] including non-listed trading index funds (hereinafter referred to as 'index funds') and exchange-traded funds (hereinafter referred to as 'ETFs').[13] Active investment funds belong to a category that aims to surpass benchmark portfolio performance. They actively engage in the governance of listed companies, seeking investment returns by replacing the company's management and participating in crucial company decisions.

High-frequency trading institutions and passive investment funds are typical algorithm-driven institutional investors, with algorithm applications running through the pre-investment, in-investment, and post-investment stages of both types of funds.[14] For passive investment funds, algorithm applications are mainly reflected in providing data analysis and model construction through quantitative model development and big data processing in the pre-investment stage, achieving automated trading and risk management in the in-investment stage, as well as performance analysis and investor services in the post-investment stage. Risk management involves activities in both the in-investment and post-investment stages.[15] For high-frequency

12 Giovanni Strampelli, *Are Passive Index Funds Active Owners? Corporate Governance Consequences of Passive Investing*, 55 San Diego Law Review 809-810 (2018).

13 To distinguish, this paper adopts the concept of passive investment funds that include both ETF and non-ETF index funds. Here, the term 'index fund' refers to non-listed traded index funds, to differentiate from ETFs. In practice, there are actively managed ETFs, but their number is extremely limited, and this paper does not discuss them.

14 At different historical development stages, the algorithms applied by institutional investors vary, and some institutional investors have experienced a transformation from assistance to dominance by algorithms. Taking passive investment funds as an example, in the early days, they used computerized program trading and quantitative analysis to achieve index tracking; in the middle stage, with the development and popularization of ETFs, they used data mining and machine learning to improve efficiency and accuracy; at the current stage, with the development of technologies such as big data, artificial intelligence, natural language processing, and blockchain, the intelligence and personalization of passive investment funds have been continuously enhanced. For example, Atahualpa Securities launched a product that can automatically generate quantitative investment plans based on factors such as users' risk preferences, time constraints, and income expectations. ARK applied artificial intelligence and big data analysis technologies in its ETF products.

15 CHINA FINTECH REPORT 2020, at https://finance.sina.com.cn/zl/china/2020-12-25/zl-iiznezxs8788912.shtml (Last visited on November 26, 2025).

trading institutions, the applications of algorithms developed through financial technology primarily encompass automated trading, quantitative model creation, and trade execution. For instance, algorithms empower high-frequency trading institutions to integrate quantitative models to accomplish investment decisions according to established strategies, aiming to avoid potential risks and enhance investment efficiency while minimizing interference and misjudgments caused by human factors. In other words, both types of funds have formed an automated trading model based on algorithms as the underlying technology, and neither relies on human execution for securities market trading.

The representation of these two types of funds as the main research objects of algorithm-driven institutional investors is as follows. Firstly, passive investment funds have become or are becoming the largest securities investment funds in major global capital markets and continue to maintain a growing market share.[16] By the end of October 2025, the total size of publicly offered funds in China reached 36.74 trillion yuan, among which passive investment funds experienced the most rapid growth.[17] Among them, the scale of ETF products reached 5.24 trillion yuan in September 2025, a year-on-year increase of 29.69%.[18] In the US market, index funds, which began as a niche investment with just 4% of stock mutual fund assets in 1995, have since surged in popularity, representing over 62% of the market by 2025, with data showing that index funds have become the largest institutional investor.[19] The founder of index funds, *John Bogle*, regarded the shift of funds from active management to passive investment as an 'investment revolution'.[20] Secondly, high-frequency trading institutions have become the most active quantitative investment funds in Internet market transactions with the help of algorithms and low-latency technology. Data show that high-frequency trading accounts for over 70% of the trading volume in the US stock market,[21] 35%-40% in Europe,[22] and over 50% in Japan. In China,

16 HISTORIC MOMENT! PASSIVE FUNDS OVERTAKE ACTIVE FUNDS FOR THE FIRST TIME, at https://www.stcn.com/article/detail/1510543.html (Last visited on November 26, 2025).

17 CHINA'S DOMESTIC PUBLIC MUTUAL FUND ASSETS SURPASS 36 TRILLION YUAN FOR THE FIRST TIME, at https://finance.cnr.cn/cjtt/yw/20251031/t20251031_527414207.shtml (Last visited on November 26, 2025).

18 CHINA'S ETF ASSETS SURPASS 5 TRILLION YUAN FOR THE FIRST TIME, at https://www.xinhuanet.com/fortune/20250827/c27b7e4a70154ba0b98cbe4f82da8087/c.html (Last visited on November 26, 2025).

19 RELEASE: ACTIVE AND INDEX INVESTING, SEPTEMBER 2025, at https://www.ici.org/research/stats/combined_active_index (Last visited on November 27, 2025).

20 JOHN C. BOGLE, THE CLASH OF THE CULTURES: INVESTMENT VS. SPECULATION, at 8 (Liu Yinlong & Qiao Mingbang trans., Economic Press of China, 2021).

21 Tara E. Levens, *Too Fast, Too Frequent? High-Frequency Trading and Securities Class Actions*, 82 The University of Chicago Law Review 1527 (2015).

22 Tom C.W. Lin, *The New Market Manipulation*, 66 Emory Law Journal 1296-1297 (2017).

the proportion of high-frequency trading volume reached 15%-20% in 2025.[23] With the continuous increase in market scale and trading activity, algorithm-driven institutional investors play an increasingly significant role in shaping securities market dynamics.

B. Main Characteristics of Transaction-Centric Investment

In the capital market, listed companies are generally considered the main entities in the securities market. Indeed, the financing requirements of listed companies form the bedrock upon which the modern securities market is built. Therefore, as entrusted institutions representing principals for monetary voting and profit sharing, institutional investors scrutinize the fundamentals of listed companies in great detail. Empirical research shows that institutional investors are not necessarily better than individual investors at selecting investment targets and often find greater success in steering clear of poor choices, as they excel at leveraging fundamental information, such as company operating history, financial statements, scale, and liquidity.[24]

However, institutional investors relying on fundamental analysis can mitigate risks by steering clear of non-performing companies, albeit this does not assure sustained market non-performance or consistent profits. Indeed, merely avoiding failure does not equate to consistently surpassing market benchmarks, as fundamentals constitute only one of several factors influencing investments, alongside the timing of stock purchases and sales, holding expenses, and even elements of chance, all of which may collectively dictate investment outcomes. 'The fluctuation range of securities market prices is usually much larger than that of company earnings. This is primarily attributed to psychological, emotional factors, and other non-fundamental influences.'[25] More realistically, fundamental investment demands rigorous capabilities from investment institutions, including stock selection, timing, and potentially long-term holding. Most institutions cannot act like *Warren Buffet*, who can influence important decisions by engaging in the long term with a significant shareholding, such as continuing dividends to

23 ANALYSIS REPORT ON MARKET SHARE AND INDUSTRIAL COMPETITION PATTERN OF CHINA'S HIGH-FREQUENCY TRADING IN 2025, at http://m.shichangfenxi.com/newshow-10781040.html (Last visited on November 27, 2025).

24 Laura Casares Field & Michelle Lowry, *Institutional Versus Individual Investment in IPOs: The Importance of Firm Fundamentals*, 44 The Journal of Financial and Quantitative Analysis 489-516 (2009).

25 HOWARD MARKS, THE MOST IMPORTANT THING: UNCOMMON SENSE FOR THE THOUGHTFUL INVESTOR, at 200 (Li Jiangxi trans., CITIC Press, 2019).

dilute investment costs. Faced with the high requirements of fundamental investment for organizations and individuals, many institutional investors have chosen other ways to outperform or coexist in the market.

The development and formation of different investment strategies are essentially related to judgments about the effectiveness of the market and the degree of its efficiency. The market efficiency hypothesis is inherently controversial, with its foundational assumption — human rationality — subject to differing opinions. Economists like *Paul Samuelson* and *Eugene Fama* argue that the market is efficient, asserting that market participants act rationally; hence, stock trading reflects all available information, and there are no arbitrage opportunities.[26] In contrast, behavioral economics representatives such as *Daniel Kahneman* and *Robert Shiller* argue that the 'rational person' premise of the efficient market hypothesis does not match reality and propose replacing the 'rational person' concept with the 'social person' concept, believing that people not only have self-interest needs but also non-selfish behaviors (such as mutual cooperation). 'Social people' cannot fully follow rational guidance in their behavior. 'They often know the right choice but still make the wrong decision',[27] reflecting in the stock market as irrational trading decisions.[28] In investment, this translates into the time and scope within which investment strategies can capture price trends that reflect fundamental changes.[29] 'No market is completely efficient or inefficient; it is just a matter of degree',[30] thus giving rise to different investment systems and strategies to deal with the uncertainty of market effectiveness in time, targets, and scope.

Algorithm-driven trading shifts its emphasis away from the fundamentals of listed companies in favor of creating transaction-centric investment strategies. With the support of algorithms, passive investment funds establish index-based investments that mirror market trends, grounded in the constructed 'efficient market hypothesis'. However, this recognition applies to the overall market rather than individual stocks. Therefore, index funds, as representatives of passive investment funds, start purchasing stocks across all

26 Hu Zhenguo & Zeng Jun, *Adaptive Market Hypothesis: Theoretical Innovation and Empirical Tests*, 18 Finance Economy 71-72 (2016).

27 Hu Jin, Yu Jian & Zhao Gang et al., *Summary, Hotspots and Trends of Behavioral Economics Research: Based on International and Domestic Comparative Studies*, 5 Modernization of Management 141 (2022).

28 EDWARD CHANCELLOR, CAPITAL RETURNS: INVESTING THROUGH THE CAPITAL CYCLE, at 42 (Lu Meng trans., China Financial Publishing House, 2017).

29 WILLIAM GREEN, THE SIMPLE PATH TO WEALTH, at 130 (China Youth Publishing House, 2022).

30 HOWARD MARKS, *supra* note 25, 17.

categories from the outset to reflect overall market information.[31] Under the index strategy, passive investment funds believe that the market is unbeatable because of its overall efficiency. Consequently, they refrain from seeking investment selection and capital allocation based on fundamentals and do not engage in information-driven strategy. In contrast, high-frequency trading forms a high-intensity gaming model that tracks rapid shifts in supply and demand through the application of algorithms, starting with an investment approach that trusts real-time information derived from order capital flow and utilizes capital trends as the foundation for assessing market efficiency. High-frequency trading, which relies on advanced algorithms and computer systems, severs the connection between investment decisions and the fundamentals of listed companies. This form of trading achieves automated execution at speeds measured in milliseconds, focusing on capturing micro-price fluctuations rather than the long-term value. At its core, high-frequency trading operates on the belief that the market can be defeated and must establish a more efficient analysis system than other traders to capture market fluctuations more quickly.

In summary, passive investment funds believe that the market is efficient overall. Therefore, they deploy algorithms to mirror the market or specific industries, aiming for diversified investment. High-frequency trading institutions, on the other hand, rely heavily on algorithms to swiftly capture shifts in stock supply and demand for trading purposes, characterized by extremely brief holding periods and a focus on price manipulation. Consequently, algorithm-driven institutional investors display a clear 'financialized' orientation, meaning that investment strategies increasingly prioritize their trading interests over industrial financing.[32]

III. EXTERNAL COSTS ARISING FROM ALGORITHM-DRIVEN INSTITUTIONAL INVESTORS

Algorithm-driven institutional investors have a dual role in the securities market. On the positive side, institutional investors, such as high-frequency traders, provide more liquidity to the market, while passive investment funds are usually considered long-term capital in the investor structure of listed companies.[33] On the negative side, algorithm-driven institutional investors

31 Burton G. Malkiel, *Passive Investment Strategies and Efficient Markets*, 9 European Financial Management 1-2 (2003).

32 Lawrence E. Mitchell, *Reflecting on Finance: A Historical Perspective*, 4 Qinghua Law Review 90-91 (2012).

33 Lucian A. Bebchuk & Scott Hirst, *Index Funds and the Future of Corporate Governance: Theory, Evidence, and Policy*, 119 Columbia Law Review 2029-2034 (2019).

often lack the motivation to engage in corporate governance, demonstrating prevalent 'free-rider' behavior. Furthermore, the homogeneity of trading strategies and a lack of market discipline can contribute to systemic risks, as evidenced by systemic risk factors influencing funds and case studies of financial crises. In simpler terms, algorithm-driven institutional investors, while automating investments through algorithms, lead to the individualization of interests and the shifting of costs onto the market, thereby threatening the order of the existing markets.

A. Lack of Incentives to Participate in Corporate Governance

Algorithm-driven institutional investors lack incentives for active participation in corporate governance. For example, passive investment funds invest in a wide range of stocks within specific indexes or industries and do not make investment decisions based on fundamentals. The index-based investment strategy and low-cost charging model result in a lack of incentive for the former to participate in corporate governance.[34] For example, Vanguard has invested in over 13,000 companies globally but employs only 15 staff members dedicated to corporate governance. State Street has invested in 9,000 companies, with fewer than 10 employees responsible for its corporate governance.[35] Passive investment funds find it challenging to comprehend or stay informed about most of their invested companies, and actively intervening becomes even more difficult. Empirical research indicates that passive investment funds, especially index funds, have a compelling reason to refrain from actively engaging in corporate governance, often aligning themselves with the preferences and viewpoints of company managers.[36] Essentially, a focus on trading-oriented investment strategies leads passive investment funds to adopt the belief that the performance of their portfolio companies should be governed by the natural forces of the market.[37] In contrast to passive investment funds, high-frequency trading institutions lack interest and motivation in engaging with corporate governance issues.

34 There is an opposite view that index funds are not completely lacking in incentives to participate in corporate governance. The concentration of market share enables passive investment funds to share information with actively managed funds under the same investment advisor. However, this view is based on the situation of highly concentrated market share for discussion. Secondly, the scope of information sharing and the enthusiasm for cooperation between active and passive funds have not been convincingly explained. Marcel Hanuka & Edward Rock, *The Index Fund Free Rider Problem*, 123 Yale Law Journal 1-2 (2014).

35 Dorothy S. Lund, *The Case Against Passive Shareholder Voting*, 43 The Journal of Corporation Law 123-124 (2018).

36 Lucian A. Bebchuk & Scott Hirst, *supra* note 33, 2046.

37 Dorothy S. Lund, *supra* note 35, 120.

Moreover, algorithm-driven institutional investors in China's securities market face a scenario of concentrated shareholdings. The challenge lies in restraining controlling shareholders, a factor that further diminishes their motivation to engage in corporate governance.[38] According to the latest data, over half of the A-share listed companies in China have controlling shareholders with a shareholding ratio greater than 30%. In the context of concentrated shareholding, institutional shareholders with low shareholding ratios play limited roles in corporate governance due to insufficient incentives to participate. This conclusion is supported by empirical and survey results, specifically evidenced by (1) low shareholder meeting attendance rates. Empirical evidence shows that after excluding shares held by controlling shareholders, the average attendance rate of minority shareholders (including institutional investors) at shareholder meetings in 2024 was only 29.05%.[39] (2) Few proposals are submitted by minority shareholders. Most proposals are put forward by the board of directors,[40] while those from minority shareholders account for only 1.4% of all proposals. Among these, proposals from minority shareholders, excluding controlling shareholders, constitute less than 5%. (3) 'Voting with feet' incentives are more substantial.[41] Surveys show that 'funds invest relatively diversified; if the cost of engaging in corporate governance becomes excessively high, some fund managers might opt out of investing in the company and prefer instead to direct their funds elsewhere, thereby resorting to voting with their feet'.[42] In the context of

38 The shareholding ratio of institutional investors is limited, and they mainly exist as small and medium investors in the equity structure of listed companies. Taking public mutual funds as an example, according to the *Regulations on Liquidity Risk Management of Open-Ended Public Mutual Funds*, all open-ended funds managed by the same fund manager shall not hold more than 15% of the freely tradable shares of a listed company; all investment portfolios managed by the same fund manager shall not hold more than 30% of the freely tradable shares of a listed company. Private funds also have similar regulations. *See Guidelines for the Operation of Private Securities Investment Funds*.

39 2024 CHINA CORPORATE POST-INVESTMENT MANAGEMENT REPORT, at https://www.fidelity.com.cn/media/PDF/esg/Fidelity-China-Stewardship-Report-zh_2024.pdf (Last visited on November 27, 2025).

40 Zeng Zhiyuan, Cai Dongling & Wu Xiaokai, *Is It 'Supervising Management' or 'Restraining Major Shareholders'? The Impact of Fund Holdings on the Value of Listed Companies*, 2 Journal of Financial Research 158 (2018).

41 Zhang Zixue, *On the Exercise of Voting Rights of Shares Held by Securities Investment Funds*, 2 The Journal of Investor 102-104 (2013).

42 During the symposium on institutional investors' participation in the governance of listed companies, fund managers pointed out that fund participation in corporate governance is subject to constraints. Firstly, fund companies holding a large number of listed companies need to assign dedicated personnel to research and track, which requires human and capital costs. For fund companies, especially small and medium-sized fund companies, the cost of participating in corporate governance is relatively high. Secondly, the limitation of shareholding ratios means that fund companies are in a minority shareholder position in many listed companies and are not easy to have a real impact on corporate governance. Thirdly, fund investments are relatively diversified. If the cost of participating in corporate governance is too high, some fund managers may give up investing in the company and choose other companies instead, resulting in the phenomenon of 'voting with their feet'. *See* MINUTES OF THE SYMPOSIUM ON FUND MANAGERS' PARTICIPATION IN THE GOVERNANCE OF LISTED COMPANIES, at http://www.sohu.com/a/482275442_121123883 (Last visited on November 26, 2025).

concentrated shareholding, even if algorithm-driven institutional investors are willing to exercise corporate governance voting rights, it is difficult to change corporate governance decisions by concentrating shares compared to controlling shareholders. When participation in corporate governance activities has limited effects on enhancing company value, it further weakens the former's incentive to participate in corporate governance.

B. 'Free-Rider' Behavior Undermining Market Fairness

Algorithm-driven institutional investors are typical market free riders. Taking index funds among passive investment funds as an example, index funds purchase a basket of securities corresponding to the base index, aiming to achieve market returns at the lowest cost. However, intense competition prevails among index funds that adopt highly endogenous strategies. If an index fund invests in improving corporate governance, its costs would exceed those of its competitors, resulting in lower investment returns for clients.[43] 'Any attempts by an index fund manager to enhance management and raise fees are doomed to fail, as investors prefer to capitalize on the manager's efforts by shifting to another fund offering the same index investment portfolio without any management fees or at a lower cost.'[44] Consequently, many stocks held by index funds opt not to invest time and resources in exercising their voting rights, preferring instead to become free riders on the efforts of other shareholders. Furthermore, as the fund scale continues to grow and market funds continuously flow from informed investors to passive investors unconcerned with fundamentals, 'market quality will decrease, including the informational efficiency of prices',[45] limiting the effectiveness and the role of market discipline based on price behavior.[46]

High-frequency trading institutions are typical free riders. Institutional investors usually place large orders and continuously buy in smaller increments. In response, high-frequency trading institutions have

43 MAURICE M. LEFKORT, A PROPOSED SOLUTION TO THE INDEX FUND FREE RIDER PROBLEM, at https://magazine.wharton.upenn.edu/digital/a-proposed-solution-to-the-index-fund-free-rider-problem/ (Last visited on November 26, 2025).

44 Lucian A. Bebchuk, Alma Cohen & Scott Hirst, *The Agency Problems of Institutional Investors*, 31 Journal of Economic Perspectives 89-93 (2017).

45 MARY JO WHITE, ENHANCING OUR EQUITY MARKET STRUCTURE, at https://www.sec.gov/newsroom/speeches-statements/2014-spch060514mjw (Last visited on November 28, 2025).

46 Elisabeth Kempf, Alberto Manconi & Oliver Spalt, *Distracted Shareholders and Corporate Actions*, 30(5) The Review of Financial Studies 1660-1661 (2017).

developed controversial liquidity detection strategies, identifying the order behavior and trading intentions of other institutional investors through algorithms to implement similar free-riding behaviors.[47] As a product of modern financial technology, the profits of high-frequency trading mainly stem from market price fluctuations, causing high-frequency trading institutions to emerge predominantly in securities and futures markets with ample liquidity and smooth operations. Markets with weak vitality and low trading volumes are not the main target environment for high-frequency trading. This means that high-frequency trading institutions require a securities market that can support a sufficient number of market participants under good regulation. The better the corporate governance of listed companies, the more companies, trading volume, and market activity increase, thereby creating an ideal environment for high-frequency trading institutions to flourish. However, the zero-sum game approach adopted by high-frequency trading excludes it from contributing to the market's overall development.

The behavior of algorithm-driven institutional investors, akin to free-riding, undermines the fairness of the securities market, giving rise to unequal competition among investors. The fairness principle, as stipulated in the *Securities Law* and other regulatory documents, mandates equal and fair competition among investors in the securities market. This principle aims to prevent any party from gaining an undue advantage over others, thereby ensuring sustainable market development. High-frequency trading employs technological advantages to execute unfair trading strategies far faster than the market average speed,[48] while passive investment funds benefit from the active behavior of other market entities through passive following and outsource costs similar to optimizing corporate governance and enhancing fund performance. The common characteristic of such free-rider behaviors is obtaining individual private benefits without benefiting the overall market construction, and keeping relevant entities in a position of non-fair competition for an extended period, damaging the legitimate rights and interests of other investors.

47 Matt Prewitt, *High-Frequency Trading: Should Regulators Do More*, 19 Michigan Telecommunications and Technology Law Review 135-136 (2012).

48 Ma Qijia & Wang Miao, *Regulation of Unfair High-Frequency Trading in the United States and Its Enlightenment to the Amendment of the Securities Law*, 8 Securities Market Herald 66-67 (2018).

C. Increased Market Volatility Risks Under Homogeneous Trading Strategies

Despite their variety, including ETFs focusing on sectors such as healthcare and new energy, as well as index funds mirroring indices such as the CSI 300, passive investment funds demonstrate considerable uniformity in their core investment focus and automated tracking methodologies. Therefore, if the market index experiences a significant decline, all funds tracking these targets will face the same market risk. As the scale of passive investment funds continues to grow and their market influence expands, the homogeneity of investment strategies will further increase investor herding behavior, leading to greater market volatility and spillover effects.[49] For instance, during a market downturn, a sequence of events unfolds: index stock declines lead to a fall in fund net values, which in turn triggers investor redemption and further exacerbates the decline in market indexes. This not only causes passive investment funds to contract in tandem, but also amplifies market volatility and contributes to a pro-cyclical trading pattern.

The impact of high-frequency trading institutions on market volatility is even more direct. High-frequency trading institutions employ investment strategies that can detect the presence of significant hidden orders and identify traders' intentions to enter or exit the market. For instance, if a small order is swiftly executed, the algorithm deduces the potential existence of a larger order and promptly engages in arbitrage. However, liquidity detection can also produce 'flash orders'. This occurs when an investor places an order without a clear seller; the exchange may immediately route the order to high-frequency traders who can execute trades at high speeds. Potential investors who receive 'flash orders' can see the buy order and respond with their own orders. In this process, high-frequency trading algorithms outpace slower investors in transactions. However, in the competition for orders, high-frequency trading can cause securities prices to reverse millions of times daily, boosting asset price bubbles and increasing market volatility.

Algorithmic trading by institutional investors, which accelerates market volatility, poses significant risks to the stable operation of financial infrastructure. Robust financial infrastructure is essential for maintaining stability in financial markets, as evidenced by historical events such as the Asian financial crisis and dot-com crash, where the collapse of financial

49 Dorothy S. Lund, *supra* note 35, 109-110.

systems led to significant market disruptions.[50] Homogeneous trading strategies exacerbate market volatility, thereby exerting greater strain on financial infrastructure, including exchanges and clearinghouses that are essential for market operations. For example, in the 2010 'Flash Crash' event, high-frequency trading institutions generated a large number of trades in a short period, resulting in a surge in order backlogs, which subsequently necessitated the temporary suspension of trading for some stocks on the New York Stock Exchange. To address the challenges posed by homogeneous trading strategies, financial infrastructure needs to achieve more efficient and intelligent order processing and risk management to prevent systemic risks arising from increased volatility.

In summary, algorithm-driven transactions bring about the individuation of interests and the externalization of costs. It is worth noting that the actions of individual institutional investors, driven by algorithms and centered around trading, do not directly or notably create problems. However, the ongoing expansion of their market share, scale, and influence inevitably raises concerns. An even greater challenge lies in the market's inability to self-correct and overcome the cost externalization problem brought about by algorithm-driven institutional investors centered on trading. Hence, legal adjustments are necessary to regulate the private rights associated with algorithm-driven institutional investors as private entities to address the challenges arising from their transaction-centric approach.

IV. LEGAL RESPONSE TO ALGORITHM-DRIVEN INSTITUTIONAL INVESTORS WITH TRANSACTION-CENTRIC ISSUES

Financial regulation must adapt to financial risks. As a product of financial technology-driven development, algorithm-driven institutional investors, by offering diverse trading and investment strategies via algorithms, have given rise to systemic risks marked by heightened volatility, resulting in the fragmentation of interests and the shifting of costs externally. Against the backdrop of the differentiation of institutional investors and the fundamental changes in investment orientation, major capital markets have made corresponding adjustments, not only improving regulatory frameworks that focus on both the investment and fundraising ends but also revising legal provisions related to investor rights protection and information disclosure.

50 ZHENG YU, ZENG DAPENG & JI KAIMING, LEGAL PROTECTION OF FINANCIAL MARKET INFRASTRUCTURE: CURRENT SITUATION, CONFLICTS AND IMPROVEMENTS, at 6-7 (Shanghai People's Publishing House, 2018).

A. Maintaining the Regulatory Framework and Normative System Based on the Public/Private Classification

In *China's Securities Investment Fund Law* and related administrative regulations and departmental rules, a regulatory framework and normative system have been established, which are based on the classification of publicly offered and private funds. Publicly offered funds, which are open to the general public, are subject to strict regulatory oversight and transparency requirements because they are typically managed by government-supported entities. Private funds, on the other hand, are raised from a limited number of qualified investors and have different regulatory requirements, including more flexible investment restrictions and less stringent disclosure obligations.[51] Furthermore, in response to the widespread emergence of program trading, a prominent form of algorithm-driven institutional investment, the *Securities Law* has introduced fundamental regulations stipulating that users of program trading must 'report to the securities exchange and refrain from compromising the safety or normal trading order of the securities exchange'.[52] Following the revision of self-regulatory rules by the exchanges and the issuance of the *Administrative Measures for Program Trading in the Securities Market (Trial)* by the China Securities Regulatory Commission (CSRC), the regulatory framework for program trading has been strengthened.[53] However, despite these measures, the specific regulation of program trading is still at a relatively low legal level and has not yet developed into a comprehensive legal and

51 The *Securities Investment Fund Law* categorizes and regulates institutional investors based on public offerings and private placements, as evidenced by the division of publicly offered funds and non-publicly offered funds in its chapter structure. Specifically, for publicly offered funds, the CSRC has enacted the *Supervisory Measures for Managers of Publicly Offered Securities Investment Funds*, which standardize the operation, shareholder qualifications, corporate governance, and daily management of publicly offered funds. For private funds, the State Council has promulgated the *Regulations on the Supervision and Administration of Private Investment Funds* to establish corresponding regulatory frameworks. Thus, laws, administrative regulations, and departmental rules primarily classify institutional investors into public/private categories, forming differentiated regulatory regimes.

52 Article 45 of the *Securities Law* stipulates that 'Program trading with orders automatically generated by or placed through computer programs shall be in compliance with the regulations of the securities regulatory authority under the State Council and shall be reported to a stock exchange and shall not affect the system security of stock exchange or the normal trading order.'

53 Regarding program trading, the Shanghai Stock Exchange has issued the *Notice on Strengthening the Management of Relevant Matters of Program Trading*, and the Shenzhen Stock Exchange also has similar regulations. In addition, in the *Several Opinions on Strengthening Supervision, Preventing Risks, and Promoting the High-Quality Development of the Capital Market* promulgated by the State Council, it is clearly stated that regulations on program trading should be introduced to strengthen the supervision of high-frequency quantitative trading. Subsequently, the CSRC issued the *Administrative Measures for Program Trading in the Securities Market (Trial)*, indicating that the differentiation of institutional investors has been recognized at the regulatory level. However, whether the overall regulatory system and regulatory concepts have adaptive changes regarding the trading-oriented investment orientation formed by algorithm-driven institutional investors remains to be further observed.

regulatory system that effectively addresses the primary issues arising from the investment strategies.

Under the public/private regulatory framework, institutional investors in China mainly focus on fiduciary duties between fund managers and investors, neglecting investment behavior regulation. Publicly offered funds in China mainly take the form of contractual funds, whereas private funds may be organized as corporations or partnerships. However, both are essentially based on the relationship in which investors entrust their funds to professional institutions for management, which lays the legal basis for fiduciary duties.[54] The *Securities Investment Fund Law* explicitly outlines the fiduciary duties of fund managers and custodians, mandating that they fulfill their entrusted responsibilities in accordance with the law and the terms of the fund contracts. This includes the custodian's obligation to execute investment instructions and supervise the fund manager's operations to ensure compliance with legal and contractual requirements.[55] For example, in the publicly offered fund section, it is stipulated that 'when engaging in other significant related-party transactions, the principle of prioritizing the interests of fund shareholders must be followed to prevent conflicts of interest',[56] reflecting the duty of loyalty under fiduciary duties.

Nevertheless, the fiduciary duties under the *Securities Investment Fund Law* are relatively abstract, primarily protecting investors' rights and interests without specifically constraining the investment orientation of institutional investors and their derivative issues. Traditionally, fund managers possess professional discretion in utilizing funds, grounded in a trust relationship, and are exempt from external interference. Whether the application of algorithms in index investing or high-frequency trading remains free from external intervention depends on the absence of illegal activities such as market manipulation, which provides a legal basis for external regulators to intervene. However, the issues discussed in Part II reveal that, firstly, algorithm-driven institutional investors' indifference to

54 THE RESEARCH GROUP OF THE FIRST COMPREHENSIVE ADJUDICATION DIVISION OF THE SHANGHAI FINANCIAL COURT, RESEARCH ON DIFFICULT ISSUES IN THE APPLICATION OF LAW IN CONTRACTUAL PRIVATE OFFERING FUND CASES: BASED ON THE ANALYSIS REPORT OF 115 SIMILAR CASES, at 96 (Shanghai People's Publishing House, 2021).

55 According to article 3 of the *Securities Investment Fund Law*, the rights and obligations of a fund management institution, a fund custodian and the fund share holders shall be agreed upon in a fund contract in accordance with this Law. The fund management institution and the fund custodian shall perform their fiduciary duties in accordance with this Law and the fund contract.

56 According to article 74 of the *Securities Investment Fund Law*, entities engaging in other material connected transactions shall adhere to the principle of prioritizing the interests of fund share holders, mitigate conflicts of interest, comply with the provisions of the State Council's securities regulatory authority, and fulfill information disclosure obligations.

market construction and their 'free-rider' behavior highlight the conflict between individual benefit-seeking, transaction-centric investments and market public interests, a conflict that the market is unable to resolve spontaneously and effectively; secondly, there is a regulatory vacuum for the spillover effects of transaction-centric investments by algorithm-driven institutional investors, and regulatory lag can lead to systemic risks. Algorithm-driven institutional investors, backed by technologies such as algorithms, big data, and artificial intelligence, are expanding in scale and activity, thereby substantially enhancing the practicality and volatility of the financial markets. In the past financial crises, it was the 'lack of systemic risk regulation' and 'inability to cope with practicality' that resulted in the persistent dissemination of crises and disrupted financial order and regulation.[57]

B. Adapting Regulation to Algorithm-Driven Investing

Major capital markets have transitioned from a traditional binary public/private structure to specialized legislative frameworks tailored to regulate institutional investors, with a particular emphasis on differentiating these investors within the realm of financial technology.[58] Representative measures include the *Germany's High-Frequency Trading Act*, which introduced regulations, such as the obligation for algorithmic trading entities to obtain specific qualifications and ensure that their trading systems can handle high volumes without being used for market manipulation. The EU's revision of the *Markets in Financial Instruments Directive* and Japan's revision of the *Financial Instruments and Exchange Act*, both of which directly regulate high-frequency trading. Although their scope of application and regulatory targets vary, they share some common or similar regulatory provisions, such as the requirement for high-frequency trading institutions to register and be subject to supervision and regulatory measures targeting cryptocurrency exchanges. Ensuring transparency by disclosing trading strategies and algorithms to regulatory authorities is crucial for maintaining fair competition and preventing the use of non-public information or

57 Fan Conglai, Lin Jian & Cheng Yijiang, *Macroprudential Management and Microprudential Supervision: The Construction of a Coordinated Mechanism for Financial Regulatory Policies*, 54(9) Academic Monthly 35 (2022).

58 COMPARISON AND RESEARCH ON THE DEVELOPMENT OF PUBLIC MUTUAL FUNDS IN CHINA AND THE UNITED STATES, at 12-13 (China Finance and Economics Publishing House, 2020).

unethical practices that could undermine market integrity.[59] Furthermore, in 2022, the US introduced a legislative draft specifically targeting index funds, acknowledging that the significant size of index funds fundamentally altered the ownership landscape. The ownership structure of the securities market and voting rights in corporate governance should belong to fund holders, explicitly requiring fund investment advisors to vote according to the instructions of fund shareholders.[60]

At the same time, addressing the rise of algorithm-driven institutional investors' transaction-centric strategies, legal frameworks have intensified the emphasis on bolstering the fiduciary responsibilities of investment advisors, namely fund managers, thereby augmenting the oversight of institutional investors' behavior. For example, regarding institutional investor participation in corporate governance, two models have emerged: the due diligence management model originating from the UK and the strong regulatory model represented by the US.[61] In the US, the legislative framework emphasizes that trustees are legally obligated to exercise their voting rights in corporate governance with fiduciary responsibility, ensuring that their actions align with the best interests of the beneficiaries. In accordance with the guidelines of the Securities and Exchange Commission (SEC), investment advisors are required to disclose their proxy voting policies, procedures, and outcomes on their websites or in written form, ensuring transparency and accountability in representing their clients' interests.[62] Within the UK's due diligence management framework, investment advisors are expected to 'responsibly manage the property entrusted by fund providers' and formulate policies accordingly.[63] They should also record specific voting decisions for

59 The difference is that the applicable objects, regulatory standards, and mandatory levels of information disclosure of the above regulations are not the same. For example, in terms of regulatory standards, German law requires high-frequency trading institutions to use authorized data and algorithms, and EU regulations emphasize issues of investor protection and market stability. Finally, the requirements for information disclosure by high-frequency trading institutions in these regulations or guidelines are also not exactly the same. For example, the *Markets in Financial Instruments Directive* requires high-frequency trading institutions to disclose their trading strategies and algorithms to exchanges and regulatory authorities, while Japan requires high-frequency trading institutions to make detailed algorithm disclosures to exchanges and submit detailed business reports regularly. Fan Jiwei, *Regulation of High-Frequency Trading in Japan and Its Enlightenment*, 7 Securities Market Herald 67-68 (2018).

60 *See* Investor Democracy Act S4241. Although this bill has not been passed, it has received wide support in the legislative body.

61 China Securities Asset Management Association, *Overseas Practices of Institutional Investors' Participation in the Governance of Listed Companies*, 4 Voice of Amac 1 (2021).

62 Miao Ruobing, *Legal Regulation of Passive Investors' Passive Participation in Corporate Governance*, 2 Securities Market Herald 39-40 (2022).

63 CHINA SECURITIES ASSET MANAGEMENT ASSOCIATION & ZITAI SHAREHOLDER SERVICE INSTITUTION, COMPILATION OF OVERSEAS LAWS, REGULATIONS AND PRACTICES ON INSTITUTIONAL INVESTORS' PARTICIPATION IN THE GOVERNANCE OF LISTED COMPANIES, at 10 (China Finance and Economics Publishing House, 2021).

corporate governance and disclose them to the public, including investors and the regulatory authorities. Simultaneously, institutional investors should oversee the governance of listed companies and promptly communicate major issues while effectively managing conflicts of interest.[64] To further promote institutional investor participation in corporate governance and fulfill fiduciary duties, both models allow institutional investors to take collective action to drive shareholder activism. For instance, the SEC relaxed regulations on proxy solicitation, enabling institutional investors to engage directly with companies for governance purposes. This has led to a decrease in the costs and potential legal risks associated with their involvement in corporate governance.[65]

Tax law differentiation also plays an important regulatory role in constraining transaction-centric investments by algorithm-driven institutional investors. By examining the historical evolution of investment funds, we discern that both the principle of avoiding double taxation and the fund share diversification promoted by tax laws underscore the significant impact of taxation on institutional investors' investment behavior.[66] Hence, the focus on high-frequency trading, which leverages speed beyond the market average, serves to illustrate how such strategies have competitive advantages and 'free-riding' behaviors. France and Italy have levied financial transaction taxes on frequent withdrawals and cancellations of orders.[67] Similarly, long-term investments encourage institutional investors to focus on the fundamentals of listed companies and participate in corporate governance actions rather than purely engaging in market price speculation.[68] Countries such as China, the US, and the UK apply varying capital gains tax rates based on the duration of shareholding, with lower rates for long-term investments and higher rates for short-term holdings. Through such differentiated tax burdens, the overall returns of funds can be significantly affected, and tax law differentiation can guide institutional investors' investment behavior, promoting attention to listed company fundamentals and long-term investment.

64 *Id.*, 3-9.

65 WU XINCHUN, VIGOROUSLY PROMOTE INSTITUTIONAL INVESTORS' PARTICIPATION IN THE GOVERNANCE OF LISTED COMPANIES, at https://www.sse.com.cn/aboutus/research/report/c/10056873/files/b27578bd6a764e8c8445acbabad79988.pdf (Last visited on October 15, 2025).

66 MATTHEW P. FINK, THE RISE OF MUTUAL FUNDS: AN INSIDER'S VIEW, at 20-22 (Dong Huachun trans., Law Press · China, 2010).

67 Thomas Garnett, Gaetan Nicodeme & Bogdan Tasnadi et al., *Financial Transaction Taxes in the European Union*, 69(1) National Tax Journal 233-234 (2016).

68 Cheng Cai & Bian Yijun, *An Examination and Evaluation of the Tax System of American Mutual Funds*, 4 Journal of Foreign Taxation 37 (2002).

V. LEGAL REGULATION OF EXTERNAL COSTS VISUALIZATION AND ACCOUNTABILITY CENTERED ON TRADING

Jack Balkin believes that the core of algorithmic social regulation is not the algorithm itself but the people who use algorithms and those who allow themselves to be dominated by algorithms.[69] One principle of equitable governance in an algorithmic society is to refrain from externalizing costs, thereby preventing the contamination of social justice. Translating this into legal norms means implementing legal regulations to balance public and private interests. Specifically, for the aims of this research, it is crucial to guarantee the transparency and accountability of the external costs incurred by algorithm-driven institutional investors. Transparency can be achieved via mandatory disclosure processes, while accountability necessitates a balance among various rights and obligations and adaptive adjustments to the regulatory framework.

A. Establishing External Cost Visualization Regulations Through Mandatory Information Disclosure Procedures

The main issues arising from transaction-centric investments by algorithm-driven institutional investors can be categorized as the individuation of interests and the externalization of costs, where the externalization of costs, due to the absence of coordinated accountability, gives rise to a 'law-evading' issue.[70] To address this issue, information disclosure supervision can achieve the visualization of external costs and the legal connection of accountability systems, with its legal basis rooted in fund managers' fiduciary duty to investors.

By leveraging the concept of cost externalization and enhancing accountability, we can achieve the specification and visualization of fiduciary duties for algorithm-driven institutional investors through procedural constraints centered on information disclosure, such as (1) mandatory disclosure of corporate governance participation. To address the lack of incentive for algorithm-driven institutional investors to participate in corporate governance, fund managers should disclose the voting situation in corporate governance to fund shareholders in a timely and comprehensive manner and participate in corporate governance activities based on the

69 Jack Balkin, *Three Laws in the Algorithmic Society*, 5(2) Modernization of Rule of Law Studies 185 (2021).

70 Shi Jichun & Feng Hui, *Research on 'Accountability System': Also on the Status of Accountability System in Chinese Economic Law*, 1 Politics and Law 2 (2009).

principle of safeguarding the best interests of investors. Institutional investors holding over 1% of a listed company's circulating shares are required to disclose their voting in corporate governance, as mandated by regulations and best practices, to ensure transparency and protect the interests of circulating shareholders.[71] For institutional investors holding less than 1% of a listed company's circulating shares, fund managers are required to disclose their annual voting records in corporate governance to fund shareholders, ensuring transparency and accountability in their role as active participants in company decision-making. (2) Algorithm registration and trading record retention. The non-disclosure and opacity of algorithms, known as 'algorithm black boxes', raise concerns about losing control over unknown 'hidden layers'. However, algorithms often serve as the cornerstone of investment strategies for institutional investors, making non-disclosure the norm, whereas disclosure is treated as an exception.[72] Given the risks that 'digital divides' and a lack of algorithmic transparency pose, a balanced solution would be to disclose them to public sector entities, including securities exchanges and industry associations tasked with public supervision. This approach not only fulfills the goals of visualization supervision and information disclosure but also safeguards the commercial secrets of institutional investors. Currently, China has designated securities companies as disclosure targets, with these companies summarizing the information for exchanges.[73] However, this disclosure path suffers from the lack of both a solid legal foundation and post-leakage accountability clauses, thereby impeding the realization of real-time algorithmic supervision. (3) Introduction and disclosure of voting consultations. The consulting opinions provided by voting advisors can reduce the cost of institutional investor participation in corporate governance. By fulfilling fiduciary duties, it facilitates the sharing of diverse fund management costs among the same fund manager,[74] which is a viable approach to internalizing external costs through market mechanisms. This practice has been adopted in many countries. China can provide voting consulting services through institutions such as the China Securities Investor Services Center. In the process of

71 Yin Jie & Li Jing, *On the Exercise of Voting Rights Attached to Shares Held by Securities Investment Funds*, 7(2) Northern Legal Science 87-88 (2013).

72 Xu Feng, *Legal Regulation of the Black Box of Artificial Intelligence Algorithms: Taking Intelligent Investment Advisors as an Example*, 6 Oriental Law 81 (2019).

73 Article 8 of the *Administrative Measures for Program Trading in the Securities Market (Trial)* stipulates that if the clients of securities companies conduct program trading, they shall report relevant information to the securities companies that accept their entrust in accordance with the provisions of the stock exchange and the provisions of the entrust agreement.

74 Guo Li & Zhao Yijun, *supra* note 8.

introducing voting consultation, it is imperative to establish clear regulations that mandate managers to disclose to fund shareholders the adoption standards, decision-making procedures, and any potential conflicts of interest, as emphasized by the *Blackstone case* and supported by legal regulations, to achieve the specificity and institutionalization of fiduciary duties through information disclosure procedures.

B. Enhancing Negative and Prohibitive Duties with a Focus on Balancing Obligations

In the context of 'rights-obligations' in legal adjustments, the exercise of rights manifests through active encouragement and advocacy, whereas the fulfillment of obligations is marked by regulatory restrictions and prohibitions. Legal norms employ differentiated incentive and restraint measures; all aimed at achieving an equilibrium of interests within a stable order. Algorithm-driven institutional investors, whose trading-focused investments incur external costs, have surpassed the traditional boundaries of private subject rights and ought to be incorporated into a balanced system of obligations. In simpler terms, within the scope of legal regulation, the external expenses incurred by algorithm-driven institutional investors' transaction-centric investments should be matched by corresponding obligations on the liability front.

Initially, regulatory measures can encourage market entities to voluntarily adopt high behavioral standards through self-regulatory compliance, thereby establishing stricter internal controls within the ambit of self-governance. The application of innovative technologies by market entities can generate behavioral constraints from bottom-up practices, gradually forming higher legal obligations that balance rights. For example, regarding institutional investor participation in corporate governance, BlackRock pioneered the 'BlackRock Voting Choice' program. For institutional investors meeting certain conditions under BlackRock funds, four types of voting rights options are provided: direct voting by clients, authorization for BlackRock to vote, voting according to advice from BlackRock's introduced voting advisors, or a hybrid model (clients choose some targets for direct voting while authorizing BlackRock to vote for the rest).[75] Under this self-compliance management, shareholders of BlackRock

75 EMPOWERING INVESTORS THROUGH BLACKROCK VOTING CHOICE, at http://www.blackrock.com/corporate/about-us/investment-stewardship/blackrock-voting-choice (Last visited on November 28, 2025).

funds have more corporate governance choices, partially addressing the lack of incentives for fund managers. Fund shareholders can also be more proactive and conscious in reviewing the corporate governance decisions of investment advisors. Thus, through feedback from bottom-up practices, a self-regulatory constraint standard can evolve into a legal obligation that balances rights and responsibilities.

Secondly, for behaviors exhibiting significant external costs that are characteristic of algorithm-driven institutional investors, it is necessary to formulate negative and prohibitive duty regulations in order to clarify behavioral boundaries. For instance, to curb the influx of invalid trades from high-frequency traders, the European Futures Exchange implemented a regulatory measure known as the Order-to-Trade Ratio (OTR), which is calculated as the ratio of executed trades to the total number of orders submitted. When an institutional investor approaches the minimum order execution rate, the exchange provides dynamic notifications and restricts their trading rights for the day after reaching the threshold.[76] In China's regulatory provisions, a differentiated fee approach is also used for guidance and restrictions. Functionally, regulating specific behaviors sets clear prohibitions, thereby encouraging algorithm-driven institutional investors to adopt higher behavioral standards and establish proper behavioral norms and boundaries for automated algorithmic decision-making.

Furthermore, tax reforms can function as a legal regulatory mechanism to augment 'benefit-based burdens' by imposing heightened behavioral costs. For instance, China's tax incentives for institutional investors apply universally, without distinguishing between active and passive investments, and similarly, without differentiating whether the investment orientation leads to external cost-sharing. The aim is to promote the development of institutional investors. However, algorithm-driven transactions centered on trading generate collective cost-sharing and individual benefit individuation. If their income continues to be taxed for a universal purpose, it will lack competitiveness and exclusivity in terms of tax burden,[77] thereby exacerbating institutional adaptability and unfairness at the systemic level. Implementing the 'benefit-based taxation' principle requires measuring the specific benefits of taxpayers to determine their tax burdens, aiming

76 ORDER-TO-TRADE RATIO, at https://www.eurex.com/ex-en/rules-regs/regulations/order-to-trade-ratio (Last visited on November 28, 2025).

77 Zhu Weiqun, *Understanding Four Basic Theoretical Issues of Taxation*, 1 Taxation Research 16 (2016).

to achieve a balance between tax burdens and benefits.[78] In this regard, taxing institutional investors' trading behaviors differently should reflect the implementation of the 'quantity-based taxation' principle in China's trading end, which can promote the balance of rights and obligations.

C. Enhancing the Regulatory Framework for Constraining Transaction-Side Cost Externalization

Based on a comprehensive assessment, a shift towards functional regulation in the securities industry should be contemplated to ensure the adaptive allocation of regulatory powers. The Securities Association of China is the primary regulatory body for the fund industry, focusing on self-regulation based on entity categories. However, algorithm-driven institutional investors are reflected in the direct impact of trading-end behaviors, which involve tracking intraday trading data, disclosing information about corporate governance participation, and monitoring abnormal trading activities. Given these issues, the securities exchange is a more direct regulatory body. However, the regulatory powers of securities exchanges over institutional investors are incomplete, and their subject regulatory powers over fund managers are limited, resulting in potential regulatory gaps and difficulties in effectively enforcing functional regulation. Therefore, to establish a regulatory framework for addressing external costs related to trading, securities exchanges, as front-line regulators of securities trading activities, should be granted more subject regulatory powers to adjust supervision in a timely manner according to market changes.

Algorithmic support for transaction-centric investments by algorithm-driven institutional investors requires a cooperative governance approach that integrates legal and technological governance within a new regulatory framework. Technological governance entails the utilization of scientific principles and methodologies in governance practices, thereby fostering a modern governance system grounded in scientific operational principles and advanced technologies.[79] As financial technology continues to evolve, questions arise regarding how legal and technological governance can coexist and complement each other more effectively. Various technological governance measures can complement legal governance for algorithm-driven institutional

78 Ye Jinyu, *Interpretation, Justification and Operation of the Principle of Benefit Taxation for Environmental Taxes*, 3 Law Science 77 (2019).

79 Liu Yongmou, *Digital Governance in Network Society*, 40(3) Journal of Guizhou University (Social Science Edition) 9 (2022).

investors focused on trading. For instance, data analysis technology can assist regulators in real-time monitoring, enabling them to identify abnormal trading behaviors and mitigate over-limit risks. With the help of RegTech, natural language processing technology, and machine learning algorithms, violations can be rapidly identified, regulatory reports and decision-making data can be automatically generated, and the efficiency and precision of regulatory processes can be enhanced. It should be noted that to foster collaboration between technological and legal governance, it is essential to embed technological governance within the value concepts of law for normalization, correction, and guidance, while also leveraging technological advancements to mitigate the inherent delays in legal governance.[80] In the context of financial technology, the execution and application of securities regulation are crucial, as evidenced by recent cases and technological innovations.

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80 Zheng Zhihang, *Dual Governance of Legal Governance and Technical Governance in Network Society*, 2 China Legal Science 121-124 (2018).