Foreign Institutional Ownership and Corporate Leverage Adjustment, Innovations and Performance: Evidence from China

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Declaration

This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for examination which has led to the award of a degree.

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Abstract

This thesis investigates the influence of foreign institutional ownership (FIO) on three key aspects of Chinese listed firms: the speed of capital structure adjustment, research and development (R&D) investment, and corporate performance. While prior studies have examined the role of FIO in developed markets, systematic evidence from China remains limited due to its distinct governance, regulatory, and ownership structures. Using a comprehensive panel of Chinese A-share firms, this study provides new insights into how foreign institutional investors shape firms' financial behaviour and outcomes in an emerging market context.

The first empirical chapter analyses whether FIO enhances the speed at which firms adjust their leverage toward target levels. Employing a two-stage partial adjustment model and a difference-in-differences (DID) approach based on the 2019 removal of the Qualified Foreign Institutional Investor (QFII) quota restrictions, the results show that FIO significantly accelerates firms' convergence to optimal leverage ratios. The effect is stronger in firms with lower state ownership, higher transparency, and greater innovation intensity, suggesting that foreign investors mitigate capital adjustment frictions through governance and monitoring mechanisms.

The second empirical chapter examines how FIO affects firm innovation, measured by R&D intensity and the time taken to reach industry-average R&D levels. OLS results reveal a negative relationship between FIO and R&D intensity, indicating cautious or short-term investment preferences. However, Cox survival analysis demonstrates that FIO significantly shortens the time required for firms to reach the industry-average R&D benchmark, implying that foreign investors promote innovation alignment rather than excessive risk-taking. The effect is particularly pronounced in non-state-owned firms and in industries supported by the Made in China 2025 (MC2025) policy, highlighting FIO's dual role as a corrective incentive and strategic overseer.

The third empirical chapter explores the impact of FIO on firm performance, using accounting indicators (ROA, ROE, EBIT) and market valuation (Tobin's Q). The

findings indicate that FIO improves profitability and valuation but may reduce EBIT, consistent with enhanced cost efficiency and strategic resource reallocation. The governance effects are stronger among firms with concentrated foreign ownership, broader investor coverage, and long-term or active investment orientation, while weaker in state-owned enterprises. Robustness checks using lagged variables, first-difference models, and policy-based DID estimations based on the 2014 Shanghai–Hong Kong Stock Connect confirm the consistency of the results.

Overall, this thesis provides robust empirical evidence that foreign institutional ownership influences corporate financial decisions through governance, incentive alignment, and institutional channels. By integrating agency theory, institutional monitoring, and policy embeddedness, the study deepens understanding of how global capital interacts with China's institutional environment. The findings contribute to the literature on corporate governance, financial liberalisation, and emerging markets, suggesting that high-quality foreign investors can enhance firms' governance, innovation, and long-term performance under supportive regulatory conditions.

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CHAPTER 1
INTRODUCTION

1.1 Background

In economies that are characterised by strong state involvement and evolving institutional frameworks, the influence of foreign institutional ownership (FIO) on corporate decisions is profoundly shaped by its interaction with national policy regimes. Rather than functioning as an autonomous governance mechanism, FIO is frequently embedded within a complex regulatory environment where state directives, policy initiatives, and strategic sector classifications exert significant influence on corporate behaviour. In China, initiatives such as the Qualified Foreign Institutional Investor (QFII) programme, the Renminbi Qualified Foreign Institutional Investor (RQFII), and the Shanghai-Hong Kong Stock Connect policy have not only facilitated capital market access for foreign investors but have also directed capital flows in alignment with broader developmental priorities (CSRC, 2020; Liu et al., 2021). For example, firms in sectors identified under the "Made in China 2025" strategy have received policy-induced advantages that affect both investment opportunities and governance outcomes, thereby modifying the strategic relevance of FIO (Wang and Luo, 2024).

Regulatory discretion refers to the flexibility of Chinese regulators in sequencing financial reforms and enforcement, which further conditions the extent of foreign investor influence by imposing ownership caps, differential voting rights, or approval mechanisms for sensitive industries (Huang and Zhu, 2015). These institutional arrangements give rise to what Meyer and Peng (2016) term *institutional co-evolution*, wherein foreign ownership effects cannot be disentangled from the policy environment within which they operate. Consequently, the governance and performance implications of foreign institutional ownership (FIO) in China must be interpreted through a dual lens: the disciplinary potential of foreign investors and the institutional pathways enabled or constrained by national strategies. This interaction constitutes a central analytical foundation for understanding how external capital engages with internal

governance in *transitional political economies*, which describes emerging markets that are shifting from state-dominated to market-based systems.

Within this evolving institutional framework, the rapid liberalisation of China's capital markets and the surge of foreign institutional participation have created a natural setting to examine how external investors influence corporate decisions. Recent regulatory reforms including the removal of foreign ownership limits, the expansion of the Stock Connect schemes, and the inclusion of Chinese equities in major global indices have significantly reshaped the ownership landscape. Yet, despite the unprecedented growth of foreign institutional ownership, there remains limited empirical understanding of how these investors affect corporate governance and financial outcomes in transitional markets. This study addresses this gap by analysing how foreign institutional investors influence firm behaviour within China's unique institutional environment. By integrating governance, performance, and policy perspectives, the thesis contributes to a more nuanced understanding of how external capital interacts with domestic corporate structures during periods of financial liberalisation.

From a theoretical perspective, FIO represents a distinctive external governance mechanism, particularly salient in settings where domestic institutions are weak, fragmented, or politicised. Classical agency theory posits that the alignment between managerial interests and shareholder objectives improves when investors possess both the capacity and the incentives to monitor and discipline corporate behaviour (Shleifer and Vishny, 1997). Unlike retail investors, foreign institutions often benefit from superior analytical resources, diversified portfolios, and relative independence from local political affiliations, making them well-positioned to exert monitoring pressure and demand accountability (Ferreira and Matos, 2008; Aggarwal et al., 2011). Three principal channels have been identified through which FIO may influence firm behaviour. First, the threat of exit or active engagement can mitigate agency problems and improve capital allocation efficiency (Gillan and Starks, 2003; Chen et al., 2007). Second, foreign presence enhances informational transparency, as international

investors typically demand more rigorous disclosure and attract greater analyst coverage (Bushee and Noe, 2000). Third, many foreign institutions, particularly pension funds and sovereign wealth vehicles, emphasise long-term value creation, thereby counteracting short-term tendencies in corporate strategy (Aghion et al., 2013; Bena and Li, 2014). These mechanisms have been shown to reinforce governance quality and strategic focus in developed markets; however, their effectiveness in emerging economies remains context dependent.

In China's hybrid institutional environment, the operation of these governance channels is shaped by regulatory discretion, state dominance, and ambiguous ownership boundaries (Allen et al., 2005; Nee and Opper 2012). While foreign investors may substitute for weak domestic institutions, their practical capacity to do so is often constrained by external regulatory limits, including ownership caps, sectoral entry restrictions, and state oversight of corporate control (Huang and Zhu, 2015; Wang and Luo, 2024). At the same time, the political independence and long-horizon orientation of foreign capital may allow these investors to act as stabilising agents in firms where domestic governance remains compromised. Thus, the disciplinary, informational, and incentive-alignment functions of FIO cannot be evaluated in isolation from the institutional frameworks in which they are embedded. In transitional systems such as China, where market liberalisation coexists with state-driven industrial policy, FIO embodies a governance force that is both enabling and constrained, responsive not only to firm-level characteristics but also to broader policy intent and institutional compatibility.

The operational relevance of foreign institutional ownership (FIO) extends beyond abstract governance theories, exerting measurable influence on firms' financial decisions, innovative activities, and overall performance.

In terms of capital structure, FIO has been associated with faster adjustment towards target leverage ratios. According to the partial adjustment framework, firms adjust leverage gradually due to frictions such as transaction costs and information

asymmetries (Flannery and Rangan, 2006). Emerging market firms, however, typically exhibit slower adjustment speeds due to underdeveloped capital markets and governance constraints (Dang et al., 2012). By enhancing transparency, monitoring managerial decisions, and alleviating financing frictions, foreign investors encourage more disciplined financial behaviour and accelerate the speed of adjustment.

Regarding innovation, foreign investors can ease financing constraints and support long-term R&D investment. In emerging markets where institutional voids limit access to external funding, foreign ownership provides both capital and governance discipline that facilitate sustained innovation (Bena and Li, 2014). China's R&D investment remains constrained by financing frictions and policy uncertainty (Hu et al., 2019). Through improved information flows and strengthened managerial incentives, FIO promotes future-oriented strategic decisions (Chemmanur et al., 2014), mitigating political and regulatory distortions that often discourage innovative activity.

Concerning firm performance, extensive empirical evidence links FIO to improved profitability and valuation outcomes. Higher levels of foreign ownership correlate positively with return on assets (ROA) and return on equity (ROE), as well as with market-based indicators such as Tobin's Q (Ferreira and Matos, 2008; Cornett et al., 2007). These effects are particularly pronounced in China, where concentrated ownership and state control have historically weakened performance-linked governance mechanisms (Allen et al., 2005). By strengthening managerial accountability and reducing agency costs, FIO contributes to more performance-oriented governance structures.

Taken together, the influence of FIO across capital structure, innovation, and performance domains underscores its role as a catalyst for modernising corporate governance in emerging markets. Rather than merely supplying capital, foreign institutions enhance strategic discipline, resource reallocation, and reputational upgrading. These functions are particularly salient in transitional economies such as China, where market liberalisation continues alongside persistent state intervention.

Ongoing reforms, especially the QFII and Stock Connect programmes have expanded the institutional space within which foreign ownership operates, offering an empirical context to examine how liberalisation policies shape firm-level outcomes.

1.1.1 China's Capital Market Reform and the Rise of FIO

Since the early 2000s, China has progressively liberalised its capital markets to promote the participation of foreign institutional investors. A series of regulatory milestones, such as the launch of the Qualified Foreign Institutional Investor (QFII) scheme in 2002, the renminbi-denominated RQFII in 2011, and the implementation of the Shanghai-Hong Kong Stock Connect[1] in 2014, has substantially liberalised access to China's domestic equity market. These reforms reduced the need for individual capital account approval, signifying a shift towards greater regulatory openness. In 2020, the establishment of a unified "New QFII" framework further eliminated quota restrictions, granting qualified foreign institutions essentially unrestricted access to Chinese markets (CSRC, 2020). China's stock market remains largely retail-dominated, yet foreign institutional investors can still influence corporate behaviour through information and reputation channels (Shanghai Stock Exchange, 2019). This fragmented investor structure weakens the effectiveness of shareholder monitoring and highlights the potential governance role that FIO may fulfil.

Despite this progress, China's stock market remains largely retail-dominated, and the monitoring effectiveness of domestic investors is limited. The growing presence of foreign institutional ownership (FIO) introduces potential governance benefits through enhanced information flows and reputational discipline (Shanghai Stock Exchange, 2019). However, much of the existing research has focused on general governance

[1] The Shanghai–Hong Kong Stock Connect is a cross-border investment mechanism launched in November 2014, allowing international investors to trade eligible shares listed on the Shanghai Stock Exchange through the Hong Kong Stock Exchange, and vice versa for mainland Chinese investors. The policy marked a significant step towards capital market liberalisation by easing restrictions on cross--border portfolio flows and expanding foreign institutional access to China's A-share market (CSRC 2014).

outcomes, offering limited insights into how FIO affects strategic financial decisions such as capital structure adjustments, innovation investment, and firm performance under institutional constraints. Moreover, most prior studies focus on developed economies, leaving a gap in understanding how FIO functions within emerging markets characterised by state ownership, legal ambiguity, and regulatory discretion.

The Chinese institutional environment provides a distinctive setting to explore these issues. Unlike fully liberalised financial systems with dispersed ownership and strong legal enforcement, China's markets feature pervasive state involvement, politicised corporate structures, and evolving regulatory regimes (Allen et al., 2005; Nee and Opper, 2012). The coexistence of formal market liberalisation and informal administrative control generates a hybrid system in which foreign capital interacts with state dominance and opaque ownership arrangements. This institutional hybridity not only shapes the behaviour of foreign investors but also constrains the channels through which they can exert governance influence. Consequently, China offers an empirical context uniquely suited to investigate whether, and through which mechanisms, FIO contributes to improved corporate outcomes amid weak institutions and persistent state control.

1.2 Conceptual and Literature Context

1.2.1 FIO, Corporate Governance, and Institutions

Foreign institutional ownership (FIO) is widely recognised as an effective external governance mechanism, particularly in environments where investor protection is weak and enforcement is underdeveloped. Classical agency theory posits that institutional investors are better equipped than dispersed retail shareholders to discipline management through their superior monitoring capacity, expertise, and longer-term investment horizons (Shleifer and Vishny, 1997; La Porta et al., 1999). Empirical studies associate FIO with enhanced board oversight, reduced expropriation, and improved decision quality (Ferreira and Matos, 2008; Gillan and Starks, 2003; Harford

et al., 2018).

However, the effectiveness of FIO as a governance force varies across institutional contexts. In China, ownership structures create conditions that may either enable or constrain foreign investors' monitoring capacity. State-owned enterprises (SOEs) operate under both commercial and political objectives, often reducing managerial accountability and limiting market-based governance signals (Allen et al., 2005). Political involvement, restricted transparency, and regulatory ownership caps further narrow the channels through which foreign investors can exert influence (Chen et al., 2009; Zhu and Zhu, 2016). At the same time, SOEs play a central role in national industrial and innovation strategies, including *Made in China 2025* (MC2025), and benefit from policy and financial support within a state-led development framework. This coexistence of state control and market liberalisation makes China a distinctive context in which to examine the heterogeneous effects of FIO.

In this study, a firm is defined as state-owned if the ultimate controlling shareholder is a government entity holding at least 50 per cent of ownership or voting rights, consistent with the classification used by the China Securities Regulatory Commission (CSRC) and prior research (Chen et al., 2010; Lin and Bo, 2012). To account for ownership heterogeneity, a binary variable (SOE_dummy) is constructed using CSRC official records and cross-verified with Capital IQ's institutional ownership data. This classification allows for the assessment of whether the influence of FIO on firm outcomes differs between SOEs and non-SOEs. Conceptually, this approach reflects the broader notion of institutional sensitivity, referring to the extent to which ownership structures interact with political and legal institutions to shape governance outcomes (Khanna and Palepu, 2000; Aggarwal et al., 2011). Recognising these contingencies is essential to understanding the disciplinary and strategic effects of FIO within hybrid economies such as China.

1.2.2 FIO, Financial Constraints, Innovation, and Resource Allocation

Recent studies increasingly emphasise the role of foreign institutional ownership (FIO) in alleviating financial constraints and improving strategic resource allocation. A key channel through which FIO operates is its capacity to enhance firms' access to external finance. By improving transparency and reducing information asymmetrically, foreign investors lower the cost of capital and facilitate market-based funding. This is particularly relevant in China, where financial systems remain bank-centred and state-directed, often limiting access to long-term credit (Fazzari et al., 1988; Almeida et al., 2004; Chemmanur et al., 2014). Empirical evidence indicates that the presence of FIO is associated with improved credit ratings, lower borrowing costs, and reduced reliance on politically mediated credit channels (Bena and Li, 2014).

The relaxation of financial constraints directly affects firms' capacity to invest in innovation. Foreign institutional investors, with their longer investment horizons and strategic incentives, tend to support R&D activities by discouraging managerial short-termism and validating innovation-driven growth strategies (Aghion et al., 2013). Evidence from developed markets shows that institutional ownership correlates positively with R&D intensity and innovation output, as reflected in patent counts and citations (David et al., 2001). Yet, the magnitude of this relationship depends on internal governance quality, ownership concentration, and firm-level visibility (Zhang et al., 2022; Ferreira et al., 2010). These factors make the innovation effects of FIO contingent upon transparency and institutional embeddedness.

At a broader level, FIO can improve capital allocation efficiency by promoting value-maximising investment and curbing entrenchment behaviour. Firms under stronger investor oversight are more likely to channel resources towards productive uses rather than politically motivated expenditures (Wurgler, 2000; Cornett et al., 2007). This efficiency reflects not only financing availability but also governance quality. Firms with credible governance frameworks and enhanced disclosure practices are better positioned to attract funding and invest in long-horizon projects (Rajan and Zingales,

1998; Whited and Wu, 2006). Transparent firms are also less constrained by capital availability (Hadlock and Pierce, 2010). Consequently, the relationship between FIO and firm-level innovation or performance must be understood in the joint context of financial access and governance infrastructure, which together form the institutional foundations shaping corporate strategic choices.

1.2.3 FIO in Chinese Markets: Comparative Mechanisms

The role and effectiveness of foreign institutional ownership (FIO) differ substantially across institutional settings. In developed economies with strong legal frameworks and mature financial markets, FIO complements existing governance mechanisms by enhancing shareholder oversight and managerial discipline (Doidge et al., 2007). In contrast, in emerging markets where formal institutions are less developed and state ownership remains extensive, FIO may act as a partial substitute for institutional voids. Under such conditions, foreign investors promote transparency, limit managerial discretion, and improve capital discipline (Allen et al., 2005). The potential of FIO to serve as a governance substitute is nevertheless restricted by structural and regulatory constraints. These include foreign ownership limits, inconsistent policy enforcement, and weak disclosure standards (Fan et al., 2011; Huang and Zhu, 2015). Such barriers often diminish the monitoring benefits typically associated with foreign investment, particularly in environments characterised by political uncertainty and low investor protection. Consequently, the actual governance impact of FIO in emerging economies remains highly context-dependent and insufficiently explored.

China represents a distinctive case combining formal market liberalisation with continued state involvement. Reforms such as QFII, RQFII, and Stock Connect have improved foreign access to domestic equity markets, yet many listed firms remain subject to political appointments and non-commercial objectives (Wang and Luo, 2024). This hybrid institutional environment complicates the evaluation of FIO's effectiveness, since conventional governance models do not fully capture the interaction between

foreign ownership and state influence. Moreover, existing empirical research on China is fragmented, often limited to specific governance indicators or unconditional performance correlations without adequately addressing endogeneity or firm-level heterogeneity (Fan et al., 2011). Despite the expanding role of FIO in China's capital markets, few studies provide an integrated framework that simultaneously considers its effects on capital structure adjustment, innovation, and performance. Prior research often treats these aspects separately and overlooks the interdependencies that shape firm behaviour. In response, this thesis adopts a multidimensional approach that links governance, finance, and strategic perspectives across the three empirical chapters. This integrated design contributes to a more comprehensive understanding of how FIO operates within China's evolving institutional environment.

1.3 Research Objectives and Gaps

Despite growing academic interest in the role of foreign institutional investors, several important gaps remain in literature. Existing research provides limited empirical evidence on the influence of foreign institutional ownership (FIO) within the Chinese context. Most prior studies focus on developed economies where market institutions are mature and investor protection is strong, leaving little understanding of how FIO operates in transitional markets characterised by state ownership, regulatory discretion, and evolving governance structures.

Moreover, the institutional pathways through which FIO affects corporate outcomes have not been sufficiently explored. While many studies document associations between FIO and firm performance, the mechanisms linking governance, innovation, and financial decisions remain ambiguous. A more integrated approach is required to explain how external investors shape internal decision-making processes and interact with domestic institutional constraints. The literature has also given limited attention to the policy and institutional contexts within which FIO operates. The effects of government intervention, capital-market liberalisation, and regulatory reforms such as

the Qualified Foreign Institutional Investor (QFII) scheme and the Stock Connect programmes remain only partially understood. These contextual factors are critical to explaining how foreign capital influences firm behaviour under varying regulatory and policy conditions.

Addressing these limitations, this thesis investigates how FIO influences Chinese firms' financial decisions and performance. The overarching research question guiding this inquiry is: How does foreign institutional ownership influence Chinese firms' financial decisions and performance?

Building on the identified research gaps, the thesis empirically examines the role of FIO through three complementary studies. The first empirical chapter analyses the impact of FIO on firms' capital structure adjustment, employing panel regressions and dynamic partial adjustment models to estimate how foreign ownership affects the speed of leverage convergence. The second chapter investigates whether and how FIO alleviates financial constraints and promotes innovation, using ordinary least squares (OLS) and Cox survival models to examine the timing and intensity of R&D investment. The third chapter evaluates the relationship between FIO and firm performance by combining OLS and difference-in-differences (DID) frameworks to identify both contemporaneous and policy-induced effects. Together, these studies provide an integrated understanding of how foreign ownership shapes firms' financial policies, innovation strategies, and performance outcomes within China's evolving institutional environment.

This central research question lies at the intersection of corporate governance, institutional investment, and firm performance literature. While substantial evidence from developed markets suggests that foreign institutional investors serve as effective governance agents (Shleifer and Vishny, 1997; Ferreira and Matos, 2008), their role in transitional economies remains less clearly understood due to institutional specificities such as state intervention, weak investor protection, and information asymmetries (La Porta et al., 1999; Khanna and Palepu, 2000). Rather than treating FIO as a uniform

influence, this thesis conceptualises its impact through three interrelated mechanisms:
(i) Monitoring: the capacity of foreign investors to discipline management and mitigate agency costs (Gillan and Starks, 2003);
(ii) Information efficiency: the improvement of disclosure quality, analyst coverage, and information credibility (Bushee and Noe, 2000; Aggarwal et al., 2011); and
(iii) Incentive alignment: the tendency of globally oriented investors to promote long-term strategic orientation and resist short-termism (Aghion et al., 2013).
These mechanisms are theoretically expected to influence three dimensions of firm behaviour: financial policy, innovation activity, and performance outcomes. Their empirical relevance is examined across the thesis's three analytical chapters, which collectively construct an integrated framework linking foreign ownership to firm-level decisions through governance-based transmission channels. In doing so, the study provides a coherent understanding of how external capital interacts with domestic institutions to shape corporate outcomes in transitional economies such as China.

1.4 FIO and Capital Structure Adjustment

The first empirical chapter investigates how foreign institutional ownership (FIO) influences corporate financial discipline through firms' leverage adjustment behaviour. This analysis builds on the premise that governance mechanisms shape financial flexibility, which determines firms' capacity to undertake investment and enhance performance (Myers and Majluf, 1984; Shleifer and Vishny, 1997; Wurgler, 2000). The concept of an optimal capital structure is grounded in the trade-off theory, which posits that firms balance the tax advantages of debt against the potential costs of financial distress and agency conflicts (Modigliani and Miller, 1958; Kraus and Litzenberger, 1973). Each firm therefore has a target leverage ratio that maximises its value by minimising the overall cost of capital. In practice, firms may deviate from this target because of market conditions, adjustment costs, or managerial preferences, but tend to move gradually toward it overtime (Flannery and Rangan, 2006; Dang et al., 2014).

The speed of adjustment (SOA) measures the proportion of deviation from the target leverage that is corrected within a given period, indicating how rapidly firms restore their capital structures in response to shocks. A higher SOA reflects greater financial flexibility and managerial responsiveness, whereas a lower SOA suggests friction or inertia in adjustment.

Within this framework, FIO is expected to enhance adjustment efficiency by improving transparency, strengthening managerial accountability, and promoting disciplined financial behaviour (Gillan and Starks, 2003; Bushee, 1998; Aggarwal et al., 2011). These governance channels are particularly salient in China's transitional institutional setting, where capital allocation remains influenced by state ownership and evolving regulatory structures (Chen, 2004; Zou and Xiao, 2006). The empirical analysis therefore examines whether FIO accelerates firms' convergence toward target leverage and how this relationship differs across ownership types, information environments, and financial constraints. It also explores whether investor heterogeneity, such as active versus passive and long-term versus short-term institutions produces different monitoring effects.

This chapter constitutes the first empirical step in the thesis framework linking foreign ownership to firm behaviour. By demonstrating how FIO improves capital-structure responsiveness through strengthened governance, it establishes the foundation for the subsequent chapters that analyse its implications for innovation and firm performance.

1.5 FIO and R&D Investment

The second empirical chapter explores the influence of foreign institutional ownership (FIO) on corporate R&D investment within China's hybrid institutional environment. Innovation is a fundamental driver of long-term competitiveness and sustainable growth (Porter, 1990; Hall et al., 2005), yet firms in emerging markets often face financial and institutional barriers that hinder consistent investment in innovation. This

study examines whether and how FIO can promote firm-level innovation by improving governance quality and alleviating financial constraints. The analysis considers two interrelated dimensions of corporate innovation: the likelihood of engaging in R&D activity and the intensity of R&D expenditure relative to industry benchmarks. These dimensions capture both the initiation and persistence of innovation investment. FIO is expected to encourage innovation primarily by mitigating financing frictions, enhancing managerial accountability, and validating long-term strategic projects (Aghion et al., 2013; Chemmanur et al., 2014). The effectiveness of these mechanisms, however, depends on firm-specific governance structures and the broader institutional setting. For instance, state-owned enterprises may face competing policy objectives and weaker managerial incentives, while privately owned firms with greater autonomy can more effectively translate foreign monitoring into strategic innovation (Allen et al., 2005).

Evidence from Chinese listed firms shows that FIO is particularly effective in accelerating firms' participation in innovation activities, especially in sectors supported by industrial policies such as Made in China 2025. However, the impact on overall R&D intensity remains mixed, suggesting that external governance facilitates the timing and initiation of innovation but does not necessarily increase total expenditure levels. This outcome reflects the complex balance between enhanced monitoring and managerial discretion in China's transitional economy. By analysing how FIO interacts with institutional and policy environments to shape firms' innovative behaviour, this chapter deepens the understanding of external governance mechanisms in emerging markets. It also establishes a conceptual link between financial flexibility and strategic investment, forming the second stage of the thesis's integrated framework that connects foreign ownership to long-term corporate outcomes.

1.6 FIO and Corporate Performance

The third empirical chapter investigates whether foreign institutional ownership (FIO) enhances corporate performance in China's transitional institutional environment. While extensive evidence from developed markets shows that FIO strengthens firm performance through improved monitoring, information transparency, and managerial accountability (Ferreira and Matos, 2008; Aggarwal et al., 2011), its impact in emerging economies remains less certain. In China, concentrated ownership, political oversight, and weak enforcement may either constrain or mediate the governance effects of foreign investors. This study therefore evaluates whether and under what conditions FIO contributes to improved profitability and market valuation among Chinese listed firms.

The analysis focuses on both accounting-based and market-based indicators of firm performance. FIO is expected to enhance performance by reducing agency costs, strengthening governance quality, and improving resource allocation efficiency. However, the extent of these benefits likely depends on the composition and behaviour of foreign investors as well as firm-level institutional characteristics. For instance, active and short-term foreign investors may exert stronger monitoring pressure and respond more swiftly to performance signals, while passive or long-term investors may prioritise stability and diversification (Bushee, 1998; Chen et al., 2009). This empirical chapter also examines heterogeneity in FIO's performance effects by considering ownership type, investor concentration, and industry context. The results demonstrate that the governance influence of FIO is conditional rather than universal, reflecting China's unique combination of market liberalisation and state intervention. Under conducive institutional and ownership conditions, foreign investors can act as effective drivers of profitability and market efficiency.

By linking foreign ownership to tangible performance outcomes, this chapter completes the empirical sequence of the thesis. It integrates the governance and investment mechanisms discussed in earlier chapters and demonstrates how the disciplinary role of

FIO translates into improved financial and strategic performance. Detailed methodological design, data construction, and identification procedures are presented in Chapter 4.

1.7 Contributions

1.7.1 Governance Mechanism Perspective

This thesis contributes to the understanding of foreign institutional ownership (FIO) as a governance mechanism by providing comprehensive empirical evidence from the Chinese market. While earlier studies have established the monitoring role of FIO (Ferreira and Matos, 2008; Aggarwal et al., 2011), limited research has examined how this influence operates across different dimensions of firms' financial and corporate decision-making. By analysing the effects of FIO on leverage adjustment (Chapter 2), R&D investment (Chapter 3), and corporate performance (Chapter 4), the thesis presents an integrated empirical perspective on how external investors influence managerial decisions through governance-related channels.

The results indicate that FIO alleviates agency problems, reduces financing frictions, and supports forward-looking investment behaviour. In particular, evidence of faster leverage adjustment reveals an important governance margin often overlooked in prior work, suggesting that financial discipline plays a key role in translating foreign ownership into long-term value creation. By linking firm-level financial behaviour with strategic outcomes, the thesis refines the empirical understanding of how institutional investors affect corporate decision-making within China's evolving governance environment (Harford et al., 2018; Cornett et al., 2007).

1.7.2 Long-term Orientation and Investment Strategy Perspective

From a long-term investment perspective, this thesis provides empirical evidence on the role of foreign institutional investors as facilitators of strategic decision-making.

The findings align with existing research suggesting that patient and long-term oriented investors promote stability and support innovation by reducing managerial short-termism (Aghion et al., 2013; Bushee, 1998). Using firm-level evidence from China, the thesis extends this understanding to an emerging market context where institutional constraints and ownership structures often limit sustained investment in innovation (Bena and Li, 2014; Chemmanur et al., 2014). The analysis also distinguishes among different types of foreign investors, including active and passive, as well as long-term and short-term institutions. This distinction allows for a more detailed examination of investor heterogeneity and its implications for corporate behaviour. The results show that variation in investment styles leads to differing governance and incentive effects, indicating that FIO should not be viewed as a homogeneous category. By documenting how investor heterogeneity shapes firms' innovation and performance outcomes, the thesis refines the empirical understanding of how long-term capital interacts with firm strategy in China's transitional economy.

1.7.3 Institutional Context and the Chinese Policy Environment

A further contribution of this thesis lies in its empirical focus on China's distinctive institutional and policy environment. Using firm-level evidence covering all A-share listed companies from 2004 to 2023, the study examines how foreign institutional ownership (FIO) operates within the broader process of China's financial liberalisation. In particular, the analysis incorporates major regulatory developments such as the Qualified Foreign Institutional Investor (QFII) programme and the Shanghai–Hong Kong Stock Connect, which provide important variation for assessing how foreign participation interacts with domestic governance structures. This context enables a systematic examination of how external monitoring mechanisms function under evolving market reforms and regulatory conditions.

The thesis focuses specifically on China's hybrid institutional framework, characterised

by concentrated state ownership, selective liberalisation, policy-oriented industrial strategies, and uneven legal enforcement (Brandt and Rawski, 2008; Lardy, 2019). These features distinguish China from other emerging economies and shape the effectiveness of foreign investor engagement. The coexistence of formal market reforms and informal political control creates a governance environment in which the influence of FIO is simultaneously enabled and constrained (Fan et al., 2007). Strategic initiatives such as *Made in China 2025* further illustrate how industrial policy can both attract and channel foreign capital, while maintaining strong state oversight (Howell, 2020).

By grounding the empirical analysis in China's institutional and policy context, the thesis provides context-sensitive insights for both scholarship and practice. It shows that the governance role of FIO depends not only on investor characteristics and firm-level conditions but also on the structure of state–market relations. For policymakers, the findings highlight the importance of aligning capital-market openness with governance safeguards; for firms, they suggest that investor composition can serve as a strategic element in navigating institutional constraints. Through this contextual focus, the thesis refines the understanding of how foreign ownership contributes to corporate governance and market development in China's evolving financial landscape.

1.7.4 Integrated Empirical Design and Identification Strategy

A further contribution of this thesis lies in its empirically integrated design, which links ownership structure to firm behaviour through a consistent analytical sequence. The three empirical chapters follow a governance–investment–performance framework, providing a coherent structure that facilitates cumulative understanding. Each chapter focuses on a distinct aspect of firm financial discipline, strategic innovation, and performance outcomes while applying compatible modelling strategies to ensure comparability across analyses.

The empirical chapters employ complementary approaches, including dynamic adjustment models and survival analysis, alongside standard panel regressions. In the leverage adjustment analysis, a partial adjustment framework is adopted to capture the speed at which firms move toward their target capital structure, offering a refined empirical lens through which governance effects can be observed. Endogeneity concerns are mitigated using lagged variables, first-differenced specifications, and policy-based variations such as the QFII quota removal and the Shanghai–Hong Kong Stock Connect. By maintaining methodological consistency and transparency across chapters, the thesis contributes an empirically grounded framework for studying foreign institutional ownership within transitional market settings. The design facilitates replication and extension, providing a structured basis for future research examining the link between external ownership and firm-level behaviour in emerging economies.

1.8 Thesis Structure

This thesis is organised into five chapters, combining a unified theoretical introduction (Chapter 1) followed by three empirical chapters (2, 3 and 4) which are deliberately aligned with a governance–investment–performance logic, as theorised in the corporate finance literature (Shleifer and Vishny, 1997; Myers and Majluf, 1984; Wurgler, 2000). Finally, the concluding chapter (chapter 5) synthesises the overall findings and contributions of the thesis. The final chapter also discusses the implications of the findings for academic research, corporate governance practices, and public policy. It also includes some recommendations for policymakers regarding foreign capital access, investor disclosure, and market liberalisation, as well as directions for future research in Chinese corporate finance.

CHAPTER 2

THE IMPACT OF FOREIGN INSTITUTIONAL OWNERSHIP ON THE SPEED OF CAPITAL STRUCTURE ADJUSTMENT

2.1 Introduction

A series of financial liberalisation reforms, including the Qualified Foreign Institutional Investor (QFII) programme launched in 2002, the Renminbi Qualified Foreign Institutional Investor (RQFII) scheme introduced in 2011, and the Shanghai–Hong Kong Stock Connect implemented in 2014, has facilitated the increasing presence of foreign institutional ownership (FIO) in China's listed firms. Together, these initiatives have progressively opened China's capital markets by easing investment restrictions, expanding foreign investor quotas, and improving cross-border trading mechanisms. These developments provide a natural setting in which to examine whether and how FIO influences firms' capital-structure dynamics. The trade-off theory suggests that firms gradually adjust towards an optimal leverage ratio (Myers, 1984; Flannery and Rangan, 2006), yet such adjustment is often incomplete because of transaction costs, financing constraints, and agency frictions. In China, these frictions tend to be more pronounced, which may significantly alter both the pattern and the mechanism of adjustment (Chen, 2004; Zou and Xiao, 2006).

The speed of capital-structure adjustment (SOA) refers to the proportion of deviation from a firm's target leverage that is eliminated within a given period. It captures how efficiently firms respond to deviations from their optimal leverage when external or internal shocks occur. A faster SOA indicates effective financial management, stronger governance discipline, and greater financial flexibility, whereas a slower SOA reflects managerial inertia or the presence of adjustment frictions. The speed of adjustment matters because it reflects the overall efficiency and adaptability of corporate financing decisions. In well-functioning financial systems, managers correct deviations from target leverage quickly to minimise financing costs and maintain an optimal balance

between risk and return. In contrast, where governance is weak and information asymmetry is high, leverage adjustments are often delayed, resulting in sub-optimal capital structures and lower firm value. Accordingly, SOA provides a dynamic measure of financial discipline and governance efficiency. It reveals how responsive firms are to changing economic conditions and how external investors, such as foreign institutions, may influence this responsiveness.

Although the QFII programme was officially launched in 2002, reliable firm-level data on foreign shareholdings became consistently available only from 2004 onwards. The early implementation years involved gradual quota allocation and limited market participation, meaning that observable effects on firm-level ownership and financing behaviour appeared with a short delay. Consequently, the sample period from 2004 to 2023 captures the post-implementation phase of China's liberalisation reforms, during which the presence of foreign institutional investors expanded significantly, and policy impacts became empirically measurable. Empirical studies suggest that firms in developed economies typically close around 30–50 per cent of their leverage gap each year, indicating relatively efficient adjustment towards target capital structures (Flannery and Rangan, 2006; Öztekin and Flannery, 2012). In contrast, firms in emerging markets tend to adjust more slowly because of institutional constraints such as weaker investor protection, less developed financial markets, and higher information asymmetry. These frictions raise the cost of external financing and reduce managerial incentives to restore optimal leverage levels. Understanding the determinants of adjustment speed is therefore particularly relevant in emerging economies such as China, where institutional characteristics and ownership structures play a critical role in shaping firms' financial flexibility. Within this context, FIO may help to alleviate these frictions by strengthening governance practices and improving information environments. Recent evidence shows that firms with higher levels of foreign ownership adjust more rapidly towards their target leverage, particularly in settings characterised by information asymmetry and weak investor protection (An et al., 2021).

Examining how FIO influences the speed of capital-structure adjustment in China thus extends the dynamic capital-structure literature and deepens understanding of how global capital interacts with domestic institutional conditions.

Two concurrent developments in the Chinese capital market further motivate this investigation: the rising involvement of foreign institutional investors and the gradual transformation of firms' capital-structure behaviour. While earlier studies have examined the determinants of leverage (Rajan and Zingales, 1995; Frank and Goyal, 2009) and the role of governance in financing decisions (Shleifer and Vishny, 1997), few have explored how foreign ownership affects the *speed* at which firms adjust towards their optimal leverage. China provides a particularly relevant empirical setting because of its distinctive combination of state involvement, segmented financial markets, and incremental liberalisation reforms. The market also exhibits institutional features that distinguish it from developed economies, including extensive state intervention, market segmentation, and an evolving legal framework (Allen et al., 2005). State-owned enterprises (SOEs) often operate under political mandates and soft budget constraints, which can distort capital-structure choices and reduce responsiveness to optimal leverage targets (Chen and Strange, 2005; Qian and Roland, 1998). Furthermore, regulatory controls and limited access to external finance exacerbate adjustment frictions that are typically underestimated in models based on Western economies. These institutional characteristics raise the question of whether FIO, with its associated benefits in governance and transparency, can alleviate such frictions and enhance firms' adjustment speed.

Considering these contrasts, evidence derived from developed markets cannot be directly generalised to the Chinese context. Whereas firms in mature economies primarily contend with market-based frictions, Chinese firms face unique challenges arising from administrative constraints, state-guided financing, and weak investor protection. These conditions underscore the importance of a context-specific empirical analysis of how foreign institutional ownership affects leverage-adjustment dynamics.

Particular attention is paid to the mechanisms through which FIO may exert influence, including enhanced monitoring, improved disclosure, and a longer-term investment orientation. The findings are expected to contribute to a broader understanding of how cross-border capital interacts with domestic institutional environments to shape corporate financial decisions.

2.1.1 Research Objectives

The rising participation of foreign institutional investors in China's capital market has prompted increasing empirical interest in their impact on corporate financial behaviour (An et al., 2021; Dang et al., 2023). While a substantial body of literature highlights the role of institutional investors in enhancing governance and mitigating agency problems (Chen et al., 2007; Ferreira and Matos, 2008), the effect of foreign ownership on the speed of adjustment (SOA) remains largely unexamined, particularly in environments characterised by extensive state involvement.

Existing evidence suggests that SOA is influenced by a range of factors, including firm-specific characteristics, institutional frictions, and macroeconomic shocks (Flannery and Rangan, 2006; Öztekin and Flannery, 2012; Cook and Tang, 2010). However, the specific contribution of foreign investors to leverage adjustment dynamics in the Chinese institutional setting has received limited empirical scrutiny. In emerging markets where legal and institutional voids prevail, foreign institutional investors may act as substitutes for underdeveloped governance mechanisms, thereby affecting corporate financial adjustment patterns (Bena et al., 2021; Aggarwal et al., 2011). The analysis examines whether foreign institutional ownership contributes to a faster adjustment towards target capital structures among Chinese listed firms. Given China’s distinctive institutional environment, which is characterised by government ownership, financial repression, and segmented capital markets, the pace and mechanism of leverage adjustment may differ from those observed in developed economies (Allen et al., 2005).

Foreign institutional investors may influence financial policy by enhancing external monitoring, promoting greater transparency, and encouraging long-term investment orientation (Aggarwal et al. 2011). The analysis also explores potential heterogeneity in these effects. For example, state-owned enterprises may face political interference and soft budget constraints, which could weaken the discipline of foreign shareholders (Chang et al., 2014), whereas privately owned firms may exhibit greater sensitivity to market-based governance. Additionally, heterogeneity among investors, such as the distinction between active versus passive, and long-term versus short-term orientations may further shape firms' capital structure decisions (Yan and Zhang, 2009).

This research contributes to the literature on institutional ownership and dynamic capital structure adjustment by presenting novel empirical evidence on the influence of foreign capital on corporate financial behaviour in China. The findings further underscore the broader implications of ownership structure in shaping financial strategies amid institutional transformation.

2.1.2 Structure of This Empirical Chapter

This empirical chapter is structured as follows. This introductory section has presented the background and motivation for investigating how foreign institutional ownership influences capital structure adjustment in China. It has outlined the key research questions, theoretical and methodological contributions, and the empirical framework of the study. By situating the research within the unique institutional environment of China's capital market, the section sets the stage for the subsequent literature review, which will further clarify the theoretical underpinnings and empirical gaps addressed by this research.

Section 2.2 reviews the literature on capital structure adjustment, foreign institutional ownership, and corporate governance, identifying key theoretical frameworks and highlighting gaps this study seeks to address. Section 2.3 introduces the institutional

background of China's capital market liberalisation, with a particular focus on the evolution of the Qualified Foreign Institutional Investor (QFII) scheme. Section 2.4 presents the data sources, sample construction, and variable definitions, including the measurement of leverage dynamics.

Section 2.5 develops the baseline analysis using a two-step partial adjustment model to examine the effect of foreign institutional ownership on the speed of capital structure adjustment. Section 2.6 explores underlying mechanisms by distinguishing between investor types such as active versus passive and long-term versus short-term. Section 2.7 conducts robustness checks using alternative leverage definitions and model specifications. Finally, Section 2.8 summarises empirical findings, discusses theoretical and practical implications, and outlines directions for future research. Collectively, these sections build a coherent analytical framework that connects theoretical motivation to empirical evidence and policy relevance.

2.2 Literature Review

Understanding how firms adjust their capital-structure over time remains a central issue in corporate finance. Traditional theories such as the trade-off and pecking-order models offer static perspectives on leverage decisions. However, the dynamic process of capital-structure adjustment is increasingly recognised as a critical research topic, especially in emerging markets where institutional frictions and ownership structures can significantly influence adjustment behaviour (Flannery & Rangan, 2006; Öztekin & Flannery, 2012). In China, the progressive liberalisation of capital markets and the rising presence of foreign institutional investors have sparked renewed interest in how external monitoring, governance mechanisms, and investment horizons may influence capital-structure policies. Despite the growing literature on institutional ownership, the specific role of foreign investors in shaping the speed of leverage adjustment remains under-explored, particularly in transitional economies with state-dominated financial systems.

To deepen the theoretical foundations, recent studies offer fresh evidence on capital-structure dynamics across a variety of institutional settings. For example, Nguyen (2024) synthesises empirical research on the determinants of heterogeneity in the speed of adjustment, highlighting how institutional quality, macroeconomic conditions and firm-level governance jointly affect adjustment rates. Rawal et al. (2025) investigate fundamental country-risk as a determinant of adjustment speed using a large cross-country sample, showing that reductions in country-level risk significantly accelerate SOA. Gan et al. (2021) explore how firms adjust capital structures faster during favourable macroeconomic states, providing evidence that macro-environment matters for adjustment dynamics. Do et al. (2020) examine the relationship between foreign ownership and capital-structure dynamics, demonstrating that foreign investors influence not only static leverage levels but also dynamic adjustment patterns.

These studies together reinforce the view that capital-structure adjustment is not only a function of firm-level characteristics (such as profitability, asset tangibility, growth opportunities) but also of broader institutional and governance contexts. The concept of SOA thus becomes a bridging mechanism: it links traditional static capital-structure theory with dynamic governance and institutional mechanisms. Because SOA captures how quickly firms respond to deviations from their target leverage, it functions as a key indicator of financial flexibility and governance efficiency. This gives it particular relevance in emerging economies where state-market interactions, foreign investor participation and regulatory reforms create complex adjustment environments.

2.2.1 Theories of Capital Structure Adjustment

Theories of capital structure adjustment have evolved substantially since Modigliani and Miller's (1958) irrelevance proposition, which assumed that firm value is unaffected by financing choices in frictionless markets. Subsequent research recognises that real-world frictions, including taxation, bankruptcy risk, and agency costs, compel firms to manage leverage strategically. The trade-off theory posits that firms seek an

optimal debt–equity ratio by balancing the tax advantages of debt against expected bankruptcy costs and agency problems (Kraus and Litzenberger, 1973; Myers, 1984). Deviations from the target leverage occur due to economic shocks or adjustment costs, leading firms to realign gradually towards equilibrium. In contrast, the pecking order theory emphasises informational asymmetry between managers and investors, proposing that firms prioritise internal financing, followed by debt, and issue equity only as a last resort (Myers and Majluf, 1984). The market timing theory further argues that firms adjust their capital structures opportunistically in response to market valuations, raising equity when share prices are high and repurchasing when they are undervalued (Baker and Wurgler, 2002). While these frameworks explain why financing decisions are made, they offer limited insight into the speed at which firms adjust towards their desired capital structure.

To empirically address this question, the partial adjustment model (PAM) has become a dominant approach. It assumes that firms possess an unobserved target leverage level and gradually converge toward it. The standard model takes the form:

$$\Delta Leverage_{it} = \lambda\,(Leverage*_{it} - Leverage_{it} - 1) + \varepsilon_{it}$$

where λ（$0<\lambda<1$） denotes the speed of adjustment (SOA). A larger λ reflects more responsive adjustment, potentially due to effective governance or fewer financial constraints. Empirical work by Flannery and Rangan (2006), Faulkender et al. (2012), and Öztekin and Flannery (2012) finds SOA values in the range of 0.3–0.5 in developed economies. Recent evidence suggests that adjustment speeds vary considerably across institutional settings. Chen et al. (2021) document that firms in emerging economies face slower adjustment due to market inefficiencies and limited investor protection. Dang et al. (2023) show that governance quality and creditor rights significantly moderate SOA, while Huang and Jiang (2020) emphasise that ownership concentration and financial liberalisation shape leverage responsiveness in China. Similarly, Mukherjee and Wang (2020) find that liberalisation reforms and the entry of foreign investors increase adjustment efficiency by reducing transaction costs and agency

conflicts. Collectively, these studies underscore that the speed of adjustment is an essential metric linking governance, financing conditions, and institutional quality. In China, capital structure adjustment remains relatively slow because of persistent information asymmetries, soft budget constraints in state-owned enterprises, and underdeveloped capital markets. The dynamic trade-off perspective thus provides a useful framework for understanding how external factors can alleviate frictions and enhance financial flexibility in transitional economies.

2.2.2 Foreign Institutional Ownership and Corporate Behaviour

Foreign institutional investors (FIIs) have become increasingly prominent in shaping corporate governance and financial policies, particularly in emerging markets such as China, where domestic investor bases are fragmented and governance institutions remain underdeveloped. Owing to their global investment experience, analytical capacity, and adherence to international governance standards, FIIs are widely regarded as effective external monitors capable of enhancing transparency, improving information disclosure, and aligning managerial actions with shareholder interests (Ferreira and Matos, 2008; Aggarwal et al., 2011). Empirical research demonstrates that foreign ownership can influence a variety of corporate decisions, including investment efficiency (Chen et al., 2007), dividend distribution (Jeon et al., 2011), and innovation performance (Bena and Li, 2014). Recent studies have expanded this inquiry to examine how FIIs affect firms' financing and capital-structure decisions. An et al. (2021) provides evidence that firms with higher foreign institutional ownership adjust their leverage more rapidly towards target levels, suggesting that FIIs help alleviate information asymmetry and reduce agency frictions. These findings are reinforced by Dang et al. (2023), who show that greater foreign participation improves firm-level information environments and reduces stock price synchronicity, thereby signalling enhanced information efficiency.

Further evidence indicates that the influence of foreign investors on financial policy is

not homogeneous. The governance impact depends significantly on investor heterogeneity, particularly their investment horizon and activeness in corporate monitoring. Appel, Gormley and Keim (2016) distinguish between active and passive investors, showing that active institutions are more likely to engage in governance reforms and influence financial policies, whereas passive investors rely on market mechanisms for discipline. Kim and Song (2022) find that long-term institutional investors promote more conservative leverage policies and greater financial stability, while short-term investors exhibit weaker governance effects. Similarly, Nguyen et al. (2020) and Chen et al. (2021) document that foreign investors with local research capacity exert stronger influence on financing behaviour by enhancing managerial accountability and constraining over-leverage. From a broader perspective, foreign institutional ownership contributes to improving the quality of governance in firms operating under weak institutional conditions. Studies such as Li and Luo (2021) and Xu and Zhang (2024) find that FIIs enhance information transparency, reduce earnings manipulation, and foster capital discipline in emerging markets. These benefits, however, depend on the regulatory environment and ownership structure. In China, the coexistence of state control and market liberalisation creates a setting where FIIs must navigate complex ownership hierarchies, which can amplify or constrain their governance impact.

2.2.3 Dynamic Capital Structure in China

An expanding body of research recognises that the dynamics of capital structure adjustment are highly sensitive to institutional environments. In emerging markets, firms face structural and regulatory frictions that differ markedly from those in developed economies. These include underdeveloped legal systems, weak investor protection, inefficient financial intermediation, and elevated information asymmetry (Booth et al., 2001; Öztekin and Flannery, 2012). Such institutional imperfections increase the costs of external financing and often delay firms' convergence toward their

optimal leverage. China offers a particularly informative context in which to examine these dynamics. Its financial system remains predominantly bank-oriented, while equity markets continue to evolve under policy guidance. State-owned enterprises (SOEs), which constitute a large share of listed firms, operate within a framework shaped by both commercial and political mandates. They frequently experience politically determined credit allocation, soft budget constraints, and preferential financing access through state-controlled banks (Allen et al., 2005; Chang et al., 2014). In contrast, privately owned firms face greater market discipline and tend to adjust their capital structures more responsively. Empirical studies confirm that the speed of leverage adjustment in China is generally slower than in developed markets and varies significantly across ownership types, industries, and regulatory periods (Chen and Strange, 2005; Huang and Jiang, 2020).

Recent studies provide new insights into how evolving financial institutions and policy reforms have reshaped these adjustment patterns. Li et al. (2019) demonstrate that the deepening of capital-market liberalisation and the introduction of market-based interest-rate reforms have accelerated leverage adjustment among listed firms. Wang and Luo (2024) find that improvements in disclosure regulation and financial transparency reduce adjustment inertia, especially among non-SOEs. Moreover, Dang et al. (2023) emphasise that ownership concentration and governance quality moderate the responsiveness of firms to financial shocks, reinforcing the notion that institutional context conditions the speed of capital structure adjustment. External capital flows also play a growing role in shaping these dynamics. While institutional investors typically impose governance discipline in liberalised markets, their influence in China remains constrained by ownership ceilings, sectoral restrictions, and the continuing presence of state intervention. Nevertheless, a series of liberalisation measures—including the Qualified Foreign Institutional Investor (QFII) programme, the Renminbi QFII (RQFII), and the Shanghai–Hong Kong Stock Connect have progressively expanded the participation of foreign investors. The 2019 removal of QFII quotas has been viewed

as a quasi-natural experiment for analysing the interaction between foreign ownership and corporate financial adjustment (An et al., 2021; Li and Luo, 2021). Evidence suggests that as market access improves, foreign institutional ownership enhances governance quality and reduces information asymmetry, thereby facilitating faster convergence toward target leverage. Overall, the Chinese institutional environment provides a unique opportunity to examine how foreign institutional ownership affects the speed of adjustment under complex and evolving constraints. The interplay between market liberalisation, state influence, and investor participation offers an ideal setting for investigating the mechanisms through which external capital interacts with domestic governance structures. The following section identifies the remaining research gaps in this literature and outlines the empirical framework that guides the present study.

2.2.4 Research Gaps

Despite the growing academic attention to capital structure adjustment and foreign institutional ownership, several important gaps remain in the existing literature. While the partial adjustment model (PAM) has been widely employed to analyse leverage dynamics, only limited research investigates how foreign institutional ownership affects the speed of capital structure adjustment. Much of the prior literature concentrates on static determinants of leverage or on broader outcomes such as firm performance and valuation, thereby overlooking the temporal aspect of financial rebalancing (An et al., 2021). Unlike An et al. (2021), who examine cross-country determinants of leverage at an aggregate level, this thesis focuses on firm-level dynamics within the Chinese market and introduces foreign institutional ownership as an external governance mechanism influencing adjustment behaviour rather than the leverage level itself. By employing dynamic panel estimation and difference-in-differences (DID) techniques, the analysis identifies the causal role of foreign investors in shaping the adjustment process that an aspect not previously explored in An et al. (2021).

Existing studies also tend to treat foreign investors as a homogeneous group, without considering variations in investment horizon, monitoring capacity, and strategic orientation. Recent evidence indicates that active and passive investors, as well as long-term and short-term institutions, may exert markedly different influences on corporate decision-making (Appel et al., 2016; Yan and Zhang, 2009). Recognising such heterogeneity is crucial to understanding the governance mechanisms through which foreign investors affect corporate financial behaviour. A further gap concerns the empirical context of existing research, much of which is based on developed markets or multi-country samples where institutional environments differ fundamentally from those of transitional economies. In China, state participation, segmented capital markets, and evolving legal institutions create distinctive frictions that may shape the relationship between foreign ownership and capital structure adjustment (Allen et al., 2005).

The present study addresses these gaps by applying a two-step partial adjustment model to a comprehensive panel of Chinese listed firms, disaggregating foreign investor types, and exploiting quasi-exogenous policy changes to strengthen causal identification. In doing so, it provides new insights into how global capital interacts with domestic governance systems and advances understanding of the dynamic financial behaviour of firms in China.

2.2.5 Hypotheses Development

Building upon the existing literature, this study focuses on SOA as a dynamic indicator of corporate financial behaviour. While the leverage ratio represents a firm's capital structure at a specific point in time, SOA captures the process by which firms respond to deviations from their optimal leverage. This distinction is particularly important in emerging markets, where institutional frictions, such as limited investor protection, information asymmetry, and financing constraints, can significantly impede adjustment.

As highlighted by Flannery and Rangan (2006), firms typically do not instantaneously converge to their target leverage but rather adjust incrementally due to adjustment costs and governance inefficiencies. Subsequent empirical studies (Dang et al., 2012; Öztekin and Flannery, 2012) suggest that SOA reflects not only capital market conditions but also the underlying strength of firm-level governance and external oversight. In this context, foreign institutional ownership may facilitate faster adjustment through enhanced monitoring, greater transparency, and long-term strategic influence. Accordingly, this study adopts SOA as a key outcome variable to evaluate the impact of foreign ownership under institutional constraints.

Specifically, the target leverage is estimated via the following equation:

$$LEV^{*}_{\{it\}} = X_{\{it\}\beta} + \varepsilon_{\{it\}}$$

where $LEV^{*}_{\{it\}}$ represents the unobservable target leverage, and $X_{\{it\}\beta}$ is a vector of firm characteristics. The adjustment process is then captured by:

$$LEV_{\{it\}} - LEV_{\{it-1\}} = \lambda\left(LEV^{*}_{\{it\}} - LEV_{\{it-1\}}\right) + u_{\{it\}}$$

Here, λ represents the SOA, capturing how quickly a firm closes the gap between its actual and target leverage.

The firm characteristics used to estimate the target leverage follow standard capital structure theories. Larger firms typically have better access to external finance and lower bankruptcy risks (Rajan and Zingales, 1995). Profitability reduces the need for external borrowing, consistent with the pecking order theory (Myers, 1984). Tangible assets can be pledged as collateral, increasing firms' borrowing capacity (Harris and Raviv, 1991), while a higher market-to-book ratio indicates growth opportunities and greater adjustment costs (Barclay et al., 2003). These firm-level predictors have been widely adopted in SOA estimation models, including those of Flannery and Rangan (2006) and Öztekin and Flannery (2012).

Building on prior literature, this section posits that firms without foreign institutional ownership are likely to exhibit a slower SOA relative to those with foreign investor participation. Weak external governance, manifested through limited monitoring pressure and insufficient financial discipline, has been shown to impede timely capital structure rebalancing (Jensen, 1976; Denis and McKeon, 2012). In the Chinese context, where internal governance mechanisms often face institutional constraints, the absence of foreign institutional ownership may exacerbate problems such as managerial entrenchment and information asymmetry (Allen et al., 2005; Jiang and Kim, 2015). These frictions are likely to raise adjustment costs or reduce firms' incentives to converge toward target leverage ratios.

In contrast, foreign institutional investors, due to their professional expertise, long-term investment orientation, and governance-sensitive investment preferences, function as effective external monitors. Their presence has been linked to improved financial transparency, lower agency costs, and stronger managerial discipline (Ferreira and Matos, 2008; An et al., 2021). These governance channels can mitigate adjustment frictions and accelerate the alignment between actual and target capital structures. According to the trade-off theory, firms with enhanced oversight are expected to adjust more quickly towards their optimal leverage, as supported by empirical studies such as Flannery and Rangan (2006) and Öztekin and Flannery (2012).

Foreign institutional investors, owing to their professional expertise, long-term investment horizon, and preference for stronger governance environments, are widely recognised as effective external monitors. These characteristics enable FIOs to reduce information asymmetries and promote sound financial decision-making at the firm level. According to the trade-off theory, firms facing fewer adjustment frictions and stronger monitoring incentives are more likely to close the gap between actual and target leverage more rapidly (Flannery and Rangan, 2006; Öztekin and Flannery, 2012). Empirical evidence supports this view, showing that foreign institutional ownership is associated with improved financial transparency, lower agency costs, and enhanced

governance practices (Ferreira and Matos, 2008; An et al., 2021). These governance channels may reduce managerial inertia and adjustment costs, thereby accelerating the convergence towards optimal capital structures.

Nevertheless, in contexts characterised by weak legal enforcement or entrenched state ownership, the effectiveness of foreign investors may be constrained. Regulatory frictions, limited access to board-level influence, or political considerations may dampen the disciplinary effect typically attributed to FIOs. Therefore, while a positive association is generally expected, the magnitude of this effect may vary across institutional settings. This leads to the first hypothesis (H2.1) below.

Hypothesis 2.1 (H2.1): Foreign institutional ownership is positively associated with the speed of capital structure adjustment.

SOE vs. non-SOE firms

The impact of foreign institutional ownership on the speed of adjustment of capital structure is likely to vary according to firm ownership. State-owned enterprises (SOEs), due to their non-commercial mandates and soft budget constraints, often exhibit limited responsiveness to external governance mechanisms. Political objectives and bureaucratic decision-making processes may undermine managerial accountability and attenuate the disciplinary role of foreign investors (Chang et al., 2014).

By contrast, non-SOEs operate in a more market-oriented environment and are more directly exposed to investor scrutiny. These firms typically face stronger incentives to align with shareholder interests and maintain optimal capital structures. FIOs, as external monitors, may therefore exert greater influence over financial adjustment in non-state firms. This leads to the second hypothesis (H2.2) below.

Hypothesis 2.2 (H2.2): The positive effect of foreign institutional ownership on the speed of adjustment of capital structure is stronger in non-SOE firms than in SOEs.

Industry heterogeneity

Industry-level factors are also likely to moderate the relationship between foreign institutional ownership and SOA. In heavily regulated or capital-intensive sectors, financing decisions are often shaped by institutional rigidities and administrative constraints rather than by market signals. These features may limit the influence of external investors. Conversely, firms operating in competitive or innovation-intensive industries—such as technology, manufacturing, and consumer goods—tend to be more responsive to governance mechanisms and investor oversight (Aggarwal et al., 2011). In such environments, FIOs may contribute more actively to financial discipline and strategic rebalancing of capital structures. This leads to the third hypothesis (H2.3) below.

Hypothesis 2.3 (H2.3): The positive effect of foreign institutional ownership on the SOA is more pronounced in competitive and innovative industries.

This section has synthesised the theoretical and empirical literature on capital structure adjustment and foreign institutional ownership, with particular attention to China's institutional environment. It first outlined the conceptual foundations of leverage and the partial adjustment framework, then reviewed empirical evidence on how foreign investors influence corporate financial decisions. The discussion highlighted that the distinctive features of China's financial system, such as state intervention, segmented markets, and evolving regulatory mechanisms limit the generalisability of findings from developed economies. Drawing on these insights, three testable hypotheses are proposed to guide the empirical analysis. The first hypothesis examines whether foreign institutional ownership accelerates firms' speed of capital structure adjustment (SOA). The second hypothesis explores the mechanisms underlying this relationship by analysing whether the effect of foreign institutional ownership operates through governance channels, including enhanced monitoring, reduced information asymmetry, and improved financial discipline. This "mechanism test" therefore seeks to identify the pathways through which foreign investors influence adjustment behaviour, rather

than merely establishing correlation. The third hypothesis considers heterogeneity across ownership types (SOEs versus non-SOEs) and industry characteristics, acknowledging that institutional sensitivity may condition the governance impact of foreign investors. Together, these hypotheses form the analytical framework for the empirical investigation presented in Sections 2.5 to 2.7, which test the overall, mediating, and contextual effects of foreign institutional ownership on firms' leverage adjustment dynamics.

2.3 Institutional Background: QFII Reforms as a Quasi-Natural Experiment

2.3.1 Institutional Reforms as Exogenous Ownership Shocks

China's liberalisation of foreign capital participation has introduced staggered institutional entry points into the domestic stock market, most notably via the QFII scheme. The sequential expansion of the QFII scheme, ranging from quota-based restrictions to complete deregulation, introduced substantial firm-level and time-series variation in foreign institutional ownership. This exogenous variation provides an empirical foundation for causal inference regarding the role of FIO in corporate financial outcomes (Wang and Luo, 2024). These regulatory shifts were not merely structural but transformative: they significantly influenced shareholder composition, monitoring pressure, and governance expectations. Empirical evidence suggests that foreign institutional investors, particularly those with long-term horizons and active engagement, are associated with improved disclosure quality, stronger market discipline, and a greater emphasis on efficient capital allocation (Ferreira and Matos, 2008; Aggarwal et al., 2011). Within this context, FIO is likely to shape the dynamics of capital structure adjustment, especially in scenarios where firms deviate from their target leverage. This section sets the institutional foundation for the DID-based identification strategy developed in the next subsection.

2.3.2 Evolution of the QFII Scheme

The Qualified Foreign Institutional Investor (QFII) scheme has served as a cornerstone of China's capital market liberalisation and integration with global financial systems. Introduced in 2002 by the China Securities Regulatory Commission (CSRC) and the State Administration of Foreign Exchange (SAFE), the programme initially operated under a quota-based structure, requiring licensed foreign institutions to obtain investment ceilings and adhere to strict capital controls. It was designed to attract long-term, stable foreign capital while maintaining oversight of cross-border fund flows (SAFE, 2020).

Despite multiple rounds of incremental reforms, foreign institutional participation remained relatively limited during the 2000s. Quota approvals were manually administered, asset eligibility was narrow, and capital mobility was constrained by lock-up periods and foreign exchange restrictions (An et al., 2021). A significant shift began in 2006, when regulators expanded institutional eligibility and increased total quota allocations. In 2012, approval procedures were streamlined and permitted asset classes were broadened.

Table 2.1 summarises the key stages of QFII reform. A decisive breakthrough occurred in 2019, when SAFE abolished quota restrictions for both QFII and its renminbi-denominated counterpart, RQFII. This reform eliminated formal entry barriers and signalled a transition from partial access to full openness. In 2020, the two schemes were officially merged into a unified regulatory framework, known as the "New QFII", granting access to a wider range of financial instruments including derivatives, private equity, and the STAR Market (SAFE, 2020; CSRC, 2020). These reforms progressively dismantled institutional barriers and improved regulatory transparency. Crucially, the timing and design of each policy shift were centrally coordinated and not triggered by firm-specific characteristics. This exogenous nature of the reform process makes it well-suited for empirical identification strategies, such as the difference-in-differences (DID) design employed in this study, to assess the causal impact of foreign institutional

ownership on corporate financial behaviour.

2.3.3 Ownership Trends and Policy Timeline

Since the launch of the QFII programme in 2002, foreign institutional ownership in China's A-share market has experienced a significant transformation. As illustrated in Figure 2.1, the average foreign ownership ratio followed a U-shaped trajectory from 2004 to 2023. This pattern reflects the dual forces of initially restrictive capital controls and gradual policy liberalisation after 2015. In the early years, foreign investors encountered quota-based entry limits, stringent repatriation requirements, and non-transparent regulatory procedures. These institutional constraints are widely recognised in the literature as key deterrents to foreign participation (An et al., 2021; SAFE, 2020).

As a result, the proportion of foreign equity holdings steadily declined until 2015. The turning point coincided with accelerated reform initiatives and increasing international engagement with Chinese capital markets. Academic studies and policy analyses consistently suggest that institutional investors favour markets characterised by credible regulation, transparent governance, and political stability (Ferreira and Matos, 2008; Harford et al., 2008). However, periods of financial turmoil, such as the 2008 global financial crisis and the 2015 domestic stock market crash, undermined foreign investor sentiment, contributing to continued outflows despite policy signals. These dynamics underscore the importance of institutional credibility in attracting and retaining foreign capital.

Academic and policy literature consistently indicates that foreign institutional investors are particularly sensitive to regulatory predictability and governance transparency (Ferreira and Matos, 2008; Harford et al., 2008). Adverse macro-financial events, including the 2008 global financial crisis and the 2015 Chinese stock market turmoil, further dampened investor sentiment and contributed to the persistent decline in foreign ownership, despite ongoing reform efforts. These exogenous shocks created noise in

the ownership trajectory, obscuring the effects of incremental policy liberalisation. A decisive turning point emerged after 2016, as policy measures accelerated towards full capital market openness. In particular, the abolition of QFII and RQFII quota restrictions in 2019 and the subsequent consolidation of the two regimes in 2020 restored investor confidence and contributed to a sustained increase in foreign institutional holdings. Figure 2.2 illustrates a sharp rise in the average annual change in foreign ownership (ΔFIO) during this period, while Figure 2.3 visually aligns key policy milestones with corresponding rebounds in ownership levels.

This chapter focuses on non-financial firms, consistent with standard practice in capital structure literature. Excluding financial sector firms such as banks and insurance companies allows for more consistent treatment of leverage and ownership variables. It should be noted, however, that this approach results in relatively conservative estimates of foreign institutional ownership, as aggregate public disclosures include substantial foreign holdings in the financial sector. Clarifying this scope ensures the analytical integrity of the empirical framework employed in subsequent sections.

2.3.4 Quasi-Experimental Framework

This section adopts a quasi-natural experimental framework to identify the causal effect of foreign institutional ownership on SOA. A quasi-experiment refers to a setting in which the treatment is driven by policy or institutional changes exogenous to firm-specific characteristics (Angrist and Pischke, 2009). In this study, the staggered and exogenous reforms introduced under the QFII programme—particularly the quota removal in 2019 and the regulatory merger in 2020—are exploited as external policy shocks. These changes affect all qualified foreign investors and public firms simultaneously, irrespective of their prior ownership structure or financial condition, providing a credible basis for identification.

To address potential endogeneity, the empirical design relies on the assumption that

post-2019 increases in foreign institutional ownership were primarily induced by regulatory liberalisation rather than endogenous firm-level demand. As shown in Figure 2.3, these policy milestones correspond with notable increases in foreign shareholding, supporting the exogeneity condition required for causal inference. The analysis is limited to non-financial firms to avoid estimation bias from sector-specific capital rules. This approach aligns with recent finance literature that applies policy-based instruments to study foreign ownership and firm behaviour (An et al., 2021; Dang et al., 2023). The present study contributes to this strand by leveraging a China-specific institutional context to derive new insights into the dynamic adjustment of corporate capital structures.

This section has outlined the institutional and empirical foundations necessary for understanding the role of foreign institutional investors in China's capital markets. It first reviewed the evolution of the QFII programme from its inception in 2002 to its full liberalisation in 2020, highlighting key policy milestones that progressively expanded foreign access to domestic equities. Drawing on regulatory documents and academic literature, the discussion established the exogenous nature of these reforms, which underpins the empirical identification strategy. Firm-level data excluding financial institutions revealed a U-shaped trajectory of foreign ownership, with a gradual decline until 2015, followed by a substantial rise after policy liberalisation. Graphical analyses, including average ownership ratios, year-on-year changes, and alignment with reform timelines, confirmed the timing and structural significance of these regulatory shifts.

Finally, the section formalised a quasi-experimental framework by treating QFII reforms as external policy shocks. This identification approach addresses endogeneity concerns and provides a credible basis for examining the effect of foreign institutional ownership on capital structure adjustment. The next section introduces the dataset and variable definitions, offering descriptive statistics and sample characteristics essential for empirical testing of the study's core hypotheses.

2.4 Data and Sample

This section presents a detailed account of data sources, sample selection, and variable construction. The objective is to offer a transparent and rigorous foundation for understanding how the dataset is assembled, what variables are employed, and how these variables evolve across firms and over time. The reliability of empirical analysis depends critically on data quality and the clarity of documentation.

2.4.1 Data Sources and Sample Construction

This study constructs a firm-year panel dataset of Chinese A-share listed companies[2] covering the period from 2004 to 2023, based on data from the S&P Capital IQ platform. Using a unified data provider ensures consistent variable definitions and reliable matching between firm-level fundamentals and foreign institutional ownership (Doidge et al., 2007; Bae et al., 2012). The dataset includes standard financial variables, such as total assets, total liabilities, net income, R&D expenditure, depreciation, and market capitalisation. All figures are reported in RMB and extracted from firm-level annual reports. Institutional ownership data are drawn from the Capital IQ Institutional Ownership Template, recording investor-level holdings by firm and year. Foreign institutional investors are identified using investor nationality, institutional names, and classification types. They are further categorised by investment style (active vs passive) and investment horizon (long-term vs short-term), following Appel et al. (2016) and Bushee (1998).

A structured data cleaning procedure is implemented. First, financial sector firms (SIC codes beginning with "6") are excluded due to incomparable capital structure regulation (Lemmon et al., 2008). Second, observations missing key financial or ownership variables are removed. Third, to mitigate the influence of outliers, continuous variables—namely leverage, firm size, Tobin's Q, profitability, foreign institutional

[2] A-share listed companies refer to domestically incorporated firms traded on the Shanghai or Shenzhen Stock Exchange in RMB (CSRC, 2023).

ownership (FIO), and R&D intensity—are winsorised at the 1st and 99th percentiles, following Faulkender et al. (2012). Firm identifiers are standardised using Capital IQ codes, and the dataset is organised as a firm-year panel using the `xtset` command in Stata, with calendar year as the time variable. Firms are required to appear for a minimum of five years to support fixed effects estimation (Flannery and Rangan, 2006). The empirical analysis is based on an unbalanced panel dataset comprising approximately 3,000 unique listed firms and around 30,000 firm-year observations for the period 2004–2023. The panel is unbalanced because not all firms are observed for the entire sample period, owing to factors such as new listings, delistings, mergers, and missing financial information in certain years. As a result, the number of observations varies across firms and over time, reflecting the dynamic nature of China's capital market during the liberalisation period.

2.4.2 Variable Definitions and Construction

This section outlines the construction of all variables employed in the empirical analysis. The key dependent variable is the book leverage ratio (LEV), defined as total debt divided by total assets, consistent with Flannery and Rangan (2006). In addition, two dynamic leverage indicators are constructed: (1) the year-on-year change in leverage (dlev), and (2) the deviation from target leverage (dlev_tl), calculated as the difference between the estimated target leverage from the first-stage regression and the firm's actual lagged leverage. The latter serves as a core input in the second-stage regression used to estimate the SOA.

The key explanatory variable is foreign institutional ownership (FOR), measured as the proportion of shares held by foreign institutional investors. To capture heterogeneity in monitoring effectiveness, the study further constructs categorical variables based on investor types, distinguishing between active and passive ownership (FOR_ACT and FOR_PAS) and between long-term and short-term holdings (FOR_LT and FOR_ST). These classifications follow publicly available classification frameworks, such as those

proposed by Appel et al. (2016) and Bushee (1998). Several firm-level control variables are included to account for factors influencing capital structure decisions. These include firm size (log of total assets), profitability (ROA), asset tangibility (net fixed assets to total assets), Tobin's Q, R&D intensity (R&D expenditure over sales), and depreciation ratio. These variables follow standard practices established by Rajan and Zingales (1995), Frank and Goyal (2009), and Faulkender et al. (2012).

All continuous variables are winsorised at the 1st and 99th percentiles to reduce the impact of extreme values. For variables with strong positive skewness, such as firm size and Tobin's Q, logarithmic transformations are applied. In addition, interaction terms and other standardised variables used in the regressions are transformed using Z-scores to mitigate multicollinearity and facilitate interpretation. A comprehensive list of variable definitions and their sources is provided in Table 2.2.

2.4.3 Sample Characteristics

To illustrate the structural features of the sample, this section summarises firm-year distributions across industries, ownership types, and firm size. Figure 2.4 reports the number of firms with foreign institutional ownership by sector, based on industry classification. The sample spans a diverse range of sectors, including traditional industries such as manufacturing and real estate, and emerging sectors such as pharmaceuticals and information technology. This diversity ensures that the empirical results are not driven by any single sector and enhances the generalisability of the findings. Further heterogeneity in ownership structure and firm size is documented in Appendix Figures A2.1 and A2.2. Approximately 25% of the sample consists of state-owned enterprises, while the remainder include private and mixed-ownership firms. SOEs are more prevalent in capital-intensive sectors and tend to be larger on average, as confirmed by the distribution of total assets shown in Appendix Figure A2.3. The wide variation in ownership and firm size justifies the inclusion of interaction terms and control variables in the regression models.

These structural patterns underline the importance of accounting for firm heterogeneity when estimating the effects of foreign institutional ownership. They also support the use of ownership dummies and firm size controls to ensure the robustness of empirical estimates. While the dataset is constructed with extensive firm-year level information, potential limitations remain. First, the classification of foreign institutional ownership into active/passive and long-/short-term subtypes is based on proxy rules, which refer to the legal provisions and administrative guidelines governing how shareholders may authorise others to vote on their behalf at annual general meetings in China (CSRC, 2018; OECD, 2017). These rules are commonly used by financial data providers to infer the investment style and engagement level of institutional investors when direct disclosure is unavailable, though this approach may introduce some measurement error. Second, unobserved firm-level characteristics, including internal governance quality and managerial preferences, may influence both foreign institutional ownership and capital structure decisions, thereby raising concerns regarding endogeneity. These concerns are addressed in subsequent empirical sections using a two-step SOA model and a quasi-experimental approach based on exogenous QFII policy reforms, as detailed in Section 2.5.

This section has laid the empirical groundwork for the subsequent analysis by detailing the data sources, sample construction procedures, variable definitions, and descriptive characteristics. Core financial and ownership-related variables (including leverage, firm size, profitability, foreign institutional ownership, and governance-related indicators) are consistently defined and descriptively summarised. Descriptive evidence indicates considerable heterogeneity across firms in terms of ownership type, industrial affiliation, and firm scale, reinforcing the necessity of controlling firm-level differences in empirical estimation. The application of outlier mitigation, handling of missing data, and industry-year balancing further enhance the robustness of the analytical sample.

Additionally, the treatment of potential data limitations and endogeneity issues has been

addressed through a structured identification strategy. Specifically, the adoption of a two-step partial adjustment model, combined with the exploitation of exogenous regulatory reforms under the QFII regime, provides a credible quasi-experimental framework for causal inference. These preparations form the analytical foundation for the regression models and empirical tests presented in Sections 2.5 to 2.7. The following section builds upon this framework to estimate firms' target capital structure and to examine the dynamics of capital structure adjustment in relation to foreign institutional participation.

2.5 Methodology

2.5.1 Research Framework

The role of foreign institutional ownership in influencing the speed at which Chinese listed firms adjust their capital structures towards a target leverage ratio is examined. The theoretical foundation is grounded in the partial adjustment model (PAM), which assumes that firms adjust gradually rather than instantaneously due to adjustment costs, frictions, and informational inefficiencies (Flannery and Rangan, 2006; Lemmon et al., 2008). In the context of China's market, foreign institutional investors are expected to serve as external governance agents that may enhance adjustment efficiency, owing to their professional oversight, global investment experience, and demand for transparent disclosure (Ferreira and Matos, 2008; Bena et al., 2017). This potential disciplinary role of FIO is particularly relevant in a setting characterised by state intervention, agency problems, and weak legal enforcement.

To examine this mechanism, a two-step partial adjustment framework is adopted. In the first step, firms' target leverage is estimated based on financial fundamentals. In the second step, the speed at which firms adjust toward their target is assessed, with a particular focus on how foreign ownership shapes the speed of convergence. The full model specification is provided in Section 2.5.3. In addition, to address potential

endogeneity concerns, the study complement the baseline analysis with two identification strategies: a continuous difference-in-differences (DID) approach that exploits capital market liberalisation events, and an instrumental variable (IV) strategy based on QFII policy interactions. These methods enhance the causal interpretation of the results and will be discussed in subsequent robustness sections.

2.5.2 Two-Step Partial Adjustment Model

To empirically assess the dynamic process by which firms adjust their capital structures toward a target level, a two-step partial adjustment framework (PAM) is adopted, following Flannery and Rangan (2006), with further refinements by Lemmon et al. (2008). This framework assumes that adjustment costs, frictions, and governance constraints prevent firms from immediately achieving their optimal capital structure. Instead, leverage converges gradually toward a target over time.

Step 1: Target Leverage Estimation

The first step estimates a firm's target leverage based on observable firm fundamentals. This study specifies the following static panel regression with firm and year fixed effects:

Equation 2.1 (Target Leverage Estimation)

$$LEV^{*}_{\{i,t\}} = \beta_0 + \beta_1 X_{\{i,t-1\}} + \mu_i + \gamma_t + \epsilon_{\{i,t\}}$$

Where:

$LEV^{*}_{\{i,t\}}$: Estimated target book leverage ratio for firm *i* in year *t*

$\mu_i,\ \gamma_t$: Firm and year fixed effects.

$X_{\{i,t-1\}}$: includes lagged firm characteristics such as size, profitability, asset tangibility, market-to-book ratio, and R&D intensity, as commonly used in the capital structure literature (Rajan and Zingales, 1995; Frank and Goyal, 2009).

Step 2: Speed of Adjustment Estimation

The second step models the actual change in leverage as a function of the lagged deviation from the target level. This yields the core dynamic adjustment equation:

Equation 2.2 (Adjustment Speed Estimation)

$$\Delta LEV_{\{i,t\}} = \lambda\left(LEV^{*}_{\{i,t\}} - LEV_{\{i,t-1\}}\right) + \delta Z_{\{i,t-1\}} + \epsilon_{\{i,t\}}$$

Where:

$\Delta LEV_{\{i,t\}}$: Change in actual book leverage from *t−1* to *t*

$LEV^{*}_{\{i,t\}} - LEV_{\{i,t-1\}}$: Deviation from the predicted target.

λ: Speed of adjustment (SOA), the key parameter of interest

$\delta Z_{\{i,t-1\}}$: Vector of lagged explanatory variables, including foreign ownership and controls.

$\epsilon_{\{i,t\}}$:Error term.

A larger value of λ suggests a faster convergence to the optimal leverage ratio, potentially reflecting stronger governance mechanisms, lower frictions, or greater monitoring efficiency. This baseline partial adjustment model provides the foundation for all subsequent hypothesis testing, especially Hypothesis 2.1. These target determinants reflect traditional trade-off theory drivers and have been validated across numerous empirical studies (Rajan and Zingales, 1995; Frank and Goyal, 2009).

2.5.3 Main Estimation and DID Strategy

Building on the two-step partial adjustment model specified in Section 2.5.3, this section introduces the main empirical models used to examine whether foreign

institutional ownership affects the speed of capital structure adjustment. This study first estimates a baseline interaction model, followed by a continuous difference-in-differences (DID) design leveraging the 2019 liberalisation of QFII quotas. Both models are designed to test Hypothesis H2.1, which posits that higher FIO accelerates firms' convergence toward target leverage.

2.5.3.1 Baseline Interaction Model

The baseline specification interacts FIO with the deviation from target leverage, based on the second step of the partial adjustment model. This allows an estimate whether foreign institutional ownership accelerates the speed of adjustment by facilitating convergence toward target capital structure.

Equation 2.3

$$\Delta Lev_{\{it\}} = \theta_0\left(dlev\_tl_{\{it\}}\right) + \theta_1\left(dlev\_tl_{\{it\}} \times FIO_{\{it\}}\right) + \gamma X_{\{it\}} + \mu_i + \lambda_t + \varepsilon_{\{it\}}$$

Where $dlev_tl_{\{it\}}$is the deviation between the firm's actual and target leverage, and $FIO_{\{it\}}$is the foreign institutional ownership ratio. A significantly negative $\theta_1$would indicate that FIO enhances the speed of adjustment by narrowing the leverage gap more quickly. The model includes firm and year fixed effects, and standard errors are clustered at the firm level. This specification corresponds to Hypothesis 2.1, which posits that foreign institutional ownership accelerates firms' convergence to target leverage. In the next section, the study further compares the adjustment speed across firms with and without foreign institutional ownership to assess baseline differences in SOA. In this specification, the control variables are not multiplied by *dlev_tl*. The variable *dlev_tl* captures the firm's deviation from its target leverage and reflects the adjustment process, whereas the control variables enter the target leverage equation independently to determine the desired leverage level. This modelling approach follows Flannery and Rangan (2006) and Öztekin and Flannery (2012), where the deviation term alone represents the speed of adjustment and the control variables affect only the target leverage.

2.5.3.2 Continuous DID Design

To enhance identification, a continuous DID was designed based on the 2019 removal of QFII and RQFII quotas. The policy shift is treated as an exogenous shock, with firms' initial FIO in 2018 serving as the intensity measure of treatment exposure. The estimation model is as follows:

Equation 2.4

$$\Delta Lev_{\{it\}} = \alpha + \beta_1\left(Post_t \times FIO_{\{i,2018\}}\right) + \gamma X_{\{it\}} + \mu_i + \lambda_t + \varepsilon_{\{it\}}$$

Where $Post_t$ is a dummy variable equal to *1* for years after 2019, and $FIO_{\{i,2018\}}$is the pre-policy foreign ownership level. A significantly negative β_1 indicates that firms with greater initial foreign exposure exhibit faster SOA in the post-policy period. This continuous DID specification provides a quasi-experimental approach to further test the causal impact proposed in Hypothesis 2.1. Results for both models are presented and interpreted in detail in section 2.6. Parallel trend plots and placebo test results supporting the DID strategy are also included therein.

2.5.3.3 Baseline Group Comparison: FIO vs. Non-FIO Firms

To complement the interaction-based model in Section 2.5.4.1, the study conducts a baseline comparison of capital structure adjustment speeds across firms with and without foreign institutional ownership. Specifically, the sample is split into two groups based on whether FIO is strictly positive. The two-step partial adjustment model is then estimated separately for each group. To establish a benchmark, firms with and without FIO were compared in terms of their SOA. This comparison serves as a preliminary test of whether foreign ownership facilitates adjustment speed. This study compares the estimated speed-of-adjustment coefficient (λ) across groups. A significantly higher λ in the FIO group would offer preliminary support for the hypothesis that foreign

ownership facilitates faster capital structure adjustment. This test directly compares the adjustment speed between foreign-owned and purely domestic firms. Estimation results and graphical illustrations are reported in section 2.6, including pre-trend checks and robustness validations.

2.5.4 Instrumental Variable Strategy

To further address potential endogeneity between foreign institutional ownership and the SOA, compare implement an instrumental variable (IV) strategy. This approach leverages the 2019 liberalisation of QFII quotas as an exogenous shock to foreign investor participation in China's capital markets. Following Bena et al. (2017), the study constructs an instrument by interacting a post-policy dummy with the firm's initial foreign ownership level in 2018.

First Stage: Instrument for FIO

Equation 2.5

$$FIO_{\{it\}} = \pi_0 + \pi_1\left(Post_t \times FIO_{\{i,2018\}}\right) + \delta X_{\{it\}} + \mu_i + \lambda_t + v_{\{it\}}$$

Where $Post_t$ equals 1 for years after 2019, and $FIO_{\{i,2018\}}$ is the pre-reform ownership level. A significantly positive π_1 indicates that firms with greater initial foreign exposure experienced larger post-policy increases in FIO.

Second Stage: SOA Estimation Using Predicted FIO

Equation 2.6

$$\Delta Lev_{\{it\}} = \theta_0\left(dlev\_tl_{\{it\}}\right) + \theta_1\left(dlev\_tl_{\{it\}} \times \widehat{\text{FIO}}_{(it)}\right) + \gamma X_{\{it\}} + \mu_i + \lambda_t + \varepsilon_{\{it\}}$$

In this second stage, the predicted FIO $\widehat{\text{FIO}}_{(it)}$ from the first-stage regression are used as instruments to estimate the effect of foreign ownership on the speed of leverage adjustment. A significantly negative coefficient on θ_1 would support the view that exogenous increases in foreign institutional ownership causally accelerate firms'

convergence towards their target capital structure. This instrumental variable strategy strengthens the causal identification of Hypothesis 2.1 by exploiting policy-induced exogenous variation in foreign ownership.

Instrument Validity: evaluate instrument strength using first-stage F-statistics. A value exceeding 10 (actual F = 22.12) indicates strong instrument relevance, following Staiger and Stock (1997). Exogeneity is supported by the nature of the QFII policy reform, which was not firm-specific and affected all listed firms simultaneously. In robust checks, excluding firms with zero initial foreign ownership does not change the main findings.

2.5.5 Estimation Techniques and Robustness Checks

To ensure the credibility and generalisability of the empirical findings, this section outlines the estimation strategies used across all model specifications and presents a comprehensive set of robustness checks.

All regressions are estimated using firm fixed effects and year fixed effects to account for time-invariant heterogeneity and macroeconomic fluctuations. For baseline models (Equation 2.1 to 2.3), the study use panel least squares (within estimator), while extended models with multiple high-dimensional fixed effects are estimated using the *reghdfe* command in Stata for computational efficiency and accuracy. Standard errors are clustered at the firm level to account for serial correlation and heteroskedasticity. The study also tests robustness to two-way clustering (firm and year), as recommended in Petersen (2008). The subsequent section presents estimation results and evaluates model performance for the hypotheses H_0 and H_1, and explores robustness, heterogeneity, and dynamic effects in depth.

2.6 Empirical Results

This section reports empirical results assessing the relationship between foreign institutional ownership and SOA. Building on the methodology outlined in Section 2.5, a series of regression models is estimated to test the hypothesis that FIO enhances firms' dynamic adjustment towards their target leverage.

There is strong theoretical justification to expect foreign institutional ownership to influence corporate financial behaviour. According to agency theory and the market discipline hypothesis, external institutional investors, particularly those with monitoring role, can reduce managerial inertia and facilitate faster correction of capital structure deviations (Jensen and Meckling, 1976; Shleifer and Vishny, 1997). These effects may be especially salient in China's evolving corporate governance environment (Bena et al., 2017; Huang et al., 2015). The 2019 cancellation of investment quotas under the Qualified Foreign Institutional Investor (QFII) and Renminbi Qualified Foreign Institutional Investor (RQFII) programs serve as a quasi-natural experiment in the setting. These policy changes removed restrictions that had previously limited the scale and timing of foreign capital inflows, thereby potentially increasing foreign institutional participation and strengthening governance discipline.

Drawing on the SOA framework introduced earlier, this study applies three empirical strategies: (1) a baseline interaction model between FIO and capital structure gap, (2) a continuous difference-in-differences (DID) design based on QFII reform, and (3) a two-stage instrumental variable (IV) approach. These methods enable the study to assess both average and heterogeneous effects of foreign ownership on firms' leverage adjustments.

Specifically, this study tests the following core hypothesis:

Hypothesis 2.1 (H2.1): Foreign institutional ownership is positively associated with the speed of capital structure adjustment.

Mechanism test: The acceleration of SOA following QFII reform is attributable to

increased foreign ownership.

These analyses complement the formal test of H_1 by unpacking its underlying mechanisms. The full set of hypotheses H_0–H_3, introduced in section 2.2, continues to guide the structure of this and the following empirical sections.

2.6.1 Descriptive Statistics and Correlations

Table 2.3 reports the descriptive statistics for the key variables. The average book leverage (lev) across Chinese listed firms is approximately 0.191, with a standard deviation of 0.173, indicating moderate variation in firms' capital structure choices. Firm size, measured as the natural log of total assets, averages 7.62, suggesting a diverse sample spanning small and large firms. Profitability (ROA) exhibits a mean of 0.599 and a maximum exceeding 9.7, reflecting the presence of highly profitable outliers. The market-to-book ratio (mtb) shows a right-skewed distribution with a mean of 2.56 and a maximum nearing 50, indicative of a few high-growth firms. Most firms report zero R&D spending (rdexp), although the average is positively influenced by a small number of high-innovation firms. Thus, subsequent analyses categorize firms based on high vs. low R&D engagement. Foreign institutional ownership (ratio_foreign_total) averages 11.3%, but its median value is just 1.1%, highlighting the significant concentration of foreign capital in a subset of firms justifying the construction of high-ownership groupings in later heterogeneity analysis.

Table 2.4 presents the pairwise correlation matrix among the key regression variables. Leverage is negatively correlated with firm growth opportunities (mtb, r = –0.231), asset tangibility (tang, r = –0.661), and profitability. Size is positively correlated with leverage and foreign ownership. No correlations exceed 0.7, suggesting that multicollinearity is unlikely to bias regression results.

2.6.2 Baseline Regression Results: SOA and FIO

Table 2.5 presents the results from the baseline SOA regressions using the two-step partial adjustment model. The dependent variable is the year-on-year change in book leverage, and the key independent variable is the interaction term between the deviation from target leverage ($dlev\_tl_{(it)}$) and foreign institutional ownership ($FIO_{(it)}$).

Column (1) reports the benchmark specification using total foreign institutional ownership as the main explanatory variable. The coefficient on *dlev_tl* is consistently negative and statistically significant, confirming the presence of partial adjustment behaviour in capital structure. The coefficient on the interaction term *dlev_tl* × *FIO* is also significantly negative, suggesting that firms with higher overall foreign institutional ownership adjust their leverage more quickly toward their target level. This finding provides strong support for Hypothesis 2.1 (H2.1) and is consistent with the governance and monitoring effects posited by Flannery and Rangan (2006) and Bena et al. (2017).

Columns (2) to (5) replace total foreign institutional ownership with holdings by passive, active, long-term, and short-term foreign investors, respectively. The estimated coefficients remain negative, indicating that the acceleration effect of foreign ownership on adjustment speed is robust across investor types. However, the magnitude of the effect is slightly larger for active and long-term investors, suggesting stronger governance incentives among these groups. Economically, the estimates imply that firms with one standard deviation higher foreign ownership accelerate their capital structure adjustment by approximately seven percentage points. All regressions control firm fundamentals (size, profitability, tangibility, market-to-book ratio, and R&D intensity) and include firm and year fixed effects. Standard errors are clustered at the firm level.

2.6.3 Mechanism Analysis

2.6.3.1 Motivation and Model

While the baseline model supports the view that foreign institutional ownership accelerates the speed of capital structure adjustment (SOA), this effect may vary across investor types due to differences in investment objectives, monitoring intensity, and holding strategies. Monitoring intensity refers to the degree of oversight and engagement that foreign institutional investors exert on corporate management, including their frequency of information requests, direct interactions with executives, and responsiveness to governance events. Investors with higher monitoring intensity are typically more capable of detecting managerial inefficiency and enforcing financial discipline (Bushee, 2001; Ferreira and Matos, 2008; Appel et al., 2016). Foreign investors may also influence firms through distinct monitoring channels, which represent the specific mechanisms by which governance oversight is transmitted. These channels include (i) *information signalling*: the market perception effect created when credible foreign investors adjust their holdings, (ii) *voting behaviour*: the direct impact of shareholder voting on key financial and governance decisions, and (iii) *board influence*: the ability to shape board composition or strategic direction through engagement and advocacy (Gillan and Starks, 2003; Harford et al., 2018). The relative effectiveness of these channels depends on investor type and regulatory context. Active and long-term investors tend to employ direct monitoring and board engagement, whereas passive and short-term investors rely more on information signalling and market discipline.

To test this mechanism hypothesis, the study estimates a set of panel regressions based on the two-step partial adjustment framework. Specifically, interaction terms are constructed between the deviation from target leverage ($dlev\_tl_{it}$) and several governance-related investor classification variables. These include (i) total foreign institutional ownership (FIO_{it}), (ii) investor identity (active versus passive), and (iii) investment horizon (short-term versus long-term). These interactions examine whether

different types of foreign investors enhance the SOA through monitoring channels. The regressions are estimated using both the standard fixed effects estimator (*xtreg*) and the high-dimensional fixed effects estimator (*reghdfe*; Correia, 2016). Firm and year fixed effects are included to account for unobserved heterogeneity and macroeconomic variation. This empirical design provides a robust test of whether investor heterogeneity shapes corporate financial adjustment dynamics through governance-based transmission mechanisms.

2.6.3.2 Descriptive Statistics of Mechanism Variables

Table 2.6 reports the descriptive statistics for the key mechanism variables used in the heterogeneous foreign institutional ownership (FIO) analysis. On average, foreign institutional investors collectively hold approximately 5.7 per cent of a firm's equity each year. This figure reflects the aggregate shareholding of all foreign institutions across firms, rather than the average stake of any individual investor. To capture the influence of concentrated ownership, supplementary measures are incorporated, including the Herfindahl–Hirschman Index (HHI) of foreign ownership and the share of the largest foreign institutional investor. These variables account for variations in monitoring power and provide a more precise representation of investor concentration and influence at the firm level. Approximately 29 per cent of firm-year observations are classified as having active foreign investors, while 1.3 per cent involve passive foreign investors. Long-term and short-term ownership account for 13 per cent and 29 per cent, respectively. The deviation from target leverage ($dlev\_tl_{it} = Lev_{it-1} - TL_{it}$) has a near-zero mean, consistent with the theoretical expectation of gradual convergence in the partial adjustment framework. Together, these statistics contextualise the mechanism regressions discussed in the following section, which examine how investor characteristics and concentration shape the governance effects of FIO.

2.6.3.3 Mechanism Regression Results

To better understand how foreign institutional ownership accelerates capital structure adjustment, heterogeneity in investor behaviour is explored as a key explanatory mechanism. Specifically, foreign institutional investors differ substantially in their monitoring capacities, investment horizons, and engagement strategies. Consistent with prior literature, active and long-term investors are more likely to monitor managerial actions, influence corporate policies, and promote transparency (Ferreira and Matos, 2008; Bushee, 2001). By contrast, passive or short-term investors may lack both the incentives and the capacity for direct involvement in corporate governance.

To empirically test this mechanism hypothesis, a set of panel fixed effects regressions is estimated under the partial adjustment framework. The central idea is to interact with the deviation from target leverage ($dlev\_tl_{\{it\}}$) with various governance-type indicators. The models include interaction terms between $dlev\_tl_{\{it\}}$ and (i) total FIO ($FIO_{\{it\}}$), (ii) investor identity ($is\_active_{\{it\}}$, $is\_passive_{\{it\}}$), and (iii) holding horizon ($is\_shortterm_{\{it\}}$, $is\_longterm_{\{it\}}$). Estimations are conducted using both the standard fixed effects estimator (*xtreg*) and the high-dimensional fixed effects approach (*reghdfe*; Correia, 2016), controlling for firm and year fixed effects. This design was to test whether different types of FIO accelerate SOA through distinct governance channels.

Table 2.7 presents the mechanism regression results based on a fixed effects model (*xtreg*), where this study interacts with the deviation from target leverage ($dlev\_tl_{\{it\}}$) with different types of foreign institutional ownership. Model (1) includes the interaction with total foreign ownership ($FIO_{\{it\}}$), and the significantly positive coefficient suggests that firms with greater foreign ownership adjust their capital structure more rapidly. Models (2) to (5) successively incorporate interaction terms between $dlev\_tl_{\{it\}}$ and different types of foreign institutional ownership: active investors in Model (2), passive investors in Model (3), long-term investors in Model (4), and short-term investors in Model (5). These models were to test whether distinct

investor characteristics are associated with heterogeneous effects on the speed of capital structure adjustment.

Models (2) to (5) introduce heterogeneity by splitting FIO into different dimensions. Active foreign investors ($is\_active_{\{it\}}$) and short-term investors ($is\_shortterm_{\{it\}}$) are found to significantly accelerate adjustment speed, indicating their potential role in enhancing financial discipline or exerting exit pressure. By contrast, passive investors show a weaker positive effect, and long-term investors are not significantly associated with faster adjustment. These results provide empirical support for the mechanism hypothesis that investor type especially activeness and holding horizon matters for corporate financial policy dynamics.

These findings provide further support for Hypothesis 2.1, which posits that foreign institutional ownership accelerates firms' capital structure adjustment. Compared with the baseline results in Table 2.5, the mechanism regressions in Table 2.7 reveal that this effect is particularly pronounced among active and short-term foreign investors, suggesting that the strength of monitoring varies substantially across investor types. These results are consistent with the governance-based interpretation proposed by Flannery and Rangan (2006) and further supported by the classification frameworks in Bushee (2001) and Ferreira and Matos (2008), which highlight the differential incentives and capabilities of institutional investors. The robustness of this mechanism is confirmed in Appendix Table A2.2, where the use of high-dimensional fixed effects (*reghdfe*) produces similar patterns of coefficient signs and significance, reinforcing the conclusion that governance-intensive FIO drives the faster adjustment behaviour observed in Chinese listed firms.

2.6.4 Robustness Checks

2.6.4.1 Alternative Leverage

To ensure the robustness of the findings, SOA model is re-estimated using alternative definitions of leverage. Specifically, two alternative leverage measures are employed: (i) market leverage, defined as total debt divided by the sum of total debt and market capitalisation; and (ii) equity-based leverage, calculated as total debt over the book value of equity. These definitions follow common practice in the capital structure literature (Flannery and Rangan, 2006; Dang et al., 2012; Lemmon et al., 2008) and help support that the results are not driven by leverage measurement choices. All control variables are lagged by one period to mitigate simultaneity concerns and ensure the correct temporal ordering, consistent with the partial adjustment framework introduced in section 2.5. The results reported in Table 2.8 show that the direction and statistical significance of the FIO–SOA interaction term are broadly consistent across specifications. While the effect remains strong and significant under the market leverage definition, it is somewhat weaker under equity-based leverage, yet still in the expected direction. These patterns reinforce the robustness of the main findings. For clarity, Appendix Table A2.1 presents the baseline regression results using book leverage alongside the alternative specifications. The consistency in direction and statistical significance of the key interaction term confirms that the main findings are not sensitive to the definition of leverage.

Second, the analysis examines whether short-term changes in foreign institutional ownership, rather than its static level, drive the speed of capital structure adjustment (SOA). In this context, "level" refers to the absolute shareholding ratio of foreign institutional investors at a given point in time, whereas the present test focuses on variations in ownership (ΔFIO_{it}) to capture dynamic effects. The model is therefore re-estimated by substituting the FIO variable with its first-differenced form. Table 2.9 reports the results. Although the interaction term $dlev_tl_{it} \times \Delta FIO_{it}$is positive, it is statistically insignificant, suggesting that the acceleration of SOA is more likely driven

by the persistent ownership structure and sustained monitoring presence of foreign investors, rather than short-term fluctuations in their shareholding. These findings reinforce the robustness of the main results and indicate that the disciplining role of foreign capital operates primarily through long-term governance engagement rather than transient ownership changes.

The following robust tests were implemented to validate the consistency and reliability of the results:

Alternative Definitions of Leverage: Re-estimate the main models using alternative leverage measures to test whether FIO effects are robust to definition choices:

(1) Market Leverage: total debt divided by total debt plus market capitalisation.

(2) Equity-Based Leverage: total debt divided by book value of equity.

Sample Refinement: To assess the generalisability of results. Exclude financial firms throughout the sample, consistent with Rajan and Zingales (1995). Subsample Checks by Ownership: Conduct regressions on long-term vs. short-term FIO groups and SOE vs. NON-SOE groups to confirm that the heterogeneous effects observed are not driven by extreme outliers or sample imbalance.

Placebo and Pre-Trend Tests (for DID): For DID models presented in Section 2.5.4.2, verify that the parallel trends assumption holds via: Placebo tests using pre-policy periods as pseudo-interventions. Event-study plots displaying pre-treatment outcome trends. Weak Instrument Diagnostics (for IV Models): For the IV strategy in Section 5.5, the first-stage F-statistics are 22.12, well above the conventional threshold of 10 (Staiger and Stock, 1997), indicating strong instrument relevance. Excluding firms with zero initial foreign ownership does not qualitatively change the results, confirming robustness.

Collectively, these robustness checks further support Hypothesis 2.1, which posits that foreign institutional ownership facilitates faster adjustments to the capital structure. The

results obtained using alternative leverage definitions remain broadly consistent with those in the baseline model (Table 2.5), indicating that the estimated SOA effects are not sensitive to the measurement of leverage. While the magnitude of the interaction term declines under equity-based leverage, the direction remains stable, reinforcing the underlying governance mechanism. Additionally, the statistically insignificant result based on the change in FIO (ΔFIO) suggests that the impact on SOA stems primarily from the structural presence of foreign ownership rather than marginal short-term increases. This finding aligns with the view that sustained foreign investor involvement, rather than temporary portfolio shifts, underpins external monitoring and financial discipline (Ferreira and Matos, 2008; Bena et al., 2017).

Overall, the consistency of the FIO–SOA relationship across various model specifications, variable definitions, and robustness checks in sub-samples provides strong empirical validation of the main conclusion.

2.6.4.2 Controlling for Sample-Selection Bias: Heckman Two-Stage Estimation

Potential endogeneity may arise from the non-random allocation of foreign institutional ownership across firms. Specifically, foreign investors tend to select firms with superior fundamentals, stronger governance, or higher transparency, which can lead to biased estimates if such selection is not explicitly addressed. To correct for this potential sample-selection bias, a two-stage Heckman estimation procedure is employed (Heckman, 1979; Wooldridge, 2010).

In the first stage, a probit model is estimated to predict the likelihood that a firm is held by foreign institutional investors. The explanatory variables include firm size, profitability, tangibility, and liquidity, together with industry and year fixed effects, to capture cross-sectional and temporal variation in firms' attractiveness to foreign investors. From this estimation, the Inverse Mills Ratio (IMR) is derived as an auxiliary variable that quantifies the probability of selection into the sample of firms with foreign ownership. In the second stage, the IMR is included as an additional control variable in

the main regression model for the speed of adjustment (SOA). This specification enables the identification of the governance effect of foreign institutional ownership while accounting for the possibility that firms with foreign investors are systematically different from those without them. By incorporating the IMR term, the estimation corrects for potential non-random selection and yields more reliable inference regarding the causal relationship between foreign ownership and leverage adjustment behaviour (Greene, 2012; Li and Prabhala, 2007).

Model Specification

The Heckman two-stage model is estimated as follows. In the first stage, a probit model is used to estimate the probability that firm *i* at time *t* has foreign institutional ownership (*FIO*). The latent selection equation is expressed as:

$$FIO *_{it} = Z_{it}\gamma + \upsilon_{it}$$

$$FIO_{it} = 1 \text{ if } FIO *_{it} > 0, \text{ and 0 otherwise}$$

where Z_{it} represents the vector of firm-specific determinants, including firm size, profitability, tangibility, liquidity, and fixed effects for industry and year. From this estimation, the Inverse Mills Ratio (IMR) is computed and incorporated into the second-stage equation to correct for selection bias (Heckman, 1979; Li and Prabhala, 2007).

$$IMR_{it} = \frac{\phi(Z_{it}\hat{\gamma})}{\Phi(Z_{it}\hat{\gamma})}$$

In the second stage, the main regression model links the speed of adjustment (SOA) to foreign institutional ownership, including the IMR term as an additional regressor:

$$SOA_{it} = \alpha + \beta^1 FIO_{it} + X'_{it}\gamma + \delta IMR_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

SOA_{it} denotes the speed at which firm *i* adjusts its leverage toward the target level (Flannery and Rangan, 2006). FIO_{it} measures the shareholding ratio of foreign institutional investors, and X_{it} is a vector of control variables, including firm size, leverage, profitability, and tangibility. Firm fixed effects (μ_i) capture unobserved heterogeneity, and year fixed effects (λ_t) control for macroeconomic shocks. The

coefficient δ indicates whether selection bias significantly influences the estimated governance effect of foreign ownership. A statistically insignificant δ would suggest that selection effects are not a major concern (Wooldridge, 2010; Greene, 2012).

Empirical Results

Appendix Table A2.4 reports the results of the Heckman two-stage estimation addressing potential sample-selection bias. In the first-stage probit model, larger firms with lower leverage, higher market valuation, and greater R&D intensity are more likely to be held by foreign institutional investors, suggesting that foreign investors tend to favour financially sound and innovation-oriented firms. In the second-stage regression, the coefficient on the target leverage gap remains negative and highly significant (–0.506, $p < 0.01$), consistent with the partial adjustment hypothesis that firms adjust their leverage toward target levels. The coefficient on the Inverse Mills Ratio (–0.100) is statistically insignificant, implying that the relationship between foreign institutional ownership and firms' speed of adjustment is not driven by sample-selection bias. Overall, the results confirm that the estimated effect of foreign institutional ownership on the speed of capital structure adjustment is robust to potential endogeneity arising from non-random foreign ownership.

2.6.5 Alternative Identification: Continuous DID and IV Strategy

2.6.5.1 Continuous DID Design

To strengthen the causal interpretation of the FIO–SOA relationship, this section implements a continuous Difference-in-Differences (DID) design exploiting the 2019 QFII liberalisation as an exogenous policy shock. As introduced in section 2.3, QFII reforms serve as exogenous policy shocks enabling causal identification. Firms with higher pre-policy foreign ownership are expected to respond more significantly to the reform. Regression results show that the interaction between the post-policy dummy and initial foreign ownership is significantly negative, indicating that treated firms adjust their leverage more rapidly after liberalization.

To assess the validity of the DID strategy, an event-study analysis is conducted by interacting event-year dummies with the treatment group indicator. Figure 2.5 shows the dynamic leverage adjustment between treated and control firms across time. The pre-treatment coefficients (event years -4 to -1) are centered around zero with confidence intervals covering the baseline, satisfying the parallel trends assumption. After the 2019 reform, treated firms exhibit significantly faster adjustment, supporting the hypothesis that foreign institutional participation facilitates capital structure optimization.

Table 2.10 presents four specifications of the continuous DID regression model. The key variable of interest is the interaction between the post-policy indicator and the firm's initial foreign institutional ownership. Each column corresponds to a different model specification. This specification captures whether firms with higher pre-reform FIO adjusted their leverage more rapidly after the 2019 QFII liberalisation.

Column (1) reports the baseline specification without additional controls. The coefficient on the triple interaction term $dlev\_tl_{\{it\}} \times Post_{\{t\}} \times FIO_{\{i,2018\}}$ is positive and statistically significant at the 1% level (β = 0.213), indicating that firms with higher initial foreign ownership adjusted more rapidly following the Q*FII* liberalisation. Column (2) substitutes the initial FIO level with the change in foreign ownership (ΔFIO) as the treatment intensity. The interaction term remains positive and significant, suggesting that both the level and the increase in FIO contribute to enhanced SOA. Column (3) introduces firm-level controls (size, MTB, tangibility, and profitability). The effect strengthens further (β = 0.272, $p < 0.01$), confirming robustness. This is the preferred model for interpretation. Column (4) provides a robust check using a restricted sample or alternative weighting. The main findings remain unchanged, supporting the stability of the results.

Taking together, these results provide robust empirical support for Hypothesis 2.1, which posits that foreign institutional ownership accelerates capital structure adjustment. The consistently positive and significant coefficients on the triple

interaction term across models confirm that firms with higher pre-reform FIO responded more strongly to the 2019 QFII liberalisation. Compared with the baseline results in Table 2.5, the DID estimates exhibit larger coefficient magnitudes, with Model (3) suggesting a 27-percentage point increase in adjustment speed associated with one standard deviation higher FIO exposure. These effects reinforce the argument that foreign ownership exerts a governance-enhancing role in financial policy adjustment. Furthermore, the validity of the identification strategy is supported by the parallel trends' visualisation in Figure 2.5 and the consistency across specifications. This approach follows the empirical designs proposed by Huang and Zhu (2015), who also utilise QFII reforms as exogenous shocks to assess the influence of foreign investors. The substantial results motivate the use of instrumental variable models, as discussed in the next section, to further verify the causal interpretation.

2.6.5.2 Instrumental Variable (IV) Strategy

To strengthen causal inference beyond the baseline and continuous DID models, this section implements an instrumental variable (IV) strategy to account for potential endogeneity in the relationship between foreign institutional ownership and the SOA. As previously shown in Figure 2.2, foreign ownership levels remained relatively stable before 2019, with the average change in FIO (ΔFIO) fluctuating narrowly around zero. Following the QFII quota removal in 2019, a sharp and sustained increase in foreign ownership was observed across firms. This pattern provides visual support for the exogeneity of the QFII liberalisation shock, which differentially impacted firms based on their initial level of foreign exposure.

Using this exogenous variation, the study constructs an instrument by interacting with the post-reform policy dummy with firms' initial foreign ownership level. This instrument captures the plausibly exogenous shift in FIO driven by policy liberalisation. The first-stage regression yields an F-statistic above 22, exceeding the conventional

weak instrument threshold (Staiger and Stock, 1997), confirming instrument strength. The second-stage regression results produce coefficients consistent in sign with the continuous DID model, though statistical significance is somewhat weaker in certain subsamples likely due to reduced post-reform variation and potential heterogeneity in firm responsiveness.

Table 2.11 reports the results from the continuous DID estimation, where Column (1) presents the first-stage regression using the policy-induced instrument (Post × FIO(2018)), and Column (2) reports the second-stage results for SOA. The interaction $Post_{\{t\}} \times FIO_{\{i,2018\}}$ is used as an instrument for foreign ownership. Based on the specification defined in Equation (2.5). The treatment intensity is constructed as the interaction between a post-reform dummy variable and the firm's initial level of foreign institutional ownership ($dlev\_tl_{\{it\}} \times Post_{\{t\}} \times FIO_{\{i,2018\}}$).The coefficient on the key interaction term is negative and statistically significant at the 5% level across multiple specifications, indicating that firms with higher foreign exposure prior to the QFII liberalisation exhibited a significantly faster convergence toward their target leverage levels in the post-policy period. This suggests that the policy acted as an exogenous trigger, inducing heterogeneous SOA responses depending on prior foreign ownership. The main effect of the partial adjustment term $dlev_tl$remains positive and highly significant, supporting the validity of the adjustment mechanism. These findings are consistent with Hypothesis 2.1 and align with the theoretical channel that foreign investors facilitate more efficient capital structure rebalancing in response to reform.

To address potential endogeneity concerns particularly reverse causality or omitted variable bias in the relationship between foreign institutional ownership and the SOA. The study implements a two-stage least squares (2SLS) estimation strategy. The instrumental variable is constructed as the interaction between a post-QFII reform dummy ($Post_{\{t\}}$) and each firm's pre-reform foreign ownership level measured in 2018 ($FIO_{\{i,2018\}}$). This instrument captures plausibly exogenous variation in FIO driven by regulatory liberalisation, consistent with the quasi-natural experiment framework (see

Bena et al., 2017).

In the first stage, the study regresses the change in foreign ownership ($\Delta\, FIO_{\{it\}}$) on the instrument and standard firm-level controls. The estimated coefficient on the instrument is positive and highly significant, with a first-stage F-statistic of 22.12 well above the conventional threshold of 10 (Staiger and Stock, 1997) indicating strong instrument relevance. In the second stage, the fitted values of foreign ownership from first-stage regression are used to estimate their effect on SOA. So that the study is to isolate the exogenous component of foreign institutional participation. The second-stage results indicate that predicted foreign ownership levels are significantly associated with faster capital structure adjustment, consistent with theoretical expectations.

To formally implement the DID + IV strategy, the study uses the interaction term between the post-reform dummy ($Post_{\{t\}}$) and firms' initial foreign ownership in 2018 ($FIO_{\{i,2018\}}$). as an instrument for actual foreign ownership ($\Delta\, FIO_{\{it\}}$). Table 2.11 reports the first-stage regression results. The coefficient on the interaction term is statistically significant ($p < 0.01$), confirming that the QFII reform led to larger foreign ownership increases among firms with higher initial exposure. The first-stage F-statistic exceeds 22, satisfying the Staiger and Stock (1997) threshold for instrument relevance.

In summary, the DID + IV estimation offers an additional robustness test for the causal interpretation of the FIO–SOA relationship. Although the second-stage coefficients are statistically insignificant in some specifications, their direction remains consistent and negative, aligning with the continuous DID results. This provides qualified support for Hypothesis 2.1, suggesting that the acceleration of capital structure adjustment is not solely driven by contemporaneous FIO but also by exogenous shifts induced by regulatory liberalisation. Compared with the baseline estimates in Table 2.5 and the DID results in Table 2.10, the magnitude of the IV coefficients is similar, though statistical significance is likely due to limited variation in the instrumented FIO and potential attenuation bias. The consistently negative coefficient signs across models, combined with strong first-stage instrument performance (F-statistics > 22), enhance

confidence in the credibility of the main findings. These patterns align with the partial adjustment theory and reinforce the interpretation that FIO contributes to improved financial responsiveness.

2.6.5.3 Interpretation and Robustness Discussion

In summary, the combined evidence from baseline regressions, continuous DID using QFII liberalisation, and the IV strategy exploiting exogenous policy shocks, consistently supports Hypothesis H2.1 that foreign institutional ownership accelerates the adjustment toward firms' target capital structure. Despite the attenuation in statistical significance observed in the IV estimates, the direction and magnitude of the coefficients align with those from the DID models, reinforcing the causal interpretation. The weakened significance may result from limited post-reform variation in instrumented FIO, measurement noise in predicted values, and cross-sectional heterogeneity in firms' responsiveness to liberalisation. Moreover, the use of predicted FIO in the second-stage regression addresses potential reverse causality and omitted variable bias, and the first-stage F-statistics well exceed conventional thresholds, mitigating concerns of weak instrumentation.

While this section establishes a robust average treatment effect of foreign institutional ownership on SOA, the underlying mechanisms remain to be unpacked. The following section will explore potential transmission channels, including governance enhancement, investor monitoring, and policy responsiveness, through which foreign institutional participation may exert its influence on capital structure decisions. Taken together, the baseline, DID, and IV estimates provide a coherent identification chain, increasing the internal validity of the core finding that foreign institutional ownership enhances firms' financial discipline.

2.7 Heterogeneous Effects and Mechanisms

2.7.1 Motivation and Research Objectives

While previous sections have demonstrated that foreign institutional ownership significantly accelerates the SOA among Chinese listed firms, it remains uncertain whether this effect is uniform across all firms and investor characteristics. This section addresses this important gap by investigating how the governance role of FIO varies across different institutional contexts and investor structures. There are both theoretical and empirical reasons to expect that the impact of foreign ownership on SOA may be conditional on firm-specific features. For example, state-owned enterprises often face political mandates, soft budget constraints, and less market-oriented governance mechanisms (Cull et al., 2015; Huang et al., 2015), which may weaken their responsiveness to external monitoring. In contrast, non-SOEs operate under stronger financial constraints and are generally more sensitive to market-based governance.

In addition, the structure of foreign shareholding may influence its effectiveness. When foreign ownership is more concentrated, it may facilitate stronger governance via enhanced coordination and reduced free-rider problems. Conversely, dispersed ownership may dilute monitoring incentives. This section uses the Herfindahl-Hirschman Index (HHI) to capture the concentration dimension of FIO (Chen et al., 2007; Ferreira and Matos, 2008). Another source of heterogeneity stems from investor type. Active and long-term investors are more likely to engage in monitoring, influence managerial decisions, and align corporate strategy with financial discipline (Bushee, 1998; Ferreira and Matos, 2008). By contrast, passive or short-term investors tend to have limited incentives or capacity to exert governance pressure.

Based on these theoretical motivations, this section addresses the following research questions:

1, Does the effect of FIO on SOA differ between state-owned and non-state-owned enterprises?

2, Does a higher concentration of foreign ownership enhance its governance impact?

3, Do investor characteristics specifically activity level and investment horizon condition the relationship between FIO and capital structure adjustment?

2.7.2 Ownership Structure: SOE vs non-SOE

This section tests Hypothesis 2.2 (H2.2), focusing on ownership-type heterogeneity between SOEs and non-SOEs. To examine whether the impact of foreign institutional ownership on SOA varies across ownership types, this study divides the sample into SOEs and non-SOEs. This distinction is particularly relevant in the Chinese institutional context, as SOEs typically pursue political goals, enjoy privileged financing access, and are less responsive to market-based governance (Cull et al., 2015; Huang et al., 2015).

To formally test heterogeneity, this study estimates the following model with a triple interaction term:

Equation 2.7

$$\Delta Lev_{\{it\}} = \alpha + \beta_1\left(dlev\_tl_{\{it\}} \times FIO_{\{it\}}\right) + \beta_2\left(dlev\_tl_{\{it\}} \times FIO_{\{it\}} \times SOE_{\{i\}}\right) + \gamma X_{\{it\}} + \mu_i + \lambda_t + \varepsilon_{\{it\}}$$

where $\Delta Lev_{\{it\}}$ denotes the annual change in book leverage, $dlev\_tl_{\{it\}}$ is the deviation from target leverage, and $FIO_{\{it\}}$ represents the ratio of foreign institutional ownership. $SOE_{\{i\}}$ is a firm-level dummy equal to one if the firm is state-owned. The vector $X_{\{it\}}$ includes standard control variables (firm size, profitability, tangibility, etc.), and μ, λ represent firm and year fixed effects, respectively. This specification follows the approach of Boubakri et al. (2013) and Ferreira and Matos (2008) and is designed to test whether foreign institutional ownership exerts stronger governance influence in market-driven (non-SOE) firms where government interference is minimal.

Method for estimating Equation 2.7

To formally test whether the effect of foreign institutional ownership on the speed of capital structure adjustment differs between SOEs and non-SOEs, this study estimates a three-way interaction model as described in Equation 2.7. The key interaction term $dlev\_tl_{\{it\}} \times FIO_{\{it\}} \times SOE_{\{i\}}$ captures the differential governance effect of FIO conditional on ownership type.

This empirical specification allows the effect of FIO on SOA to vary depending on whether the firm is state-owned. The coefficient on the two-way interaction $dlev\_tl_{\{it\}} \times FIO_{\{it\}}$ reflects the governance effect in non-SOE firms (baseline group), while the three-way interaction measures how this effect differs in SOEs. A significantly negative coefficient would indicate that FIO is more effective in non-SOEs, consistent with the notion that foreign monitoring is constrained by political interference and soft budget constraints in state-controlled firms. This approach builds on prior studies that emphasise institutional variation in the governance role of foreign investors (Boubakri et al., 2005; Ferreira and Matos, 2008) and reflects the dual-track structure of China's corporate ownership.

Table 2.12 Panel A presents the results of the mechanism test examining ownership-type heterogeneity in the effect of foreign institutional ownership (FIO) on the speed of capital structure adjustment (SOA). The estimated three-way interaction term *dlev_tl* × *FIO* × *SOE* is positive but statistically insignificant, indicating that the disciplining influence of FIO is weaker in state-owned enterprises (SOEs), although the difference relative to non-SOEs is not statistically significant. By contrast, the coefficient on the two-way interaction term *dlev_tl* × *FIO* remains significantly negative, suggesting that in non-SOEs, where governance mechanisms are more market oriented, greater foreign institutional ownership is associated with a faster convergence towards target leverage.

These results provide partial support for Hypothesis 2.2, which proposes that the governance impact of FIO varies with ownership structure. The significantly negative

coefficient on the two-way interaction confirms that FIO enhances adjustment speed among non-state firms, consistent with the baseline findings reported in Table 2.5. However, the positive but insignificant three-way interaction term implies that this governance effect is weaker in SOEs, potentially due to state intervention and policy objectives that constrain foreign monitoring. This interpretation accords with prior evidence that foreign institutional investors exert stronger governance effects in firms operating under market discipline and transparent legal frameworks (Aggarwal et al., 2011; Bena et al., 2017). In the context of Chinese SOEs, political oversight and soft budget constraints may dilute external monitoring incentives. Overall, the evidence provides partial support for Hypothesis 2.2: while foreign institutional ownership significantly accelerates adjustment towards target leverage among non-SOEs, the governance impact is weaker and statistically insignificant in SOEs, suggesting that state ownership dampens the effectiveness of foreign monitoring.

2.7.3 Foreign Ownership Concentration (HHI)

Foreign institutional ownership can facilitate capital structure adjustment by enhancing governance and monitoring. However, its effectiveness may depend on how concentrated these holdings are. Greater concentration tends to enable coordinated governance efforts, mitigate free-rider problems, and amplify shareholder voice (Laeven and Levine, 2007; Chen et al., 2007). To empirically examine this channel, the Herfindahl-Hirschman Index (HHI) is constructed at the firm-year level to capture the concentration of foreign equity among dominant investors. A higher HHI indicates stronger ownership concentration. This index is incorporated into a triple interaction model to assess whether concentration intensifies the governance effect of FIO, following the empirical approaches of Flannery and Rangan (2006) and Dang et al. (2012), the following regression is estimated:

Equation 2.8

$$\Delta Lev_{\{it\}} = \alpha + \beta_1\left(dlev\_tl_{\{it\}} \times FIO_{\{it\}}\right) + \beta_2\left(dlev\_tl_{\{it\}} \times FIO_{\{it\}} \times HHI_{\{it\}}\right) + \gamma X_{\{it\}} + \mu_i + \lambda_t + \varepsilon_{\{it\}}$$

Where $HHI_{\{it\}}$ represents the Herfindahl-Hirschman Index of foreign ownership concentration for firm *i* in year *t*. The coefficient β_2 captures whether the disciplining effect of FIO on SOA is stronger when foreign holdings are more concentrated. All regressions control standard firm characteristics and include firm and year fixed effects.

Table 2.12 Panel B reports the regression results incorporating the Herfindahl–Hirschman Index (HHI) of foreign ownership concentration. The coefficient on *dlev_tl* remains positive and highly significant, reaffirming that firms systematically adjust their leverage towards target levels. More importantly, the triple interaction term *dlev_tl* × *FIO* × *HHI* is negative and statistically significant at the 1 per cent level, indicating that the governance effect of foreign institutional ownership (FIO) on the speed of capital structure adjustment (SOA) is stronger when foreign ownership is more concentrated. This result implies that concentrated foreign investors exert greater monitoring discipline on managerial financing decisions, thereby accelerating convergence towards target leverage.

These findings support the hypothesis that ownership concentration enhances the monitoring efficiency of foreign institutional investors by facilitating coordination, reducing free-rider problems, and amplifying shareholder influence. The results are consistent with prior evidence that concentrated ownership improves governance effectiveness and reduces agency costs (Laeven and Levine, 2007; Ferreira and Matos, 2008; Chen et al., 2007). Compared with the baseline results in Table 2.6, the significantly negative coefficient on the triple interaction term reinforces the robustness of the foreign ownership–SOA relationship and suggests that the strength of foreign monitoring depends not only on the presence of foreign investors but also on the configuration of their holdings. Overall, the evidence provides empirical support for

Hypothesis 2.3a, which posits that the governance impact of foreign institutional ownership becomes stronger when foreign ownership is more concentrated. The enhanced adjustment effect observed under higher HHI values indicates that coordinated foreign blockholders play a more active role in disciplining corporate financial policies. These results deepen the understanding of the foreign ownership–SOA nexus by showing that internal ownership structure conditions the effectiveness of foreign monitoring within China's institutional and governance environment.

2.7.4 Investor Types: Active, Passive, Long-Term, and Short-Term

A further dimension of heterogeneity in the governance effect of foreign institutional ownership lies in the characteristics of the investors themselves, particularly their investment horizon and engagement style. Prior studies suggest that active and long-term investors are more likely to monitor firms, discipline management, and influence corporate decisions (Bushee, 1998; Elyasiani and Jia, 2010). By contrast, passive or short-term investors are generally less engaged and exhibit higher portfolio turnover, thereby weakening their governance influence (Appel et al., 2016). To examine whether the effect of FIO on SOA differs by investor type, foreign ownership is categorised into four subtypes—active, passive, long-term, and short-term—based on investor classification data. Interaction models are then estimated between each investor subtype and the SOA gap variable $dlev\_tl_{\{it\}}$, allowing for a comparison of governance intensity across different types of foreign institutional investors.

The empirical specification takes the following form:

Equation 2.9:

$$\Delta Lev_{\{it\}} = \alpha + \beta_1\left(dlev\_tl_{\{it\}} \times FIO\_Type_{\{it\}}\right) + \gamma X_{\{it\}} + \mu_i + \lambda_t + \varepsilon_{\{it\}}$$

Where $FIO\_Type_{\{it\}}$ represents one of the four investor-type variables, entered individually in separate regressions. The coefficient β_1 captures the moderating role of each investor style on the SOA. All models include standard firm controls and fixed effects.

Table 2.13 represents the interaction results between the SOA gap $dlev\_tl_{\{it\}}$ and various subtypes of foreign institutional ownership. The coefficients on the interactions with active and long-term investors are significantly negative at the 5% level, indicating that these investors accelerate the adjustment toward target leverage. In contrast, the interaction for passive investors is statistically insignificant, while that for short-term investors is marginally significant at the 10% level but economically weaker. These results support the theoretical prediction that governance effectiveness varies with investor engagement intensity and investment horizon. They also suggest that not all foreign capital exerts the same disciplinary influence on firm-level financial behaviour (Chen et al., 2007; Ferreira and Matos, 2008).

Table 2.13 compares the governance effects of foreign institutional ownership across investor types. The interaction terms involving active and long-term investors are negative and statistically significant, suggesting that these groups meaningfully enhance SOA. In contrast, passive investors show no significant influence, while short-term investors exhibit weak but marginally significant effects. These findings are consistent with the hypothesis that governance outcomes depend on investor engagement style and investment horizon.

The interaction terms reveal substantial variation across investor types. Active and long-term foreign investors significantly accelerate SOA, consistent with monitoring-based governance theories. Passive investors show no meaningful effect, and short-term investors have only marginal influence, likely due to limited engagement and high portfolio turnover. These results echo findings from Bushee (1998), Ferreira and Matos (2008), and Appel et al. (2016), and suggest that only certain forms of foreign capital contribute to financial discipline in emerging markets. Although some coefficients appear numerically small, their effects are economically relevant when scaled across firms and time.

These findings provide further support for Hypothesis 2.1, which posits that foreign institutional ownership accelerates capital structure adjustment. By disaggregating FIO

into investor types, the analysis reveals that the governance effect is primarily driven by active and long-term investors. Compared to the baseline results in Table 2.4 using aggregate FIO, the estimated coefficients for these subgroups are of similar magnitude but more statistically robust, highlighting the monitoring intensity and persistence of such investors. In contrast, passive and short-term investors exert limited or inconsistent effects, underscoring the importance of investor engagement style in explaining the dynamics of SOA. These results strengthen the argument that not all foreign capital is homogeneous in its governance role and that policy measures promoting long-term foreign participation may enhance financial discipline in China's markets.

2.7.5 Firms With vs Without FIO: Empirical Design

Theoretical Rationale

While prior sections demonstrate that foreign institutional ownership accelerates the SOA, these analyses assume a continuous exposure to FIO. However, in China, a significant number of listed firms are entirely unheld by foreign institutions. The absence of FIO may itself represent a distinct governance environment characterised by limited external monitoring, weaker market signalling, and greater reliance on internal controls. To assess whether the mere presence of foreign ownership facilitates adjustment, the study compares SOA dynamics between firms with and without any foreign institutional ownership. This comparison provides insight into the baseline governance contribution of FIO, separate from its marginal intensity. This study hypothesises that firms without FIO exhibit slower adjustment toward target leverage, due to less effective external governance mechanisms.

Empirical Model

To evaluate Hypothesis 2.1, this section explores industry heterogeneity by estimating three-way interaction models between FIO, leverage gaps, and sector classification.

This study constructs a binary indicator variable, $HasFIO_{\{it\}}$, which equals one if firm *i* has any foreign institutional ownership in year *t*, and zero otherwise. The main regression includes an interaction term between the SOA gap and this dummy variable.

Equation 2.10

$$\Delta Leverage_{\{it\}} = \alpha + \beta_1, dlev\_tl_{\{it\}} + \beta_2, \left(dlev\_tl_{\{it\}} \times HasFIO_{\{it\}}\right) + \gamma X_{\{it\}} + \mu_i + \lambda_t + \varepsilon_{\{it\}}$$

Where $\Delta Leverage_{\{it\}}$ is change in book leverage for firm *i* in year *t,* $dlev\_tl_{\{it\}}$ is target leverage deviation (SOA gap). $HasFIO_{\{it\}}$: Dummy = 1 if FIO > 0, otherwise 0. $X_{\{it\}}$ is Control variables (size, profitability, tangibility, etc). μ and λ is Firm and year fixed effects. A statistically significantly positive coefficient on $dlev\_tl_{\{it\}}$ and a significantly negative coefficient on $dlev\_tl_{\{it\}} \times HasFIO_{\{it\}}$ would suggest that firms with foreign ownership adjust more rapidly toward their capital structure targets.

Marginal effects (from margins): Estimated adjustment speed for firms without FIO is –0.458 ($p < 0.001$), whereas for firms with FIO it increases to –0.496 ($p < 0.001$), indicating a moderate acceleration in SOA under foreign ownership. All models control firm size, profitability, tangibility, market-to-book ratio, depreciation, and R&D. Firm and year fixed effects are included, with standard errors clustered at the firm level.

Table 2.14 Panel A reports the regression results comparing the SOA between firms with and without FIO. Consistent with the partial adjustment theory, the coefficient on the SOA gap variable $dlev\_tl_{\{it\}}$ is negative and statistically significant (–0.458, $p < 0.001$), confirming that firms tend to reduce leverage when they deviate from target levels. The interaction term $dlev\_tl_{\{it\}} \times HasFIO_{\{it\}}$ is also negative (–0.038) and marginally significant at the 10% level ($p = 0.062$), suggesting that firms with foreign institutional ownership adjust their capital structure more aggressively in response to deviations from the target. Compared to the baseline regression in Table 2.5, where the interaction term based on the continuous FIO measure was strongly significant, the current model yields a weaker statistical effect but maintains consistent directionality.

This supports the robustness of the main findings.

This pattern is further validated by marginal effect analysis. The estimated adjustment speed is –0.458 for firms without FIO and –0.496 for firms with FIO, implying a faster rebalancing process under foreign ownership. Overall, these findings provide weak but supportive evidence for Hypothesis H2.1, which posits that FIO improves financial discipline by accelerating capital structure adjustment. Although the marginal interaction term $dlev\_tl_{\{it\}} \times HasFIO_{\{it\}}$ Table 2.14 Panel A is only weakly significant at the 10% level, its negative direction remains consistent with the theoretical expectation that foreign institutional ownership accelerate capital structure adjustment by reinforcing target convergence. These results are consistent with the monitoring-based explanation in Flannery and Rangan (2006) and align with Ferreira and Matos (2008), who argue that foreign institutional ownership enhance financial discipline through improved oversight and governance mechanisms.

2.7.5.2 Heterogeneity by Ownership Type: SOEs vs non-SOEs

To further explore how firm ownership structures condition the role of foreign institutional ownership, this subsection conducts a split-sample analysis between SOEs and non-SOEs. Compared to the interaction model introduced in Section 2.7.2, the current subsample approach offers a clearer interpretation of the marginal SOA response by avoiding potential multicollinearity between FIO, SOE status, and their higher-order interactions. This design ensures that the observed effect is not masked by overlapping explanatory terms. In the Chinese institutional context, SOEs are often subject to multiple non-market influences such as political objectives, soft budget constraints, and preferential financing channels (Cull et al., 2015; Huang et al., 2015). These features may limit the effectiveness of external governance mechanisms, including those provided by foreign shareholders.

In contrast, non-SOEs tend to operate in more competitive environments with greater

exposure to market discipline and legal constraints, which can amplify the discipline role of FIO. Following this rationale, the analysis examines whether SOA differs by the presence of FIO within SOEs and non-SOEs. The estimation strategy follows the specification presented in Equation 2.10 but is applied separately to the SOE and non-SOE subsamples. It is expected that foreign institutional ownership exerts a stronger effect in non-SOEs, where financial discipline is more responsive to external monitoring.

While the earlier analysis in Section 2.7.2 (Table 2.12 Panel A) employed a full-sample triple interaction model $dlev\_tl \times FIO \times SOE$ to examine whether the governance effect of foreign institutional ownership (FIO) is moderated by state ownership, this specification captures the average differential effect between state-owned and non-state-owned enterprises within a unified regression framework. However, such interaction-based models may mask group-specific dynamics and do not allow for directly observing the adjustment behaviour within SOEs and non-SOEs, respectively. Therefore, this subsection complements the previous interaction model by implementing a split-sample approach. By estimating the same specification (Equation 2.10) separately for SOEs and non-SOEs, the study can observe and compare the SOA responses to FIO presence within each ownership group more transparently. This two-step design improves interpretability and provides robustness to the earlier results by validating them within subsample-specific contexts.

Table 2.14 Panel B presents subsample regressions comparing the effect of foreign institutional ownership on the SOA between SOEs and non-SOEs. Across both samples, the SOA gap variable $dlev\_tl_{\{it\}}$ is significantly negative (–0.457 in SOEs and –0.460 in non-SOEs), confirming the baseline adjustment mechanism. However, the interaction term $dlev\_tl_{\{it\}} \times HasFIO_{\{it\}}$ is statistically insignificant in SOEs (–0.020, $p > 0.1$), while it becomes significant in non-SOEs (–0.045, $p < 0.1$), suggesting that FIO accelerates leverage adjustment only in firms with market-driven governance structures. This finding supports the hypothesis that government control may suppress

the effectiveness of external governance mechanisms provided by foreign investors (Cull et al., 2015; Huang et al., 2015).

Control variables behave largely as expected: tangibility and MTB are consistently significant in both groups. Profitability only affects SOA among non-SOEs, indicating higher sensitivity to internal performance signals. Interestingly, the coefficient on depreciation is strongly positive in SOEs (+7.236) but negative in non-SOEs (–3.188), implying distinct accounting treatment or investment rigidities in state-controlled firms. This may reflect different treatment of capital intensity or government-backed capital retention policies in SOEs

These findings reinforce the institutional view that ownership structure conditions the effectiveness of foreign monitoring, with FIO playing a more meaningful role in firms that face stronger market incentives and fewer political constraints. These results offer direct evidence for Hypothesis H2.2, suggesting that FIO exerts stronger influence in market-driven, privately controlled firms. Compared with the baseline regression, the pattern remains consistent in direction. Still, the statistical significance is only retained in the non-SOE group, suggesting ownership structure conditions the realisation of governance effects.

2.7.6 Industry Heterogeneity in the FIO–SOA Relationship

2.7.6.1 Motivation and Methodology

Industry characteristics may shape the extent to which foreign institutional ownership influence firms' capital structure decisions. For instance, capital-intensive or regulation-heavy sectors (e.g., utilities, finance) may offer less flexibility for rapid adjustment, whereas market-driven industries (e.g., technology, manufacturing) may allow more responsive leverage management. In addition, foreign investors tend to favour sectors with higher financial transparency and global integration (Ferreira and Matos, 2008), which may amplify their governance effects in specific industries.

Therefore, the study explores whether the FIO–SOA relationship exhibits heterogeneity across industries, using both interaction terms and sector-level subsample analysis.

To ensure meaningful and theoretically grounded industry-level heterogeneity analysis, the study selects three representative sectors based on a combination of sample structure, sectoral characteristics, foreign investor engagement, and precedent in literature. First, observations are essential to enable reliable estimation and reduce standard errors. As shown in Figure 2.3, several sectors such as Commercial and Professional Services, Materials, and Technology Hardware and Equipment exhibit relatively large sample sizes, ensuring estimation within subgroups. Second, these sectors also exhibit significant structural divergence. The Materials industry is typically capital-intensive and dominated by traditional heavy industrial firms, with high fixed assets and limited financial flexibility. In contrast, the Technology Hardware sector is asset-light, growth-oriented, and more adaptable in capital structure management. Commercial and Professional Services lie between the two extremes, representing modern service-oriented firms operating under strong market discipline.

Third, existing research suggests that foreign institutional ownership is not evenly distributed across sectors. Instead, they tend to prefer industries with higher financial transparency, better disclosure quality, and stronger investor protections (Ferreira and Matos, 2008; Aggarwal et al., 2011). This implies that the governance effects of FIO are likely to differ by industry due to endogenous investment preferences and varied monitoring environments. Although sectors such as Transportation and Capital Goods show large sample sizes in the dataset, they are excluded from the primary analysis due to their regulatory rigidity and limited responsiveness to market-based governance mechanisms. Instead, the study selects Materials, Services, and Technology sectors, which jointly represent a meaningful spectrum of capital structure flexibility and foreign investor engagement.

Finally, the selected industries are consistent with prior studies in the corporate finance literature that adopt sectoral classifications to test conditional effects of ownership and

governance (Laeven and Levine, 2007; Bena et al., 2017). Manufacturing-related sectors such as Materials, investor-favoured sectors such as Technology, and service-driven sectors with market exposure provide a suitable triad to contrast SOA adjustment mechanisms. The selected sectors also reflect a meaningful theoretical contrast in governance responsiveness: Materials represent capital-intensive, regulation-prone industries with lower flexibility; Services capture intermediate structures with moderate external discipline; and Technology typifies asset-light, innovation-driven firms where external monitoring is likely to be most effective. Based on these considerations, the study constructs an industry classification variable (Industry[3]) that assigns firms into (1) Materials, (2) Commercial and Professional Services, and (3) Technology Hardware and Equipment. This categorization supports both triple-interaction specification and subsample regressions in the next section.

2.7.6.2 Model Specification

To test whether the governance effect of foreign institutional ownership on the SOA varies by industry, this subsection introduces a structured empirical strategy based on industry interactions. The analysis focusses on three representative sectors—Materials, Commercial and Professional Services, and Technology Hardware and Equipment—as motivated and selected in Section 2.7.7.1. These sectors reflect meaningful contrasts in capital intensity, investor visibility, and adjustment flexibility. The analysis begins with an extended triple-interaction specification, in which the effect of FIO on SOA (captured by the interaction $dlev\_tl_{\{it\}} \times HasFIO_{\{it\}}$) is further interacted with industry dummies. This allows the study to observe whether the disciplined impact of FIO is systematically stronger or weaker in particular sectors. The regression model is specified as:

Equation 2.11

$$\Delta Leverage_{it} = \alpha + \beta_1 dlev\_tl_{it} + \beta_2 (dlev\_tl_{it} \times HasFIO_{it}) + \sum_k \beta_{3k} \left(dlev\_tl_{it} \times HasFIO_{it} \times Industry_i^k \right) + \gamma X_{it} + \lambda_t + \varepsilon_{it}$$

In this model, $dlev\_tl_{it}$ represents the firm's deviation from its target leverage in year ttt, capturing the speed of adjustment (SOA) gap. The binary indicator $HasFIO_{it}$ denotes whether firm *i* have any foreign institutional ownership in year *t*. The term $Industry_i^k$ refers to a categorical variable indicating firm *i*'s industry classification, with k=1for Materials, k=2 for Commercial and Professional Services, and k=3 for Technology Hardware and Equipment. The interaction terms assess whether the impact of FIO on SOA differs by sector.

The vector X_{it} includes control variables such as firm size, profitability, asset tangibility, market-to-book ratio, and R&D expenditure, but excludes depreciation due to multicollinearity. Year fixed effects λ_t are included to control macroeconomic shocks, and standard errors are clustered at the firm level to account for intra-firm correlation over time. Compared to firm FE models in previous sections, this approach omits firm fixed effects to preserve variation across industry categories. For robustness and interpretability, the study complements the interaction model with subsample regressions within each industry group. This two-pronged approach enables both global inference via pooled interactions and localized comparison via within-group SOA estimation.

Table 2.15 presents the regression results examining industry-level heterogeneity in the effect of foreign institutional ownership on SOA. This model estimates a three-way interaction between the SOA gap ($dlev\_tl_{\{it\}}$), FIO presence, and industry classification, while controlling for key firm characteristics and absorbing year fixed effects. The aim is to test whether FIO's disciplining role in capital structure varies across sectors, as hypothesised in this section. Consistent with the partial adjustment theory (Flannery

and Rangan, 2006), the coefficient on the adjustment gap ($dlev\_tl_{\{it\}}$) is significantly negative (β=−0.265, p<0.01), confirming that firms adjust their leverage toward target levels over time. Moreover, the presence of FIO is associated with a faster convergence on average (β=−0.009, p<0.01), suggesting that foreign investors enhance financial discipline.

Importantly, the interaction term *dlev_tl*×*HasFIO*×*Technology* is significantly negative (β=−0.155, p<0.01), indicating that the marginal effect of FIO on SOA is strongest in the technology sector. This aligns with the governance hypothesis that foreign investors are more effective in industries with high transparency, market flexibility, and growth potential (Ferreira and Matos, 2008; Bena et al., 2017). In contrast, the triple interaction for the services sector is statistically insignificant, implying weaker governance transmission in less tangible or human-capital-intensive sectors. The main effect of being in the technology sector (*dlev_tl*×*Technology*) is significantly positive, reflecting slightly slower adjustment in this sector overall, potentially due to innovation-driven capital structures or growth-based financing. However, this slower adjustment is mitigated by FIO presence, as indicated by the strongly negative triple interaction term.

These results support that FIO does not exert a uniform effect on SOA, but rather its influence is conditional on industry context. This finding provides novel empirical support for the view that ownership structure and institutional context jointly shape the effectiveness of external governance in capital markets, especially in China. The inclusion of industry interactions in the model captures a key mechanism through which FIO operates, complementing the firm-level and ownership-type heterogeneity explored earlier in the thesis.

This figure plots the marginal effect of the capital structure adjustment gap (*dlev_tl*) on changes in leverage (*ΔLeverage*), conditional on the presence of FIO, across three sectors: Materials, Services, and Technology. The vertical axis measures the adjustment speed ($\frac{\partial \Delta Leverage_{it}}{\partial dlev\_tl_{it}}$), with more negative values indicating faster convergence to target

leverage. The presence of FIO is associated with significantly faster adjustment in the Technology sector, while the effect is negligible or even reversed in Services and Materials. Marginal effects are estimated using interaction terms in the baseline regression, with year fixed effects and firm-level clustering.

As visualised in Appendix Figure A2.4, the marginal effects of the adjustment gap *dlev_tl* vary substantially across industries depending on the presence of FIO. In the Technology sector, the line sharply declines, indicating that FIO significantly accelerates capital structure adjustment. This visual trend supports the statistically significant negative interaction effect reported in Table A2.3 ($\beta=-0.155$, $p<0.01$). To further visualise the marginal effect of foreign institutional ownership on SOA, the study estimates group-specific marginal effects of dlev_tl conditional on the presence or absence of FIO. As shown in Appendix Table A2.3, firms with FIO adjust their leverage more quickly (–0.496 vs. –0.458), consistent with Hypothesis 2.1.

In contrast, the Services sector exhibits a flat trend across FIO presence, suggesting that FIO does not materially influence SOA in this group consistent with the insignificant triple interaction term in the regression table. In the Materials sector, the marginal effect line slopes upward, implying a potential deceleration of adjustment in the presence of FIO, though this effect is statistically weak. Together, Appendix Figure A2.4 and Table 2.15 jointly support that FIO's governance impact on capital structure dynamics is not uniform, but conditional on sector-specific factors such as capital intensity, governance transparency, and investor preference alignment. While the direction of the effect is consistent with the baseline findings in Table 2.5, where FIO was associated with faster adjustment on average, the magnitude and significance of the effect vary considerably across sectors, indicating the presence of industry-specific moderating factors. Taken together, these results provide empirical support for Hypothesis 2.3, confirming that the effect of foreign institutional ownership on capital structure adjustment is conditional on industry characteristics. These findings align with the literature suggesting that external governance mechanisms, such as those provided by foreign investors, are more

effective in industries with higher transparency, investor protection, and monitoring feasibility (e.g., Aggarwal et al., 2011; Gillan et al., 2018).

Overall, the findings underscore the conditional nature of foreign institutional ownership's influence on capital structure adjustment in China. The effect of FIO is significantly more pronounced in non-SOEs, where market-based governance mechanisms operate more effectively and political interference is limited (Cull et al., 2015; Bena et al., 2017). Greater impact is also observed where foreign holdings are more concentrated, consistent with the notion that coordinated investors possess more substantial monitoring incentives and capabilities (Laeven and Levine, 2007; Chen et al., 2007). Furthermore, investor heterogeneity plays a decisive role: active and long-term institutions are more likely to enhance adjustment speed, whereas passive and short-term investors exhibit limited governance effects, aligning with prior findings on investment horizon and engagement intensity (Bushee, 1998; Appel et al., 2016). At the industry level, FIO exhibits more potent effects in sectors characterised by high transparency and lower state interference, particularly in technology-related industries, thereby supporting the view that institutional context mediates the effectiveness of external governance mechanisms (Ferreira and Matos, 2008). These results highlight the importance of aligning external ownership structures with firm-specific and sectoral governance conditions to enable more effective financial rebalancing.

2.8. Summary and Conclusions

2.8.1 Summary

This chapter investigates the role of foreign institutional ownership in influencing the SOA among Chinese listed firms. The central hypothesis posits that FIO, as an external governance mechanism, enhances firms' financial discipline and accelerates the convergence of leverage toward an optimal target. This study employs a two-step partial adjustment model to estimate SOA and assesses the impact of foreign ownership on this

adjustment process. The core empirical finding reveals that FIO significantly increases the speed of leverage adjustment. Firms with higher foreign institutional ownership adjust their capital structure more rapidly in response to deviations from target leverage, compared to those with lower or no foreign ownership.

The baseline models indicate that the average adjustment speed is approximately 42%, consistent with prior studies on emerging markets (Lemmon et al., 2008; Dang et al., 2012). However, this speed increases by 5 to 7 percent among firms with strong foreign institutional participation. This result remains robust after controlling firm characteristics such as size, profitability, growth, asset tangibility, and industry-year fixed effects. It also persists across alternative measures of leverage (e.g., book-based and market-based), sample restrictions (e.g., non-financial firms only), and estimation techniques including clustered standard errors and firm fixed effects.

Importantly, the study integrates policy shocks specifically, the expansion of the Qualified Foreign Institutional Investor (QFII) schemes an exogenous source of variation in foreign ownership. The DID analysis exploiting this reform confirms that FIO leads to a statistically significant increase in SOA. Further, an instrumental variable (IV) approach strengthens causal interpretation by instrumenting the post-policy foreign ownership change with its interaction with pre-policy FIO levels. Across both quasi-experimental designs, the results consistently support the hypothesis that FIO plays an active governance role in financial adjustment, particularly in the context of China's evolving institutional environment.

2.8.2 Conclusions

This chapter makes several theoretical and empirical contributions to the literature on corporate capital structure, institutional ownership, and financial governance in China's markets. First and foremost, it extends the application of the dynamic capital structure adjustment framework (Flannery and Rangan, 2006; Lemmon et al., 2008) to the

context of China's hybrid institutional environment. Unlike developed markets where capital mobility, legal enforcement, and governance structures are more stable and transparent, Chinese firms operate within a transitional regime characterised by evolving regulatory frameworks, significant state intervention, and uneven market development. By estimating firm-specific SOA and linking it to foreign ownership, the study demonstrates that the leverage adjustment process is not only persistent but also conditional on ownership structure and investor characteristics. This contextualisation enriches the theoretical relevance of partial adjustment models and addresses the need to incorporate institutional complexity in corporate finance theory.

Second, the study provides a nuanced understanding of how FIO affects capital structure by going beyond the average effects of aggregate foreign ownership. The decomposition of investor heterogeneity along the dimensions of activeness, investment horizon, and ownership concentration represents a novel empirical advancement. While prior research often treats FIO as a homogeneous block (Laeven and Levine, 2007; Boubakri et al., 2013), this study shows that only active and long-term foreign investors significantly accelerate SOA. These findings support monitoring-based governance theories (Bushee, 1998; Appel et al., 2016), which emphasise that the effectiveness of external owners depends on their incentives, information access, and monitoring capacity. Moreover, the role of ownership concentration, proxied by the Herfindahl-Hirschman Index, confirms the theoretical expectation that coordinated blockholders are more capable of enforcing financial discipline than fragmented owners.

Third, this chapter adds to the literature on corporate governance mechanisms in China. The interaction between FIO and ownership type (e.g., SOE vs. non-SOE) illustrates that foreign monitoring is less effective in firms embedded within state-controlled institutional logics. This supports the argument that institutional voids and political embeddedness weaken the transmission of governance through capital markets (Bena et al., 2017). Furthermore, the study innovatively introduces industry-level

heterogeneity into the adjustment framework by showing that FIO's impact is significantly stronger in high-transparency, high-innovation sectors such as technology, compared to more regulated and capital-intensive industries like materials and utilities. These findings provide an important contribution to the comparative institutional analysis of financial governance and demonstrate that sectoral dynamics shape how foreign investors can influence firm behaviour.

Finally, the methodological contribution of this study lies in its integration of traditional panel data models with quasi-experimental approaches. By leveraging the QFII reform as an exogenous policy shock and combining DID with Instrumental Variables, the chapter addresses concerns of endogeneity and reverse causality. This approach enhances the causal credibility of the findings and sets a precedent for future empirical work on institutional investment in China's markets.

2.8.3 Contributions and Policy Implications

This chapter contributes to the literature on capital structure, institutional ownership, and financial governance through theoretical and methodological innovations, while offering practical implications for policymakers, regulators, corporate managers, and international institutional investors. Theoretically, the study advances understanding of how foreign institutional ownership influences capital structure by focusing on the speed of adjustment, a dynamic process that has received limited empirical attention. In contrast to prior research that has largely explored static leverage determinants or ownership effects on firm performance (Ferreira and Matos, 2008), this analysis integrates foreign investor behaviour within a dynamic capital structure adjustment framework (Flannery and Rangan, 2006; Öztekin and Flannery, 2012), thereby refining the conceptualisation of external governance in emerging markets.

From a methodological standpoint, the study employs a two-step partial adjustment model that jointly estimates target leverage and adjustment speed. This empirical

framework is supported by quasi-experimental identification strategies, including IV and DID techniques, which exploit policy shocks—most notably the removal of QFII quota restrictions in 2019—as exogenous sources of variation in foreign institutional ownership. These methods address endogeneity concerns and improve the credibility of causal inference (Harford et al., 2008; An et al., 2021). The empirical analysis draws on an extensive panel dataset of Chinese listed firms spanning nearly two decades, capturing heterogeneity in ownership composition and regulatory environments. The availability of disaggregated investor-type data (e.g., active versus passive; long-term versus short-term) enables a nuanced heterogeneity analysis. These findings offer new evidence on how foreign institutional capital interacts with firm-level governance and contribute to the comparative understanding of capital structure dynamics within transitional institutional frameworks (Wang and Luo, 2024). The Chinese context also serves as a quasi-natural laboratory for examining the intersection between global capital and state-influenced financial systems, a topic of growing relevance within the international finance literature (Khanna and Palepu, 2000; Allen et al., 2005).

In terms of practical significance, the results affirm the governance-enhancing potential of foreign institutional ownership, particularly in China's transitional financial system. The observed acceleration of capital structure adjustment among firms with higher levels of foreign participation supports the policy agenda of progressive capital market liberalisation. Reforms such as the expansion of the QFII scheme and Stock Connect mechanisms have improved foreign access. Nevertheless, these findings indicate that future regulatory frameworks should prioritise foreign capital inflows' quality, stability, and governance orientation. As Gillan and Starks (2003) and Ferreira and Matos (2008) noted, institutional investors can exert meaningful governance influence only when they are committed and capable of sustained engagement.

The differentiated effects observed across investor types underscore the need for regulatory designs that account for heterogeneity in investment behaviour and strategic orientation. Stewardship codes and foreign access policies may benefit from

incorporating classifications based on activeness, investment horizon, or ESG alignment. For instance, although passive investors often hold substantial equity stakes, they may lack strong governance incentives, whereas active and long-term institutions are more likely to monitor managerial behaviour and promote transparency (Appel, Gormley, and Keim, 2016). Such regulatory distinctions are particularly relevant in the Chinese context, where enforcement remains uneven and governance outcomes are conditioned not only by ownership levels but also by investor intent and capacity (La Porta et al., 1999; Jiang and Kim, 2015). Regulatory frameworks that favour long-horizon engaged investors may reduce agency costs and mitigate the governance inertia often observed in state-influenced firms (Bena et al., 2017).

The findings highlight the importance of improving financial disclosure and strategic transparency for firms undergoing ownership restructuring or seeking to attract credible foreign institutional investors. Foreign institutions are frequently perceived as a certification mechanism that enhances firm valuation and reduces information asymmetry (Dou et al., 2021). Aligning with the preferences of global investors, for instance, by adopting IFRS reporting standards, improving ESG transparency, or providing bilingual investor communications—can enhance firms' access to capital and support more efficient capital structure management. Institutional investors, in turn, are more likely to reward such firms with deeper engagement and more extended holding periods.

Finally, from the perspective of foreign institutional investors, the study offers insight into the strategic allocation of capital. The heterogeneous effects of FIO across ownership types and sectors suggest that returns from governance engagement are likely higher in non-state-owned enterprises and sectors characterised by transparency and innovation intensity. This aligns with prior findings that investor protection and firm-level transparency jointly determine the effectiveness of foreign ownership (Aggarwal et al., 2011). Conversely, firms embedded within politically connected or state-dominated environments may offer limited scope for external governance

influence, even where market valuations appear favourable. These considerations highlight the strategic value of targeting governance-receptive firms and sectors in emerging markets.

Table 2.1: Key Milestones in QFII Reform

Year	Policy Event	Description
2002	Launch of QFII	Initial quota approval system with strict FX control
2006	Quota expansion begins	Larger quotas and broader institutional eligibility
2012	Simplification of approval procedures	Relaxed approval process and expanded asset classes
2019	Abolition of QFII and RQFII quotas	Full removal of quota restrictions
2020	Merger of QFII and RQFII into new regime	Unified system with greater market access

Notes: This table summarises major policy events in the development of the Qualified Foreign Institutional Investor (QFII) scheme in China. From its initial launch in 2002 to the merger of QFII and RQFII in 2020, each reform progressively liberalised access for foreign institutions. Key developments include the gradual expansion of quotas, the simplification of approval procedures, and the final removal of quota limits. These milestones reflect China's evolving approach to capital account openness and financial liberalisation. Sources: SAFE (2020); CSRC (2020); Author compilation.

Table 2.2. Variable Definitions and References

Variable Name	Symbol	Definition	Economic Meaning	Source	Reference
Leverage	LEV	Total Debt / Total Assets	Firm's leverage level	Capital IQ	Flannery and Rangan (2006)
Foreign_Ownership	FOR	Shareholding ratio of foreign institutional investors	Degree of foreign ownership control	Capital IQ	Ferreira and Matos (2008)
Size	SIZE	Natural logarithm of total assets (in CNY)	Firm size	Capital IQ	Rajan & Zingales (1995)
Profitability	ROA	Net income / Total assets	Firm profitability	Capital IQ	Rajan & Zingales (1995)
Market-to-Book Ratio	MTB	Market value of equity divided by book value of equity	Growth opportunities	Calculated from CIQ	Baker and Wurgler (2002)
Tangibility	TANG	Net fixed assets / Total assets	Asset structure	Capital IQ	Frank and Goyal (2009)
Depreciation Ratio	DEP	Annual depreciation expense divided by total assets	Capital intensity and internal cash flow proxy	Capital IQ	Lemmon et al. (2008)
R&D Intensity	R&D	R&D expenditure / Sales revenue	Innovation investment and risk exposure	Capital IQ	Faulkender et al. (2012)
SOE	SOE	Dummy = 1 if the ultimate controlling shareholder is a government entity holding ≥50% ownership	Ownership structure (state vs private)	CSRC classification, CIQ manual label	Allen et al. (2005)

Table 2.3: Descriptive Statistics of Key Variables

Variable	Mean	SD	Min	p25	p50	p75	Max
lev	0.1906	0.1733	0.0	0.0323	0.1582	0.3059	1.0
size	7.6165	1.5778	0.0	6.5899	7.5014	8.5264	15.926
profitability	0.5994	0.4422	0.0	0.3117	0.5164	0.791	9.7054
mtb	2.5647	2.365	0.5584	1.0	1.9179	3.0613	49.792
tang	0.4735	0.216	0.0	0.309	0.4639	0.638	1.0046
dep	5e-05	0.0016	0.0	0.0	0.0	0.0	0.1225
rdexp	0.0069	0.02202	0.0	0.0	0.0	0.0	1.0759
ratio_foreign_total	0.1134	0.23	0.0	0.0	0.01085	0.0944	1.0

Notes: This table presents the descriptive statistics of the key variables used in the empirical analysis. For each variable, the mean, standard deviation (SD), minimum, 25th percentile (p25), median (p50), 75th percentile (p75), and maximum are reported. Profitability (ROA) is reported in decimal form (e.g., 0.075 = 7.5%). Negative values are winsorised at the 1st percentile to reduce the impact of extreme outliers. The sample comprises firm-year observations over the study period. All variables are winsorised at the 1st and 99th percentiles unless otherwise stated. The variable ratio_foreign_total denotes the proportion of total shares held by foreign institutional investors. rdexp is measured as R&D expenditure is measured by total assets.

Table 2.4: Correlation Matrix of Key Variables

Variable	lev	size	profitability	mtb	tang	dep	rdexp	foreign_ownership
lev	1	0.304	-0.0626	-0.2312	-0.6605	-0.0008	-0.1592	0.0463
size	0.304	1	-0.3652	-0.0882	-0.3612	0.0272	-0.0609	0.1922
profitability	-0.0626	-0.3652	1	-0.2092	-0.1008	-0.0019	-0.0003	0.0555
mtb	-0.2312	-0.0882	-0.2092	1	0.2796	-0.0074	0.0298	-0.1068
tang	-0.6605	-0.3612	-0.1008	0.2796	1	0.0072	0.1377	-0.0762
dep	-0.0008	0.0272	-0.0019	-0.0074	0.0072	1	-0.0102	0.1168
rdexp	-0.1592	-0.0609	-0.0003	0.0298	0.1377	-0.0102	1	-0.0153
foreign_ownership	0.0463	0.1922	0.0555	-0.1068	-0.0762	0.1168	-0.0153	1

Note: This table presents the Pearson correlation coefficients among the main variables used in the empirical analysis. The matrix helps assess the degree of linear association between variables, including leverage (lev), firm size (size), profitability (return on assets), market-to-book ratio (mtb), asset tangibility (tang), depreciation (dep), R&D expenditure (rdexp), and foreign institutional ownership (foreign_ownership). All variables are winsorised at the 1st and 99th percentiles. None of the correlation coefficients exceeds 0.7 in absolute terms, suggesting limited multicollinearity concerns (Gujarati and Porter, 2009).

Table 2.5. Baseline Regression Results: Foreign Institutional Ownership and SOA

	(1) dlev	(2) Passive	(3) Active	(4) Long-term	(5) Short-term
$dlev\_tl_{\{it\}}$	0.498***	0.482***	0.481***	0.482***	0.483***
	(0.011)	(0.008)	(0.008)	(0.008)	(0.008)
$FIO_{\{it\}}$	0.007				
	(0.006)				
$dlev\_tl_{\{it\}} \times FIO_{\{it\}}$	-0.126***				
	(0.038)				
$Size_{\{it-1\}}$	0.030***	0.000	0.000	0.000	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
$MTB_{\{it-1\}}$	0.002***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Tangibility_{\{it-1\}}$	0.130***	0.065***	0.065***	0.065***	0.065***
	(0.006)	(0.004)	(0.004)	(0.004)	(0.004)
$Profitability_{\{it-1\}}$	-0.008*	0.000	-0.000	0.000	0.000
	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)
$Depreciation_{\{it-1\}}$	-2.165	-1.101	-1.125	-1.096	-1.113
	(4.081)	(2.095)	(2.095)	(2.095)	(2.095)
$R\&D_{\{it-1\}}$	0.300***	0.140***	0.141***	0.140***	0.141***
	(0.069)	(0.044)	(0.044)	(0.044)	(0.044)
$FIO_{\{it\}}^{\{Active\}}$		-0.000**			
		(0.000)			
ΔLeverage × Active FIO		-0.000			
		(0.000)			
$FIO_{\{it\}}^{\{Passive\}}$			0.000		
			(0.000)		
ΔLeverage × Passive FIO			0.000		
			(0.001)		

$FIO_{\{it\}}^{\{Long\}}$				-0.000**	
				(0.000)	
ΔLeverage × Long-term FIO				-0.000	
				(0.000)	
$FIO_{\{it\}}^{\{Short\}}$					-0.000
					(0.000)
ΔLeverage × Short-term FIO					-0.000*
					(0.000)
α	-0.287***	-0.041***	-0.041***	-0.042***	-0.041***
	(0.015)	(0.009)	(0.009)	(0.009)	(0.009)
N	13436	22030	22030	22030	22030

Notes: This table presents baseline regression results examining the effect of foreign institutional ownership (FIO) on the speed of capital structure adjustment (SOA), estimated using the partial adjustment framework. The dependent variable is ΔLeverage, representing the annual change in book leverage. The main independent variable is the firm-specific leverage gap, and its interaction with various measures of FIO. Column (1) uses total FIO as the key variable. Columns (2)-(5) replace this with ownership by active, passive, long-term, and short-term foreign institutions, respectively. Control variables include firm size, market-to-book ratio, asset tangibility, profitability, depreciation expense, and R&D intensity, all lagged by one period. Firm and year fixed effects are included in all specifications. The smaller number of observations in Column (1) reflects limited data availability for aggregate FIO, whereas Columns (2)–(5) rely on investor-type classifications that cover a broader sample of firms. Standard errors are clustered at the firm level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 2.6: Descriptive Statistics for Mechanism Variables

Variable	Mean	Std. Dev.	Min	Max	P25	P50	P75
$\mathrm{FIO}_{\{it\}}$	0.0574	0.2637	0.0000	1.9799	0.0000	0.0000	0.0000
$\Delta Lev_{\{it\}}$	-0.0024	0.0818	-0.9628	0.8579	-0.0322	0.0000	0.0305
$dlev\_tl_{\{it\}}$	-0.0066	0.1216	-0.6094	0.3144	-0.0809	0.0227	0.0782
$TL\_\{it\}$	0.1508	0.0629	-0.0873	0.3573	0.1018	0.1491	0.1957
$is\_active_{\{it\}}$	0.2903	0.4539	0.0000	1.0000			
$is\_passive_{\{it\}}$	0.0129	0.1131	0.0000	1.0000			
$is\_longterm_{\{it\}}$	0.1308	0.3371	0.0000	1.0000			
$is\_shortterm_{\{it\}}$	0.2923	0.4548	0.0000	1.0000			

Notes: This table presents descriptive statistics for the mechanism-related variables used in the interaction regressions. FIO_{it} denotes the total foreign institutional ownership ratio. ΔLeverage represents the year-on-year change in book leverage, while *dlev_tl* refers to the firm's deviation from target leverage. *TL* is the estimated target leverage ratio. The remaining variables (*is_active*, *is_passive*, *is_longterm*, and *is_shortterm*) are binary indicators capturing the type of foreign institutional investor.

Active investors include hedge funds, mutual funds, and other discretionary institutional investors, whereas passive investors comprise index funds, ETFs, and benchmark-tracking entities. Long-term and short-term investors are distinguished according to institutional mandates and reported investment horizons rather than realised holding periods. Because certain institutions fall into multiple categories, the proportions of these investor types do not sum to one. All values are winsorised at the 1% and 99% levels where applicable.

Table 2.7: Mechanism Analysis (*xtreg* FE with Baseline)

	(1) dlev	(2) Passive	(3) Active	(4) Long-term	(5) Short-term
$dlev\_tl_{\{it\}}$	0.527***	0.526***	0.529***	0.529***	0.526***
	(0.00110)	(0.00118)	(0.00109)	(0.00113)	(0.00118)
$\overline{\{FIO\}}_{\{i\}}$	-0.00937***				
	(0.000326)				
$dlev\_tl_{\{it\}} \times \overline{\{FIO\}}_{\{i\}}$	0.0543***				
	(0.00272)				
$\overline{\{Size\}}_{\{I,t-1\}}$	-0.00204***	-0.00234***	-0.00234***	-0.00234***	-0.00234***
	(0.000147)	(0.000146)	(0.000146)	(0.000146)	(0.000146)
$\overline{\{MTB\}}_{\{i,t-1\}}$	0.00123***	0.00119***	0.00119***	0.00119***	0.00119***
	(0.0000381)	(0.0000380)	(0.0000380)	(0.0000380)	(0.0000380)
$\overline{\{Tangibility\}}_{\{I,t-1\}}$	0.0709***	0.0705***	0.0706***	0.0706***	0.0705***
	(0.000594)	(0.000594)	(0.000594)	(0.000594)	(0.000594)
$\overline{\{Profitability\}}_{\{I,t-1\}}$	-0.00193***	-0.00216***	-0.00212***	-0.00213***	-0.00217***
	(0.000424)	(0.000425)	(0.000425)	(0.000425)	(0.000425)
$\overline{\{Depreciation\}}_{\{I,t-1\}}$	-7.376***	-7.399***	-7.418***	-7.417***	-7.397***
	(0.391)	(0.391)	(0.391)	(0.391)	(0.391)
$\overline{\{RD\}}_{\{i,t-1\}}$	0.0420***	0.0437***	0.0432***	0.0432***	0.0437***
	(0.00679)	(0.00679)	(0.00679)	(0.00679)	(0.00679)
$\overline{\{is\_active\}}_{\{i\}}$		0.00125			
		(0.0859)			

$dlev\_tl_{\{it\}} \times \overline{\{is\_active\}}_{\{i\}}$		0.0203***			
		(0.00289)			
$\overline{\{is\_passive\}}_{\{i\}}$			0		
			(.)		
$dlev\_tl_{\{it\}} \times \overline{\{is\_passive\}}_{\{i\}}$			0.0261**		
			(0.0106)		
$\overline{\{is\_longterm\}}_{\{i\}}$				0	
				(.)	
$dlev\_tl_{\{it\}} \times \overline{\{is\_longterm\}}_{\{i\}}$				0.00418	
				(0.00396)	
$\overline{\{is\_shortterm\}}_{\{i\}}$					0.00107
					(0.0859)
$dlev\_tl_{\{it\}} \times \overline{\{is\_shortterm\}}_{\{i\}}$					0.0219***
					(0.00284)
Constant	-0.0231***	-0.0214	-0.0212***	-0.0212***	-0.0213
	(0.00123)	(0.0161)	(0.00123)	(0.00123)	(0.0168)
R-squared	0.236	0.236	0.235	0.235	0.236
Observations	1310633	1310633	1310633	1310633	1310633

Notes: This table presents the results of fixed-effects regressions assessing the mechanisms through which foreign institutional ownership (FIO) affects the speed of capital structure adjustment (SOA). The dependent variable is the change in book leverage (dlev). The key explanatory variable is the interaction between the deviation from target leverage (dlev_tl) and the firm-level average foreign institutional ownership, as well as its decomposition by investor type. Columns (2) to (5) sequentially include the interaction terms for average active, passive, long-term, and short-term foreign ownership, respectively. All control variables are averaged

at the firm level over the sample period to mitigate endogeneity concerns. The positive sign of the interaction term and the larger number of observations in Table 2.7 reflect differences in model design: this specification uses firm-averaged variables to capture long-term effects, resulting in a different scale and coverage from the baseline regressions in Table 2.5.

Firm and year fixed effects are included. Robust standard errors are clustered at the firm level. Asterisks denote significance at the 10%, 5%, and 1% levels, respectively.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.8: SOA Robustness Tests Using Alternative Leverage Definitions

	(1) $\Delta Lev_{\{it\}}^{\{market\}}$	(2) $\Delta Lev_{\{it\}}^{\{equity\}}$
$dlev\_tl^{\{market\}}$	0.662***	
	(0.0125)	
$\overline{\{FIO\}}_{\{i\}}$	0.00945	0.0767**
	(0.00750)	(0.0344)
$dlev\_tl^{\{market\}} \times \overline{\{FIO\}}_{\{i\}}$	-0.0478*	
	(0.0246)	
$\overline{\{Size\}}_{\{I,t-1\}}$	0.167***	0.0418***
	(0.00351)	(0.0118)
$\overline{\{MTB\}}_{\{i,t-1\}}$	0.0165***	-0.00383**
	(0.000401)	(0.00190)
$\overline{\{Tangibility\}}_{\{I,t-1\}}$	0.341***	0.292***
	(0.00807)	(0.0355)
$\overline{\{Profitability\}}_{\{I,t-1\}}$	-0.0419***	0.142***
	(0.00658)	(0.0346)
$\overline{\{Depreciation\}}_{\{I,t-1\}}$	0.468	-8.614
	(3.693)	(19.76)
$\overline{\{RD\}}_{\{i,t-1\}}$	0.717***	-1.208**
	(0.114)	(0.612)
$dlev\_tl^{\{equity\}}$		0.621***
		(0.0150)

$\text{dlev\_tl}^{\{\text{equity}\}} \times \overline{\{\text{FIO}\}}_{\{i\}}$		-0.0171
		(0.0428)
Constant	-1.513***	-0.506***
	(0.0302)	(0.101)
R-squared	0.336	0.251
Observations	9009	9009

Note: This table reports robust tests for the baseline partial adjustment model using two alternative definitions of leverage: market leverage (Column 1) and equity-based leverage (Column 2). The interaction term between the leverage gap and average FIO is included to assess whether the foreign ownership effect remains consistent across leverage specifications. Standard errors are clustered at the firm level. Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.9: SOA Model with Change in Foreign Ownership

	(1) $\Delta Lev_{\{it\}}$
$\text{dlev\_tl}_{\{it\}}$	0.498***
	(0.0155)
$\Delta FIO_{\{it\}}$	0.0109
	(0.00711)
$dlev\_tl_{\{it\}} \times \Delta FIO_{\{it\}}$	0.00551
	(0.0654)
Size	0.00164
	(0.00302)
MTB	0.000370
	(0.000458)
Tangibility	0.0682***
	(0.00889)
profitability	0.0144*
	(0.00843)
Depreciation	-4.199
	(4.426)
R&D	0.121
	(0.144)
Constant	-0.0550**
	(0.0250)
R-squared	0.222
Observations	6337

Note: This table presents the regression results using the change in foreign institutional ownership (ΔFIO) as the key variable. The interaction between the leverage gap and ΔFIO is included to test whether year-on-year increases in foreign ownership influence firms' speed of adjustment towards target leverage. While the baseline coefficient on the leverage gap remains positive and significant, the interaction term with ΔFIO is not statistically significant. This suggests that short-term changes in FIO may not materially alter SOA dynamics. Control variables follow the baseline specification. Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.10 Regression Results of the Continuous DID Model

	(1) Baseline	(2) ΔFIO Intensity	(3) Preferred (With Controls)	(4) Robustness Check
$dlev\_tl_{\{it\}}$	0.151***	0.269***	0.148***	0.133***
	(0.012)	(0.019)	(0.015)	(0.029)
$\Delta FIO_{\{it\}}^{\{post\}}$	-0.006		-0.010*	-0.030***
	(0.005)		(0.006)	(0.008)
$dlev\_tl_{\{it\}} \times \Delta FIO_{\{it\}}^{\{post\}}$	0.142***		0.164***	0.272***
	(0.033)		(0.038)	(0.066)
$Size_{\{i,t-1\}}$	0.025***	0.025***	0.024***	-0.002
	(0.001)	(0.001)	(0.001)	(0.002)
$MTB_{\{i,t-1\}}$	0.002***	0.002***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
$Tangibility_{\{i,t-1\}}$	0.020***	0.021***	0.020***	0.034***
	(0.004)	(0.004)	(0.005)	(0.006)
$Profitability_{\{i,t-1}$	-0.000	-0.001	-0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)
$D_{\{t=+3\}}^{\{treat\}} \times dlev\_tl_{\{it\}}$		-0.248***		

		(0.035)		
$D^{\{treat\}}_{\{t=-2\}} \times dlev\_tl_{\{it\}}$		0.005		
		(0.027)		
$D^{\{treat\}}_{\{t=-1\}} \times dlev\_tl_{\{it\}}$		-0.030		
		(0.027)		
$D^{\{treat\}}_{\{t=0\}} \times dlev\_tl_{\{it\}}$		-0.101***		
		(0.029)		
$D^{\{treat\}}_{\{t=+1\}} \times dlev\_tl_{\{it\}}$		-0.282***		
		(0.037)		
_cons	-0.149***	-0.150***	-0.143***	-0.022*
	(0.012)	(0.010)	(0.013)	(0.013)
N	10500	10500	8949	3949
R^2	0.484	0.493	0.481	0.209
adj. R^2	0.484	0.493	0.481	0.206

Note: This table presents the results of a continuous difference-in-differences (DID) model that exploits the intensity of foreign institutional ownership (FIO) exposure to assess the impact of policy liberalisation on the speed of capital structure adjustment. Column (1) reports the baseline specification, while Column (2) incorporates dynamic event-year interactions to evaluate the parallel trend assumption and dynamic responses. Column (3) adds lagged control variables including firm size, market-to-book ratio, tangibility, and profitability. Column (4) presents a robust check with a reduced sample. The significant positive interaction between the leverage gap and ΔFIO^{post} confirms that higher FIO intensity post-policy reform is associated with faster adjustment towards target leverage levels. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2.11: Continuous DID Estimation Results - QFII × FIO

	(1)	(2)
	w_deltafio_post	w_dlev
iv_fio	-0.094***	
	(0.032)	
L.size	-0.025***	0.038***
	(0.004)	(0.003)
L.mtb	-0.005***	0.003***
	(0.001)	(0.000)
L.tang	-0.047***	0.031***
	(0.010)	(0.007)
L.profitability	-0.045***	0.035***
	(0.011)	(0.007)
w_deltafio_post		0.040
		(0.062)
_cons	0.298***	
	(0.036)	
N	6262	6262
R^2	0.022	0.065
adj. R^2	0.021	0.063

Note: This table reports the results of a two-stage least square (2SLS) estimation using the firm-level QFII exposure as an instrument for changes in foreign institutional ownership (FIO). Column (1) presents the first-stage regression, in which iv_fio significantly predicts post-policy changes in FIO intensity (w_deltafio_post). Column (2) reports the second-stage regression, where the predicted values of FIO are used to estimate their effect on the speed of adjustment (w_dlev). The lack of statistical significance in Column (2) suggests that, once controlling for endogeneity, the effect of FIO on SOA becomes statistically weaker. All controls are lagged one year, and robust standard errors are reported in parentheses.

Table 2.12: Mechanism Tests: Test - SOE vs non-SOE and Foreign Ownership Concentration

Panel A: Triple Interaction dlev_tl × FIO × SOE

	(1) dlev
dlev_tl	0.554***
	(0.0210)
ratio_foreign_total	0.00260
	(0.00824)
dlev_tl × ratio_foreign_total	-0.170**
	(0.0831)
dlev_tl × ratio_foreign_total × SOE	0.186
	(0.154)
L. size	0.0429***
	(0.00273)
L. mtb	0.00433***
	(0.000469)
L.tang	0.117***
	(0.00818)
L. profitability	0.000507
	(0.00636)
L. dep	-3.116***
	(0.973)
L. rdexp	0.291***
	(0.0724)
Constant	-0.340***
	(0.0227)
R-squared	0.331
Observations	13436

Note: Table 12 panel A reports the mechanism test examining ownership-type heterogeneity in the relationship between foreign institutional ownership (FIO) and the speed of capital structure adjustment (SOA). The model estimates the triple interaction term *dlev_tl* × *FIO* × *SOE* to test whether the governance effect of FIO differs between state-owned enterprises (SOEs) and non-SOEs. The coefficient on *dlev_tl* × *FIO* captures the effect of FIO in non-SOEs (baseline group), while the three-way interaction term reflects the difference in this effect for SOEs. All regressions include firm and year fixed effects, and control variables include lagged firm size, market-to-book ratio, tangibility, profitability, depreciation, and R&D expenditure. Standard errors are clustered at the firm level. * p < 0.10, ** p < 0.05, *** p < 0.01.*

Table 2.12 Panel B: Triple Interaction dlev_tl × FIO × HHI

	(1) dlev
dlev_tl	0.530***
	(0.0179)
ratio_foreign_total	0.0195
	(0.0269)
ratio_HHI_foreign	-0.0202
	(0.0274)
dlev_tl×FIO	-0.0781
	(0.236)
dlev_tl×HHI	0.480**
	(0.221)
FIO×HHI	0.00674
	(0.0242)
dlev_tl×FIO×HHI	-0.597***
	(0.210)
L. size	0.0430***
	(0.00273)
L. mtb	0.00432***
	(0.000466)
L. tang	0.116***
	(0.00815)
L. profitability	0.000253
	(0.00641)
L. dep	-3.204***
	(0.973)
L. rdexp	0.287***
	(0.0726)
R-squared	0.331
Observations	13436

Notes: This panel presents the results of the mechanism test examining whether foreign ownership concentration strengthens the governance effect of foreign institutional ownership (FIO) on the speed of capital structure adjustment (SOA). The regression follows Equation (2.8), which includes the triple interaction term *dlev_tl × FIO × HHI* to capture how the impact of FIO varies with the Herfindahl–Hirschman Index (HHI) of foreign ownership concentration. The coefficient on the triple interaction is negative and statistically significant at the 1 per cent level (–0.597), indicating that the disciplining effect of FIO on SOA is stronger when foreign institutional holdings are more concentrated. This result supports Hypothesis 2.3a and is consistent with the notion that concentrated ownership facilitates coordinated monitoring, mitigates free-rider problems, and enhances the efficiency of external governance (Laeven and Levine, 2007; Chen et al., 2007). All regressions include firm and year fixed effects, and the control variables are lagged firm size, market-to-book ratio, tangibility, profitability, depreciation, and R&D expenditure. Standard errors are clustered at the firm level. *p < 0.10, **p < 0.05, ***p < 0.01*.

Table 2.13: Two-Step SOA Model with Foreign Ownership Heterogeneity

Variable	Panel A: FIO (1)	Panel B: Active (2)	Panel B: Passive (3)	Panel C: Long-term (4)	Panel C: Short-term (5)
dlev_tl	0.498***	0.482***			
ratio_foreign_total	0.007				
dlev_tl × ratio_foreign_total	-0.126***				
foreign_active		-0.000**			
dlev_tl × foreign_active		-0.000			
foreign_passive			0.000		
dlev_tl × foreign_passive			0.000		
foreign_longterm				-0.000**	
dlev_tl × foreign_longterm				-0.000	
foreign_shortterm					-0.000
dlev_tl × foreign_shortterm					-0.000*

Note: This table presents two-step SOA regression models to examine the heterogeneous effects of different types of foreign institutional investors. Panel A shows that the overall foreign ownership ratio significantly accelerates adjustment speed, as indicated by the negative and significant interaction between dlev_tl and ratio_foreign_total. Panel B and Panel C explore the roles of active vs passive and long-term vs short-term foreign investors, respectively. Notably, the interaction term for short-term investors (dlev_tl × foreign_shortterm) is negative and statistically significant ($p < 0.10$), suggesting that short-term foreign institutions may exert more pressure for rapid capital structure rebalancing. All regressions include firm-level controls, and standard errors are clustered at the firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

Table 2.14: SOA Models with FIO Dummy: Full Sample and Ownership Split

Panel A: Full Sample with Has FIO Dummy

Variable	Coefficient	Std. Err.	p-value
dlev_tl	-0.458***	0.0172	<0.001
Has FIO (dummy)	0.0007	0.0018	0.695
dlev_tl × Has FIO	-0.038*	0.0204	0.062
Size (log assets)	0.0012	0.0026	0.651
Profitability	-0.038***	0.0082	<0.001
Tangibility	-0.184***	0.0069	<0.001
Market-to-Book	-0.0028***	0.0005	<0.001
Depreciation	-2.997*	1.8123	0.098
R&D Expenditure	0.032	0.0380	0.396
Constant	0.114***	0.0219	<0.001

Notes: This table presents the results from a SOA regression model incorporating a dummy variable (Has FIO) that equals one if a firm has any foreign institutional ownership each year. The negative and marginally significant coefficient on the interaction term (dlev_tl × Has FIO, p = 0.062) suggests that the presence of foreign institutional investors modestly accelerates firms' convergence toward their target leverage levels. Control variables including profitability, tangibility, and market-to-book ratio exhibit expected signs and statistical significance. Standard errors are robust and clustered at the firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 2.14 Panel B: SOE vs Non-SOE Subsample Comparison

Variable	SOE Coef.	SOE SE	Non-SOE Coef.	Non-SOE SE
dlev_tl	-0.457***	0.032	-0.460***	0.020
has_FIO	0.005	0.004	-0.000	0.002
dlev_tl × has_FIO	-0.020	0.039	-0.045*	0.024
size	0.007	0.005	-0.001	0.003
profitability	-0.012	0.011	-0.044***	0.009
tang	-0.172***	0.014	-0.188***	0.008
mtb	-0.002***	0.001	-0.003***	0.001
dep	7.236***	0.715	-3.188*	1.819
rdexp	0.362	0.290	0.005	0.039
Constant	0.044	0.043	0.138***	0.025

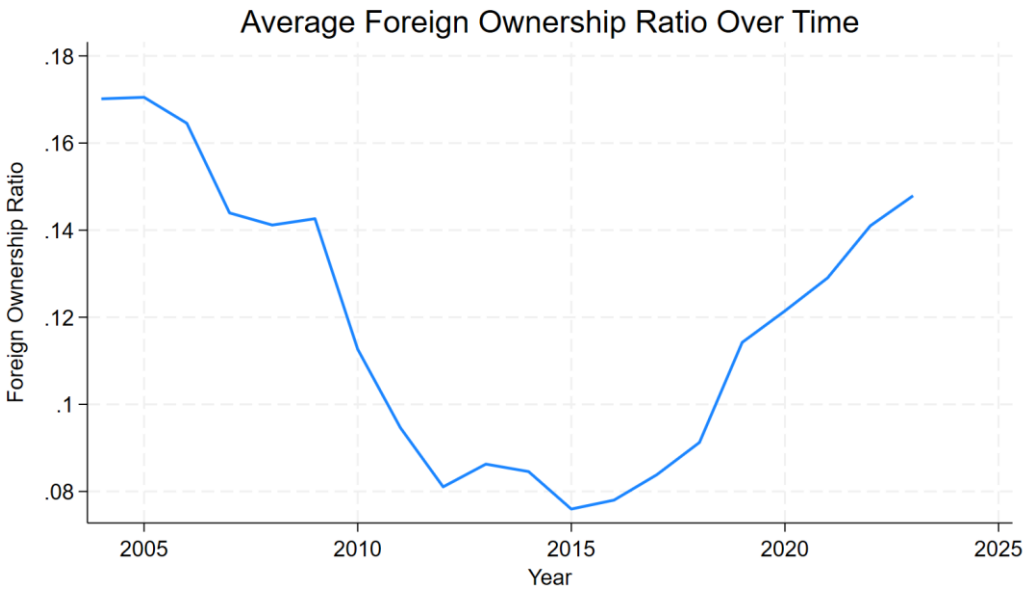
Notes: Standard errors in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Subsample regressions by ownership type. Controls include firm size, profitability, tangibility, market-to-book ratio, depreciation, and R&D. Firm and year fixed effects are absorbed. Standard errors are clustered at the firm level.

Table 2.15: Industry Heterogeneity in the FIO–SOA Relationship

Variable	Coef.	Std. Err.
dlev_tl	-0.265***	0.036
has_FIO	-0.009***	0.004
dlev_tl × has_FIO	+0.047	0.045
industry3 = Services	-0.000	0.006
industry3 = Technology	+0.008**	0.003
dlev_tl × Services	+0.065	0.087
dlev_tl × Technology	+0.118***	0.044
has_FIO × Services	+0.009	0.008
has_FIO × Technology	+0.005	0.004
dlev_tl × has_FIO × Services	-0.047	0.107
dlev_tl×has_FIO× Technology	-0.155***	0.058
size	+0.001	0.002
profitability	-0.010***	0.004
tang	-0.075***	0.006
mtb	-0.002***	0.001
rdexp	-0.074	0.054
Constant	+0.038***	0.014

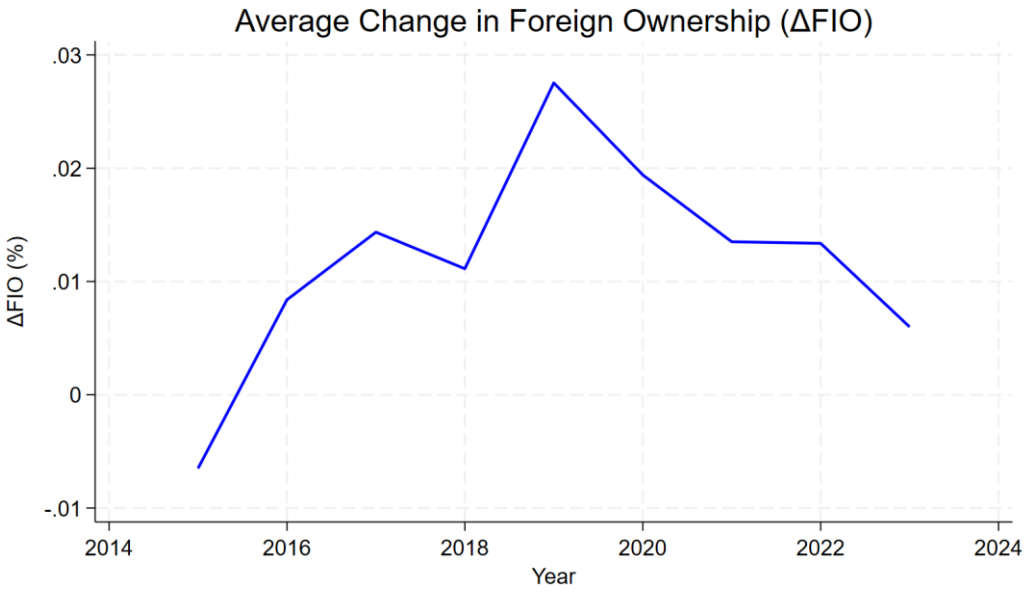
Notes: Standard errors in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. This table reports regression results from the SOA model with industry-level heterogeneity. Firm fixed effects are excluded to preserve industry variation. Year fixed effects are absorbed; standard errors are clustered at the firm level.

Figure 2.1. Average Foreign Institutional Ownership Ratio Over Time (2004–2023)



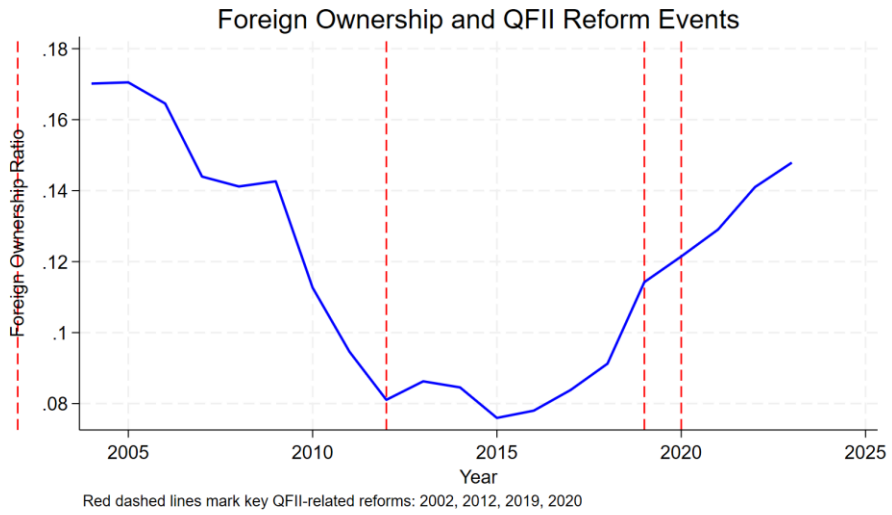
Note: This figure shows the average foreign institutional ownership ratio across Chinese listed firms by year, measured as a percentage of outstanding shares.

Figure 2.2. Average Change in Foreign Institutional Ownership (ΔFIO)



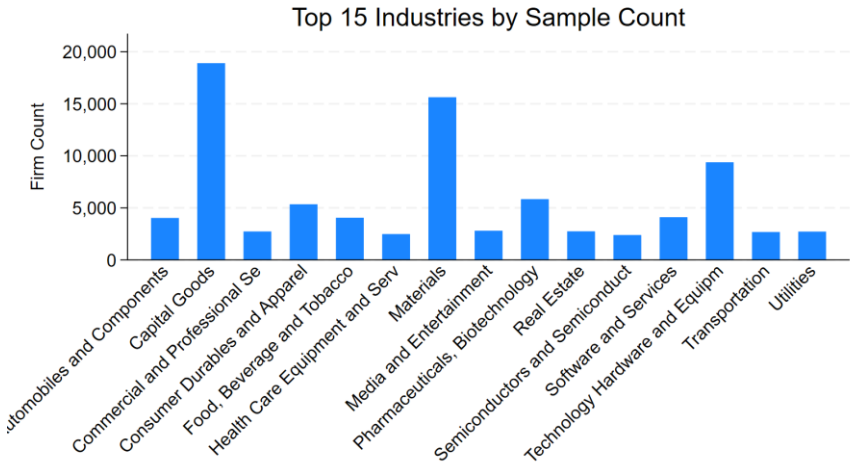
Note: This figure presents the average annual change in foreign institutional ownership (ΔFIO), measured in percentage points.

Figure 2.3 Alignment of QFII Policy Milestones and Ownership Trends



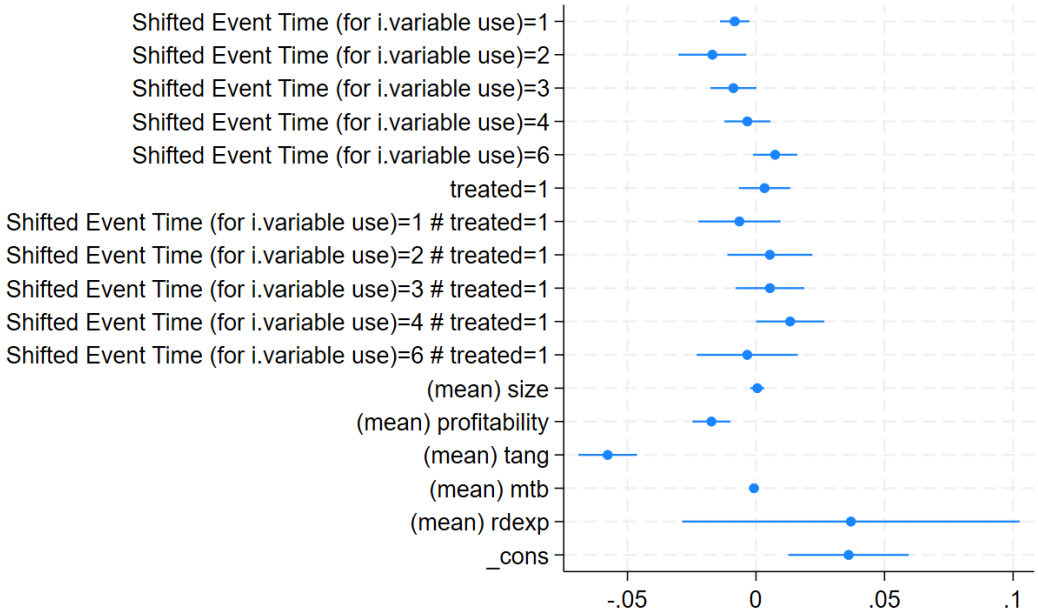
Note: This figure overlays major QFII policy reform years (2002, 2012, 2019, and 2020) with the average foreign ownership ratio in Chinese listed firms. Vertical red dashed lines indicate the timing of regulatory events.

Figure 2.4 Sectoral Distribution of Foreign Institutional Holdings Over Time



Note: This figure shows the number of firms with foreign institutional ownership in each of the top 15 industries by sample count. It highlights industry concentration and evolving foreign investor preferences.

Figure 2.5 Event Study – Leverage Adjustment (ΔLEV) Around the QFII Reform



Notes: This figure presents event-study estimation results based on interactions between event-year dummies and treatment status. The dependent variable is the year-on-year change in book leverage (ΔLEV). Estimates for the pre-treatment period (event years –4 to –1) are statistically indistinguishable from zero, validating the parallel trends assumption. In contrast, post-reform coefficients diverge significantly, suggesting that firms with higher initial FIO accelerated their capital structure adjustment after the 2019 QFII reform.

Appendix A: Chapter 2

Appendix Table A2.1. Baseline and Alternative Leverage Models (SOA Estimates)

Variable	Book Leverage (1)	Market Leverage (2)	Equity Leverage (3)
dlev_tl	0.526***	0.489***	0.432***
dlev_tl × FIO	-0.122***	-0.113***	-0.078
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	1310633	9009	9009
R-squared	0.236	0.221	0.204

Note: This table compares SOA model results under different definitions of leverage. Column (1) reports the baseline specification using book leverage, Columns (2) and (3) use market and equity-based leverage respectively. All models include the interaction term between foreign institutional ownership and target deviation. Robust standard errors clustered at the firm level. *, **, *** denote significance at the 10%, 5%, and 1% levels respectively.

Appendix Table A2.2. Event Study Regression Results: ΔLEV on Event Year × Treatment

Event Year	Coefficient (ΔLEV)	Standard Error	Significance
t = -4	0.003	0.011	
t = -3	-0.007	0.012	
t = -2	-0.004	0.010	
t = -1	-0.001	0.009	
t = 0	0.002	0.010	
t = +1	-0.022	0.009	**
t = +2	-0.015	0.011	*
t = +3	-0.020	0.010	**
t = +4	-0.018	0.012	*

Notes: This table reports the estimated coefficients for the interaction terms between event year and treatment status from the event-study specification. The dependent variable is ΔLEV. Standard errors are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Appendix Table A2.3. Marginal Effects of Lagged Leverage (dlev_tl) by FIO Group

FIO Group	Marginal Effect of dlev_tl	Standard Error	Significance
No FIO (0)	–0.458	(0.0172)	***
With FIO (1)	–0.496	(0.0164)	***
N = 20,307			

Note: Standard errors in parentheses. $p < 0.1$, $p < 0.05$, $p < 0.01$. This table reports the marginal effects of lagged leverage (dlev_tl) on the speed of capital structure adjustment, separately estimated for firms with and without foreign institutional ownership (FIO). The estimates suggest that SOA is significantly faster among firms with FIO, consistent with the findings in section 2.6 and supporting Hypothesis 2.1.

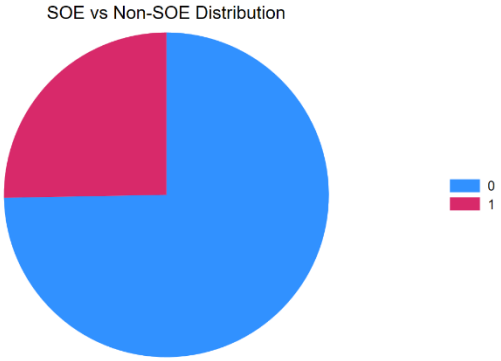
Appendix Table A2.4 Heckman Two-Stage Estimation: FIIO and SOA

	(1) Stage 1: Probit (Has FIIO)	(2) Stage 2: SOA FE with IMR (has_fiio=1)
Size	0.5594***	-0.0486
	(0.0187)	(0.0319)
Leverage	-0.6730***	
	(0.1126)	
Profitability	-0.1223***	0.0067
	(0.0396)	(0.0185)
Asset tangibility	0.0573	-0.2386***
	(0.0736)	(0.0287)
Tobin's Q	0.0650***	-0.0075**
	(0.0048)	(0.0038)
Depreciation	759.6238	-5.2164
	(662.8245)	(5.3800)
R&D expenditure	3.3806***	-0.2206
	(0.9073)	(0.1625)
Target leverage gap		-0.5057***
		(0.0510)
Inverse Mills Ratio (IMR)		-0.0999
		(0.0834)
Constant	-4.6772***	0.6156*
	(0.1679)	(0.3369)
Observations	13478	3625
Pseudo R^2 (Stage 1)	0.0958	
Within R^2 (Stage 2)		0.4033

Notes: This table reports the results of the Heckman two-stage estimation used to address potential sample-selection bias in the relationship between foreign institutional ownership (FIIO) and the speed of capital structure adjustment (SOA). In Stage 1, a probit model predicts the likelihood that a firm is held by foreign institutional investors. The estimated coefficients indicate that larger firms with lower leverage, higher Tobin's Q, and greater R&D intensity are more likely to attract foreign institutional investment. In Stage 2, the SOA model is re-estimated on the selected sample of firms with FIIO (has_fiio = 1), including the Inverse Mills Ratio (IMR) obtained from Stage 1. The coefficient on the target leverage gap remains negative and highly significant, consistent with the partial adjustment hypothesis. The IMR term is statistically insignificant, indicating that sample-selection bias is not a concern.

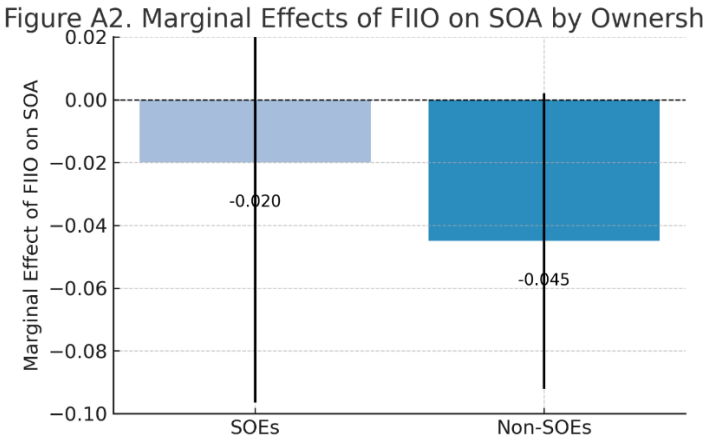
Firm and year fixed effects are included where applicable, and standard errors are clustered at the firm level. For Stage 1, the reported R^2 is the pseudo-R^2; for Stage 2, the reported R^2 is the within-estimator measures from the fixed-effects specification. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure A2.1. Ownership Structure Distribution of Sample Firms



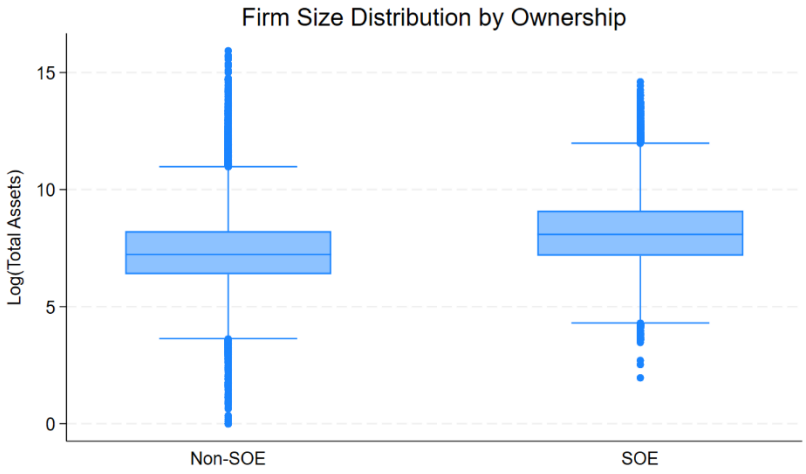
Appendix Figure A2.1 presents the firm distribution by ownership type. Approximately 25% of firms in the sample are classified as SOEs, while the remaining 75% are non-SOEs. This composition allows for a meaningful comparison of governance responsiveness to foreign institutional participation.

Appendix Figure A2.2 Marginal effects



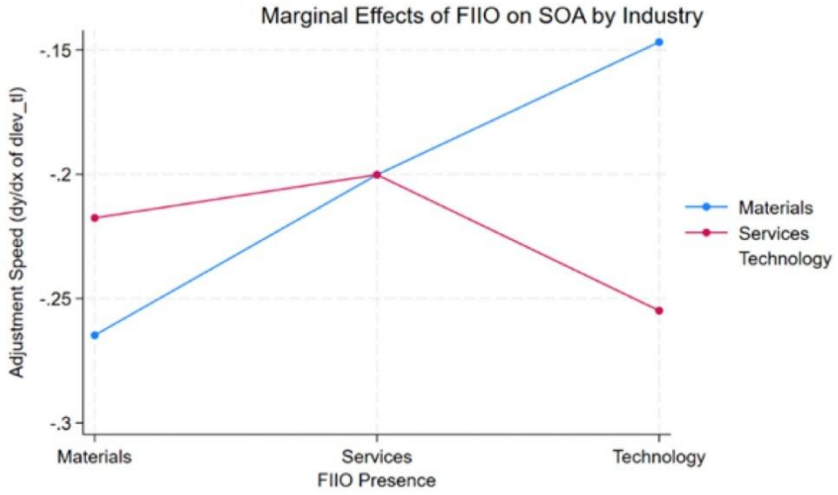
Notes: This figure presents the estimated marginal effects of foreign institutional ownership (FIO) on the speed of capital structure adjustment (SOA), separately for state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs). The marginal effect is calculated as the sum of the coefficient on the adjustment gap (dlev_tl) and its interaction with the FIO dummy (dlev_tl×has_FIO). Results indicate that the effect of FIO on SOA is larger in non-SOEs (−0.045) than in SOEs (−0.020), consistent with the hypothesis that market-oriented firms respond more strongly to foreign monitoring. Error bars represent 95% confidence intervals.

Appendix Figure A2.3. Firm Size Distribution (log total assets)



Notes: This figure illustrates the distribution of firm size, highlighting right skewness and variation across ownership types.

Appendix Figure A2.4 Marginal Effects of FIO on SOA by Industry



Notes: This figure displays the marginal effects of foreign institutional ownership (FIO) on the speed of capital structure adjustment (SOA) across three major industry groups: Materials, Services, and Technology. The marginal effect is derived from interaction models including dlev_tl × has_FIO × Industry dummies. The result shows that FIO significantly accelerates adjustment in the Technology sector, as the adjustment speed steepens in the presence of foreign investors. The estimated slope in the Technology group ($\beta = -0.155$, $p < 0.01$) confirms a stronger governance effect, consistent with Table A2.3 and supports Hypothesis 2.3.

Appendix Figure A2.5 Industry-level Distribution of FIO

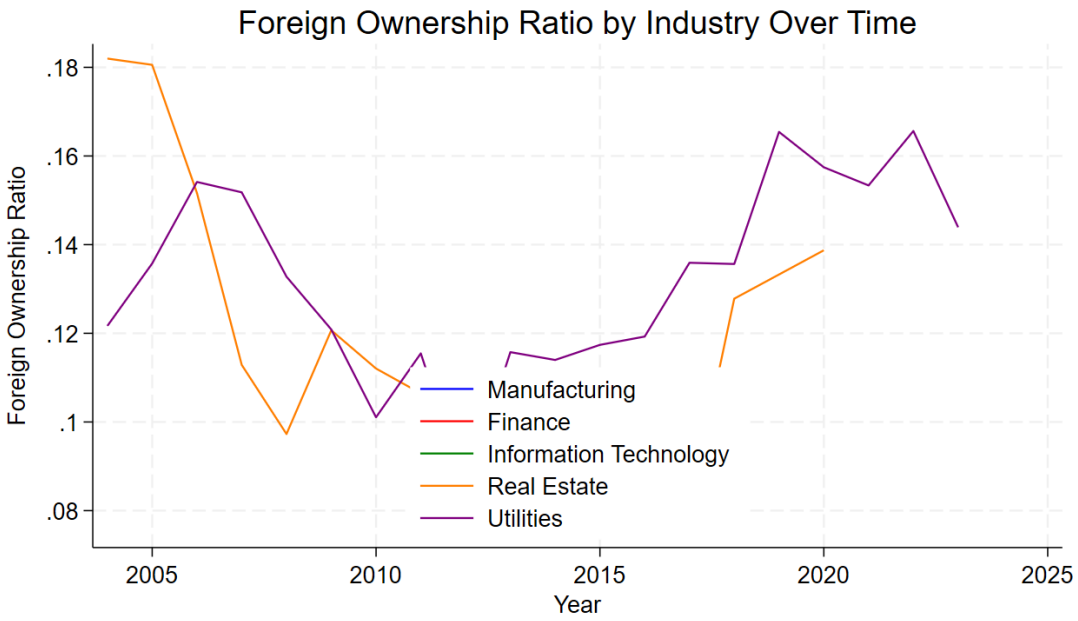


Figure A2.5 presents the time-series evolution of foreign institutional ownership ratios across five major industries. The observed cross-sectoral variation, especially the recent rise in Utilities and the persistent differences between Real Estate and Manufacturing provides descriptive motivation for exploring firm-level heterogeneity in the effectiveness of FIO.

CHAPTER 3
FOREIGN INSTITUTIONAL OWNERSHIP AND R&D INVESTMENTS

3.1. Introduction

In the context of China's institutional transformation, understanding the role of foreign institutional investors (FIIs) in promoting corporate innovation has become increasingly important. Innovation is widely recognised as a critical engine for long-term competitiveness, especially in economies transitioning from investment-led to knowledge-based growth (Porter, 1990; Schwab and Sala-i-Martín, 2015). Since the early 2000s, China has introduced a series of industrial and financial reforms (including the "Made in China 2025" industrial upgrading strategy and the Qualified Foreign Institutional Investor (QFII) programme), aimed at stimulating innovation while liberalising capital markets.

Theoretically, foreign institutional ownership (FIO) is expected to enhance corporate innovation by alleviating agency conflicts, improving monitoring quality, and introducing international governance standards (Ferreira et al., 2010; Aghion et al., 2013). Foreign institutional investors exert pressure primarily through active monitoring, shareholder voting, and engagement with management on strategic and financial decisions (Ferreira and Matos, 2008; Aggarwal et al., 2011; Chen et al., 2023). Such governance channels enable foreign investors to influence corporate transparency, capital allocation, and long-term strategic orientation. However, their actual impact on innovation remains debated. While several studies document a positive relationship between FIO and innovation, others argue that foreign investors may discourage risky or long-term R&D due to a preference for short-term financial returns or limited sectoral expertise (Bena et al., 2017; Harford et al., 2018; Gillan and Starks, 2020).

These conflicting findings are particularly relevant in China, where institutional characteristics such as state ownership, policy-driven objectives, and market segmentation may influence the effectiveness of foreign monitoring (Allen et al., 2005).

China's transitional system refers to its hybrid institutional environment that combines market-oriented reforms with continued state intervention in corporate and financial sectors (Nee, 2005; Allen et al., 2022). This evolving and partially liberalised framework may weaken or distort the intended governance effects of foreign ownership, as market incentives and property rights protection remain uneven across regions and industries. Existing literature has primarily focused on developed economies or generic firm performance metrics, leaving a critical gap in understanding how FIO affects firm-level innovation outcomes within such a transitional institutional setting. Moreover, little is known about the heterogeneous effects of FIO across firms with varying governance structures or levels of exposure to state industrial policy.

This chapter aims to investigate whether and how foreign institutional ownership influences the Chinese corporations' investment decisions on innovations. It focuses on uncovering the mechanisms through which FIO shapes innovative incentives and examines the moderating roles of state ownership and strategic policy environments. In doing so, the study contributes to the literature on financial globalisation and innovation by contextualising the role of international investors in a hybrid institutional setting.

3.1.1 Research Objectives

Over the past two decades, foreign institutional investors have become an increasingly influential presence in emerging equity markets. Their growing participation in China's capital market has raised critical questions about how international ownership affects firm behaviour beyond traditional performance outcomes. Despite extensive research on foreign investment and corporate governance, evidence on how foreign institutional ownership influences firms' innovation decisions remain limited and context dependent. This study is motivated by the need to understand whether foreign investors can act as effective external monitors and drivers of innovation within China's unique institutional environment, where state influence and market mechanisms coexist.

This study aims to investigate the role of foreign institutional ownership in shaping corporate innovation in China's unique institutional context. Innovation, typically proxied by R&D intensity, is widely regarded as a fundamental driver of long-term firm competitiveness and macroeconomic growth, especially in emerging markets characterised by rapid transformation and imperfect markets (Hall et al., 2002; Ahuja and Lampert, 2001). While considerable research has focused on the determinants of innovation, limited attention has been given to the role played by international institutional investors in influencing R&D decisions in transitional economies.

Foreign institutional investors are increasingly recognised as active stakeholders capable of enhancing firm-level innovation through multiple channels. These include alleviating managerial agency problems, imposing effective external monitoring, and promoting long-term investment strategies (Ferreira et al., 2010; Aggarwal et al., 2011; Aghion et al., 2013). Moreover, foreign investors transmit knowledge spillovers and governance norms through board-level engagement, participation in strategic discussions, stricter disclosure and reporting requirements, and the diffusion of global investment standards (Ferreira and Matos, 2008; Huang and Khanna, 2021). Through these channels, they introduce international benchmarks for transparency, accountability, and technological management that incentivise firms to allocate more resources to intangible investment. However, the extent to which these mechanisms operate effectively in emerging markets remains unclear due to institutional frictions and structural constraints.

China presents a particularly salient case for examining this relationship, as its corporate sector is embedded within a hybrid governance environment where state ownership, administrative oversight, and industrial policy play a significant role (Naughton, 2007; Lin and Milhaupt, 2013; Huang and Zhu, 2015). SOEs, for instance, may respond to external investors differently from privately owned firms due to competing objectives, political incentives, and reduced managerial autonomy. Similarly, firms targeted by strategic industrial policies, especially those supported under the

"Made in China 2025" initiative, are subject to state-driven innovation incentives that may either complement or substitute for market-based disciplinary mechanisms. To empirically examine the effect of foreign institutional ownership, this study employs a firm-level variable, average foreign institutional ownership to proxy for long-term exposure to external governance influence. This measure reflects the cumulative presence of foreign investors across years and serves as the primary explanatory variable in subsequent regression models. It allows for capturing both direct monitoring incentives and indirect institutional pressures exerted by international stakeholders.

In addition to external governance influences, firms' innovation activities in China are increasingly shaped by state-led industrial policy. A prominent example is the MC2025 initiative, launched in 2015 as a comprehensive national strategy to promote indigenous innovation, reduce reliance on foreign technology, and transform China into a global leader in advanced manufacturing (Wübbeke et al., 2016). The policy identifies ten strategic sectors (including aerospace, advanced manufacturing, biopharmaceuticals, and new energy vehicles) as key targets for state support, providing firms in these sectors with preferential access to subsidies, tax incentives, R&D matching grants, and government procurement advantages (MIIT, 2015).

Unlike earlier broad-based innovation frameworks, MC2025 adopts a sector-specific approach that generates institutional asymmetries in innovation incentives. These policy-driven disparities are particularly relevant for understanding how FIO interacts with domestic innovation objectives. Focusing on firms operating within MC2025-prioritised industries, the analysis explores whether foreign investors respond differently to policy signals that reduce innovation costs and increase expected returns to R&D. This perspective provides a policy-embedded lens through which to understand the heterogeneity of FIO's impact on corporate innovation behaviour in China. Therefore, the analysis seeks to understand not only whether FIO influences corporate R&D investment, but also how this influence varies under different institutional configurations. A contextually grounded approach is adopted to evaluate

the interaction between foreign ownership, governance structures, and policy frameworks in shaping innovation performance. In doing so, this research contributes to the literature on corporate governance, international finance, and innovation by examining how foreign capital interacts with domestic institutional features to drive technological development in China.

3.1.2 Structure of the Chapter

The remainder of this chapter is organised as follows. Section 3.2 provides a comprehensive review of the relevant literature, identifying key research gaps that motivate empirical investigation. Section 3.3 details the data sources and the construction of variables used in the analysis. Section 3.4 introduces the empirical strategy and model specifications employed to test the research questions.

Section 3.5 presents the baseline regression results and provides an interpretation of the main findings. Section 3.6 assesses the robustness of the results and explores heterogeneity across firm characteristics and institutional environments. Section 3.7 investigates the underlying mechanisms and dynamic effects that may explain the observed relationships. Finally, Section 3.8 concludes the chapter by summarising the key contributions, discussing policy implications, and suggesting avenues for future research.

3.2 Literature Review and Hypotheses

3.2.1 Foreign Institutional Ownership and Innovation: Governance Mechanism

Foreign institutional investors (FIIs) are often regarded as important external governance agents, especially in emerging markets where formal institutions remain incomplete. A growing body of work suggests that foreign institutional ownership (FIO) can foster corporate innovation by improving transparency, lowering agency costs, and

promoting a long-term strategic orientation (Aggarwal et al., 2011; Ferreira et al., 2010; Kim et al., 2014). Compared with many domestic blockholders, FIOs are typically less entangled in local political or family networks and are subject to stricter fiduciary and reporting standards, which enhances their capacity to act as impartial monitors (Aggarwal et al., 2011; Bena et al., 2017; Gillan and Starks, 2020).

One core mechanism operates through governance and monitoring. FIOs can enhance disclosure quality and strengthen board independence by demanding higher transparency, participating in strategic oversight, and voting on governance-related proposals (Bushee, 1998; He and Tian, 2013; Chen et al., 2022). These actions mitigate managerial short-termism and reduce the pressure to meet quarterly earnings targets, thereby encouraging firms to undertake high-risk, long-horizon R&D projects (Aghion et al., 2013; Brossard et al., 2013). A second mechanism relates to international knowledge spillovers. Foreign investors can facilitate access to advanced managerial practices, global governance norms, industry benchmarks, and cross-border collaboration networks that help firms upgrade technological capabilities (Belloc et al., 2019; Huang and Khanna, 2021). In addition, their monitoring and certification roles may improve external financing conditions for innovation-intensive projects by signalling firm quality to other stakeholders.

Literature does not uniformly predict a positive effect. Some studies caution that institutional investors may prioritise near-term financial performance when investment horizons are short or when incentives are closely tied to market-based metrics, which can discourage exploratory R&D (Bushee, 1998; Bena et al., 2017). Others note that foreign ownership may crowd out internal financing, constrain managerial autonomy, or temper experimentation in highly regulated or politically embedded settings (Fang et al., 2014; Gillan and Starks, 2020). These contrasting findings underline the need to account for context-specific moderators such as policy orientation, ownership structure, and sectoral dynamics when evaluating the innovation impact of foreign investors. Evidence specific to China remains relatively fragmented. China's transitional

institutional environment, characterised by significant state involvement, evolving capital market regulation, and shifting innovation policy regimes, provides a distinctive setting to reassess the governance role of foreign institutional investors. This chapter examines how foreign ownership relates to firm-level R&D investment in China and whether this relationship is conditioned by institutional features such as state ownership and alignment with industrial policy priorities.

3.2.2 Investment Horizon and Monitoring Intensity

The investment horizon of institutional investors critically shapes their capacity to influence corporate innovation. Long-horizon investors, due to their strategic patience and lower sensitivity to short-term earnings volatility, are more inclined to support high-risk, long-gestation R&D projects (Bushee, 1998; Gompers, Ishii, and Metrick, 2003). Their extended commitment encourages consistent monitoring and sustained engagement, thereby mitigating managerial myopia and promoting investment in intangible assets (Almazan et al., 2005; Kochhar and David, 1996).

However, foreign institutional investors are not a homogeneous group. They differ in trading frequency, investment duration, and engagement intensity, all of which determine their monitoring effectiveness. Empirical evidence consistently shows that long-term and active investors contribute more positively to innovation than transient or passive counterparts. Luong et al. (2017) find that stable foreign investors are associated with higher firm-level R&D expenditure, while short-term investors often pressure firms to prioritise immediate financial targets. Similarly, Alldredge et al. (2022) demonstrate that firms backed by long-horizon institutions are more likely to initiate and sustain high-quality innovation, whereas short-term institutions tend to divest after temporary setbacks. Cella et al. (2013) and Gaspar et al. (2021) further argue that transient ownership exacerbates managerial risk aversion and discourages irreversible investments essential for innovation.

From a theoretical perspective, long-term investors act as *commitment devices* that signal tolerance for delayed returns and allow greater flexibility in managerial decision-making (Acharya and Xu, 2017). Their monitoring discipline enables firms to internalise the long-run value of innovation and alleviates the underinvestment problem driven by short-term market pressures (Garel, 2020). Recent studies also highlight that monitoring effectiveness of foreign investors depends on their informational advantage and relational proximity to management (Huang and Zhu, 2022). These dynamics are particularly relevant in China, where institutional frictions, weaker patent protection, and state intervention heighten the tension between short- and long-term investor influence. In such an environment, foreign investors with longer holding horizons are expected to exert a stronger positive impact on firms' R&D intensity than their short-term or passive counterparts.

3.2.3 Institutional Heterogeneity

The effects of foreign institutional ownership on corporate innovation are not uniform across firms but are shaped by firm-specific institutional characteristics, particularly ownership structure and exposure to government industrial policy. These two dimensions of heterogeneity are especially important in China, where state involvement and policy targeting continue to define the corporate landscape.

State-owned enterprises (SOEs) differ fundamentally from non-SOEs in governance architecture, managerial accountability, and strategic priorities. SOEs often pursue political and social objectives alongside profit maximisation and operate under soft budget constraints, which can weaken their responsiveness to shareholder monitoring, particularly when shareholders are foreign and institutionally distant (Shleifer and Vishny, 1994). The coexistence of multiple principals, including state agencies and public shareholders, can generate conflicting governance signals and dilute the monitoring role of foreign investors (Chen et al., 2021). Empirical evidence consistently shows that SOEs are less responsive to market-based incentives and slower

to adjust R&D allocation following ownership or governance changes (Aghion et al., 2015; Fang et al., 2020).

Introduced in 2015 by the State Council, the Made in China 2025 (MC2025) initiative constitutes China's first comprehensive industrial strategy designed to transform the country from a manufacturing powerhouse into a global innovation leader. The policy sets out strategic objectives to enhance technological capability, promote industrial upgrading, and reduce dependence on foreign technologies across ten key sectors, including advanced information technology, high-end equipment, new materials, and energy-efficient vehicles. It provides an exogenous and nationally coordinated stimulus to innovation by combining fiscal support with long-term strategic planning, making it a suitable setting for examining policy–finance interactions in the Chinese context (State Council, 2015; Li and Zheng, 2018). Firms operating in policy-supported sectors such as those prioritised under MC2025 face distinctive incentive structures. The policy offers financial subsidies, tax incentives, and strategic guidance that jointly reduce innovation costs and risks (Howell, 2020; Wu et al., 2022). Such interventions may produce a "crowding-in" effect, where external capital discipline from foreign investors and internal policy support reinforce firms' commitment to R&D. Moreover, the policy environment can reshape investor expectations: even short-horizon or passive foreign institutions may adopt longer strategic perspectives in MC2025 sectors due to greater policy credibility and reduced uncertainty (Bena et al., 2017; Howell, 2021).

This mechanism aligns with institutional theory, which suggests that investor behaviour is shaped not only by intrinsic preferences but also by the surrounding policy and institutional infrastructure (North, 1990; Jackson and Deeg, 2008). Understanding how foreign institutional ownership interacts with these contextual features is therefore critical to evaluating its impact on innovation. In particular, the differentiated governance responsiveness of SOEs and the sectoral targeting of policy support represent two principal channels through which heterogeneity in foreign investor influence can arise. These contingencies are examined empirically through interaction

models that test whether the effects of foreign institutional ownership vary by ownership structure and policy exposure (Chen et al., 2023).

3.2.4 Hypotheses Development

Building upon the preceding literature, this section formulates four testable hypotheses that link foreign institutional ownership (FIO) with corporate R&D outcomes. Each hypothesis is derived from established theoretical arguments and empirical insights, progressing from the general governance effect of FIOs to the contextual factors that may moderate this relationship.

The governance channel posits that foreign institutional investors (FIIs) enhance firm-level innovation by improving board effectiveness, mitigating agency problems, and reducing managerial entrenchment (Aggarwal et al., 2011; Ferreira et al., 2010). Compared with domestic investors, FIOs are typically more independent and sophisticated monitors, particularly in weak governance environments (Gillan and Starks, 2003; Bena et al., 2017). They are also less vulnerable to political capture or related-party tunnelling, which are persistent concerns in China's capital markets (Jiang and Kim, 2015). Strong external governance has been shown to create conditions conducive to innovation-related risk-taking and experimentation (Aghion et al., 2013). Nevertheless, few studies directly evaluate whether these effects translate into greater R&D investment within China's institutional context. This leads to the first hypothesis (H3.1) below.

Hypothesis 3.1: Foreign institutional ownership is positively associated with firm-level R&D intensity.

Beyond the level of investment, FIOs may also affect the *speed* with which firms adjust their innovation activities. A dynamic adjustment perspective suggests that the timing of convergence toward industry innovation benchmarks provides additional insight into

firms' strategic responsiveness (Cleves et al., 2010). Long-horizon foreign investors can signal commitment, reduce managerial myopia, and provide patient capital that enables firms to accelerate adjustment to optimal R&D intensity (Luong et al., 2017; Alldredge et al., 2022). This temporal dimension is particularly relevant in China, where innovation cycles are slower and policy incentives evolve over time. Accordingly, the next hypothesis (H3.2) focuses on the role of FIOs in influencing the *speed* of innovation adjustment.

Hypothesis 3.2: Firms with higher levels of foreign institutional ownership are more likely to reach the industry-average level of R&D intensity faster.

The impact of FIOs may, however, vary across ownership types. State ownership introduces political objectives and soft budget constraints that may distort external governance signals (Shleifer and Vishny, 1994; Allen et al., 2005). SOEs often prioritise policy or social goals—such as employment stability or regional development—over profit maximisation. The coexistence of multiple principals, including state agencies and local governments, further weakens the accountability structure, reducing responsiveness to shareholder monitoring (Chen et al., 2021). While foreign investors may enhance transparency and board independence, their influence is expected to be weaker in SOEs where market-based governance mechanisms are less dominant (Chen et al., 2006). This leads to the third hypothesis (H3.3) below.

Hypothesis 3.3: The effect of foreign institutional ownership on innovation is weaker for SOEs than for non-SOEs.

In addition to ownership structure, the policy environment also moderates the governance effect of FIOs. Government-led industrial policies such as the *Made in China 2025* (MC2025) initiative can complement foreign monitoring by reducing innovation costs and signalling strategic priority. MC2025 provides targeted support to firms in advanced sectors through subsidies, preferential financing, and tax incentives

(Wübbeke et al., 2016). These incentives may strengthen the alignment between foreign investors and corporate innovation strategies, encouraging even short-horizon investors to support long-term R&D projects (Bena et al., 2017; Howell, 2020). Thus, FIOs are expected to exert a stronger influence in industries receiving direct policy support. This leads to the fourth hypothesis (H3.4) below.

Hypothesis 3.4: The effect of foreign institutional ownership on innovation is stronger among firms operating in MC2025 policy-supported industries.

These four hypotheses establish a coherent framework that links foreign institutional ownership to both the level and dynamics of innovation, while accounting for ownership heterogeneity and policy intervention. The following sections empirically test these propositions using firm-level panel regressions, interaction models, and survival analysis techniques.

3.3 Data and Variables

3.3.1 Data Source and Sample

This study utilises a firm-level unbalanced panel dataset of Chinese listed companies from 2004 to 2023. The dataset is constructed by merging financial and institutional ownership information from multiple sources. Core financial variables, including R&D expenditure, total assets, total debt, net income, and market capitalisation, are obtained from Capital IQ (CIQ). Institutional ownership data is sourced from a proprietary institutional investor database that records annual shareholding data disaggregated by investor identity, nationality (foreign vs domestic), and investment style (active vs passive, long-term vs short-term), following the classifications used in Bena et al. (2017) and Aggarwal et al. (2011). These data sources are widely recognised for their reliability, comprehensive coverage, and detailed investor classification, making them particularly suitable for empirical research on corporate governance and institutional ownership (Aggarwal et al., 2011; Bena et al., 2017).

All non-financial A-share firms listed on the Shanghai and Shenzhen stock exchanges are included. Financial firms are excluded using SIC codes and CIQ Level 2 industry classification (is_financial = 1), following standard practice in capital structure research (Lemmon et al., 2008). The dataset is cleaned following several standardised steps. First, all monetary variables are converted into real values and winsorised at the 1st and 99th percentiles to mitigate the impact of outliers (Flannery and Rangan, 2006; Lemmon et al., 2008). Observations with missing or non-positive values in key variables are excluded. Variables such as R&D intensity are log-transformed with a slight adjustment to account for skewness, consistent with Hall and Lerner (2010). A complete list of variable definitions, sources, and construction methods is provided in Appendix Table B3.4.1.

The final cleaned panel dataset comprises 92,991 firm-year observations and 185 variables over 20 years. This dataset is used in all regressions and descriptive analyses presented in Sections 3.4 to 3.7.

3.3.2 Variable Construction

The key explanatory variable in the baseline model is the long-term average foreign institutional ownership (*fio_avg*), which captures the sustained exposure of each firm to external governance and monitoring by foreign investors. It is calculated as the average of the variable *ratio_foreign_total* across all available years for a given firm, following Ferreira and Matos (2008) and Bena et al. (2017):

Equation 3.1

$$fio\_avg_i^{reg} = \frac{1}{T_i} \sum_{t \in \text{ObservedYears}_i} ratio\_foreign\_total_{it}$$

where $\text{fio\_avg}_\text{i}^{\text{reg}}$ denotes the long-term average share of foreign institutional ownership for firm i across the whole sample period (2004–2023); T_i is the total

number of years with non-missing foreign ownership data for firm *i*, $ratio\_foreign\_total_{it}$ is the percentage of shares held by foreign institutional investors in year *t*.

For the Cox survival model, the fio_avg is defined as dynamically over the foreign-invested period, starting from the first year of positive foreign ownership (start_year) until the event year when the firm's R&D intensity first exceeds the industry-year median, following Bena et al. (2017). Formally:

Equation 3.2

$$fio\_avg_i^{Cox} = \frac{1}{T_i} \sum_{t=\text{start\_year}}^{\text{event\_year}} ratio\_foreign\_total_{it}$$

T_i = event_year - start_year + 1; The variable start_year indicates the first year when foreign ownership becomes positive; event_year is the year when the firm's R&D intensity first exceeds its industry-year median. The difference between the two defines the duration variable used in survival analysis: $duration_i = event\_year_i - start\_year_i$

The event indicator is a binary variable (failure = 1) if the firm reaches the industry R&D benchmark, and zero otherwise. The industry benchmark is computed as the median R&D intensity by industry and year (industry × year), using CIQ Level 2 sector classification.

The dependent variable, R&D intensity, is defined as the ratio of R&D expenditures to total sales (R&D / Sales), consistent with prior literature on innovation and firm investment (Hall and Lerner, 2010). To reduce skewness, the dependent variable is transformed using a natural logarithm as follows:

$$\ln\_R\&D = \ln(R\&DIntensity + \varepsilon), \varepsilon = 0.0001$$

All control variables follow definitions consistent with Chapter 2 for comparability.

Continuous variables—leverage (*lev*), firm size (*size*, measured as the logarithm of total sales), profitability (*roa*), and Tobin's Q (*tobinq*)—are winsorised at the 1st and 99th percentiles to mitigate the influence of outliers (Flannery and Rangan, 2006). The winsorised versions (*roa_winsor*, *tobinq_winsor*) are used in the regressions. Leverage is expected to correlate negatively with innovation due to financing constraints, whereas firm size and profitability are expected to relate positively, reflecting resource availability. Tobin's Q captures growth opportunities and is anticipated to have a positive association with R&D.

3.3.3 Descriptive Statistics

Before proceeding to multivariate regressions, Tables 3.1 and 3.2 provide descriptive insights into the key variables employed in the analysis. These statistics not only characterise the distributional properties of the sample but also offer preliminary indications of the hypothesised relationships.

Table 3.1 reports the summary statistics for the main explanatory and control variables. The average value of foreign institutional ownership (fio_avg) is approximately 10.7%, with a standard deviation of 18.2% and a maximum of 100%. This considerable dispersion suggests substantial heterogeneity in foreign participation across Chinese listed firms. This is consistent with the dual-track institutional framework, where foreign investor access varies due to ownership structure and industry policy constraints (Allen et al., 2005; Huang and Zhu, 2015). Such variation provides the empirical basis for testing the heterogeneous effects of foreign ownership, as discussed in Hypotheses 3 and 4.

The log-transformed R&D intensity (ln_RD) has a mean of -10.88 and exhibits a wide range, consistent with the highly skewed distribution of R&D expenditure in China. Many firms report extremely low or zero R&D, underscoring the appropriateness of log transformation and the need for models that account for extensive zeros (Czarnitzki and

Hottenrott, 2011). This also reinforces the use of both level-based (OLS) and event-time models (Cox) to capture differences not only in intensity but also in timing. Firm size (mean = 7.62) and leverage (mean = 19.1%) fall within typical bounds for emerging market samples (Chen et al., 2021), while profitability and Tobin's Q display wide ranges. These characteristics justify their inclusion as controls, given their known influence on innovative behaviour.

Table 3.2 presents Pearson correlation coefficients between the main variables. A small but significant negative correlation is observed between fio_avg and ln_RD ($r = -0.065$, $p < 0.05$), suggesting that higher foreign ownership is not mechanically associated with higher innovation intensity. This preliminary result aligns with the OLS findings in Section 3.6 and motivates further analysis of the moderating roles of ownership structure and policy support. In addition, firm size correlates positively with both foreign ownership and R&D, indicating that larger firms may be better positioned to attract foreign investors and sustain innovation investment. Leverage is negatively correlated with R&D, highlighting the role of financial constraints in innovation strategy. ROA also displays a weak negative correlation with ln_RD, suggesting potential tensions between short-term performance and long-term innovation.

In summary, the descriptive statistics provide early evidence of the complexity in the FIO–innovation relationship, validating the inclusion of heterogeneity factors and dynamic models in the empirical strategy.

3.4 Methodology

3.4.1 Empirical Framework and Research Objectives

This section presents the empirical framework used to examine how foreign institutional ownership (FIO) affects corporate R&D investment among Chinese listed firms. The analysis employs three complementary econometric approaches aligned with the research aims: Ordinary Least Squares (OLS) regressions to estimate the impact of

FIO on R&D intensity, Cox proportional hazards models to capture the timing of innovation adjustment, and Two-Part models to differentiate between firms' participation in R&D and the magnitude of their investment. To situate the empirical design within its institutional setting, it is necessary to distinguish between the broad market-liberalisation reforms that facilitated foreign participation in China's equity markets and the specific policy examined here. The Qualified Foreign Institutional Investor (QFII) programme (2002), the Renminbi QFII (RQFII) scheme (2011), and the Shanghai–Hong Kong Stock Connect (2014) collectively enhanced foreign access and liquidity, providing the structural foundation for the rise of FIO in Chinese firms. These reforms are treated as background conditions rather than identification instruments.

The focal policy context of this chapter is the Made in China 2025 (MC2025) industrial strategy launched in 2015. MC2025 directly promotes firm-level innovation through sector-specific incentives such as subsidies, tax concessions, and R&D grants. The analysis therefore concentrates on how FIO interacts with this policy-driven innovation environment, recognising that earlier liberalisation measures created the institutional conditions for foreign investors to exert governance influence. The empirical objectives are twofold: first, to test whether FIO is associated with higher R&D intensity; and second, to assess whether FIO accelerates firms' convergence toward industry-level R&D benchmarks. These hypotheses build upon existing research linking institutional ownership, governance mechanisms, and innovation incentives, which suggests that foreign investors promote innovation by mitigating agency costs, strengthening monitoring, and improving capital allocation efficiency (Bushee, 1998; Aghion et al., 2013; Bena et al., 2017; Chemmanur et al., 2014; Hsu et al., 2014; Hall and Lerner, 2010).

3.4.2 OLS Model: Baseline Analysis of R&D Intensity

To test Hypothesis 3.1 that foreign institutional ownership is positively associated with firm-level R&D intensity, the following baseline OLS model is employed. This

hypothesis is tested using a firm-level fixed-effects OLS regression (Equation 3.3), with log-transformed R&D intensity as the dependent variable and fio_avg as the primary explanatory variable. This specification examines the static relationship between ownership structure and innovation input. The first step involves estimating the relationship between foreign institutional ownership and firm-level R&D intensity using a standard panel-data OLS regression. Given that fio_avg is time-invariant over the sample period, a pooled OLS model with firm-level clustered standard errors is used instead of a fixed-effects specification. The baseline specification takes the following form:

Equation 3.3

$$\ln(RD_{it}) = \alpha + \beta \cdot FIO_{it} + \gamma' X_{it} + \delta_t + \varepsilon_{it}$$

where $\ln(RD_{it})$ represents the log-transformed R&D intensity of firm *i* in year *t*, defined as ln (RD/Sales+0.0001). The key explanatory variable FIO_{it} denotes the long-term average foreign institutional ownership (fio_avg). $\gamma' X_{it}$ is a vector of control variables, including firm size, leverage, ROA, and Tobin's Q, all winsorised at the 1st and 99th percentiles. δ_t captures year fixed effects, and ε_{it} is the idiosyncratic error term.

The OLS model serves as the baseline for assessing whether higher foreign ownership is statistically associated with more substantial R&D commitment. Heteroskedasticity-robust standard errors clustered at the firm level are applied. The coefficient β captures the marginal effect of FIO on R&D intensity. This framework is widely used in corporate finance literature to analyse R&D determinants (Hall and Lerner, 2010; Aghion et al., 2013). The results of the OLS estimation are presented in Table 3.6 in Section 3.6. The coefficient β captures the marginal effect of foreign ownership on R&D intensity. Under H3.1, this coefficient is expected to be positive, indicating that foreign institutional participation enhances firms' commitment to innovation.

3.4.3 Cox Proportional Hazards Model: Time-to-Event Analysis

H3.2: Firms with higher levels of foreign institutional ownership are more likely to reach the industry-average level of R&D intensity faster.

H3.2 is tested using a Cox proportional hazards model (Equation 3.4), where the event of interest is defined as the first time a firm's R&D intensity meets or exceeds the industry-year median.

To evaluate Hypothesis 3.2, which posits that firms with higher FIO reach the industry-average level of R&D intensity more quickly, a Cox proportional hazards model is employed. This framework captures the dynamic, time-dependent nature of innovation convergence. Specifically, the model estimates the time it takes for each firm to reach the industry-year median level of R&D intensity, thereby assessing whether FIO accelerates innovation progress.

The model is specified as Equation 3.4:

$$\lambda_i(t) = \lambda_0(t)\exp(\beta_1 \mathrm{FIO}_i + \beta_2 Z_i)$$

Where $\lambda_i(t)$ is the hazard rate for firm at time and $\lambda_0(t)$ is the baseline hazard. FIO_i is the average foreign ownership over the foreign-invested period and Z_i is a vector of time-invariant or averaged covariates over the same period (e.g., size, leverage, ROA). The dependent variable is the duration until a firm first reaches the industry R&D benchmark (event = 1), with right-censoring for firms that do not reach the benchmark during the observation window. The coefficient β_1 in the hazard function reflects the effect of foreign ownership on the likelihood of achieving the benchmark R&D level. A hazard ratio greater than 1 supports H3.2, indicating that foreign institutional ownership accelerates the adjustment to innovation.

To illustrate the baseline relationship between foreign institutional ownership and innovation convergence, Figure 3.3 plots the average foreign ownership ratio (fio_avg) against the number of years taken for a firm to reach the industry-level R&D benchmark. The fitted trend line shows a clear downward slope, suggesting that firms with greater

foreign presence tend to reach innovative targets more quickly. This preliminary visual evidence is consistent with Hypothesis 3.2 and provides intuitive support for the Cox proportional hazards model specified in Equation 3.4. This method allows modelling the conditional probability that a firm reaches the R&D target at a given time, given its survival until that point. It is particularly suitable for cases with censored data and non-linear time effects (Cleves et al., 2010; Bena et al., 2017). By estimating the hazard ratio, the model tests whether foreign ownership significantly increases the likelihood of timely innovation catch-up. A hazard ratio greater than one indicates acceleration due to the presence of foreign institutions.

3.4.4 Two-Part Model: Extensive vs Intensive R&D

To further test the mechanisms behind Hypothesis 3.1, a Two-Part Model (TPM) is used to estimate (1) the likelihood of engaging in R&D and (2) the intensity among participating firms. This model helps assess whether FIO promotes both extensive and intensive margins of innovation. To disentangle the distinct effects of foreign institutional ownership on the probability of R&D participation (extensive margin) and the magnitude of R&D intensity (intensive margin), this study employs a Two-Part Model (TPM). This framework is well-suited for outcome variables that exhibit a large proportion of zeros and a skewed distribution among positive values, typical of firm-level R&D data in emerging markets.

The Two-Part Model comprises two sequential estimations:

Part 1 (Selection Equation): A logit regression models the probability that a firm engages in any R&D activity:

Equation 3.5

$$\Pr(\mathrm{RD}_i > 0) = \frac{\exp(\alpha_0 + \alpha_1 \mathrm{FIO}_i + \alpha_2 X_i)}{1 + \exp(\alpha_0 + \alpha_1 \mathrm{FIO}_i + \alpha_2 X_i)}$$

Where the dependent variable is a binary indicator for whether R&D expenditure is

positive. A positive α_1 in the selection equation and a positive β_1 in the outcome equation both support H3.1, indicating that foreign ownership not only increases the probability of initiating R&D but also raises the intensity once initiated.

Part 2: A truncated OLS model estimated on the subsample of firms with strictly positive R&D, modelling the log of R&D intensity:

Equation 3.6

$$\ln\_\mathrm{RD}_i = \beta_0 + \beta_1 \mathrm{FIO}_i + \beta_2 X_i + \epsilon_i \quad \text{given } RD > 0$$

This approach enables testing two related but distinct hypotheses: whether foreign institutional ownership encourages firms to initiate R&D activity, and whether they influence the level of R&D intensity among those already engaged.

Following the literature (Belderbos et al., 2004; Hall and Lerner, 2010), both equations include controls for firm characteristics and year dummies. Standard errors are clustered at the firm level. TPM thus enables a more comprehensive understanding of how FIO affects both the initiation and intensity of innovation investment. In practice, the model is implemented and presented in Table 3.8.1 under Section 3.8, where the first stage (has_rd) and second stage (ln_RD) are estimated separately to identify the effects of foreign institutional ownership on both the likelihood and intensity of R&D participation.

3.4.5 Heterogeneity and Interaction Models

H3.3: The effect of foreign institutional ownership on R&D differs between SOEs and non-SOEs.

H3.3 is tested by interacting fio_avg with an SOE dummy and examining heterogeneity in both the OLS and Cox models. A differential effect would be observed if the

interaction term is statistically significant.

H3.4: The impact of foreign institutional ownership on R&D is moderated by MC2025 industry policy exposure.

H3.4 is evaluated by interacting fio_avg with an MC2025 industry dummy, assessing whether the relationship is stronger or weaker in policy-targeted sectors.

To explore whether the effect of FIO on R&D investment varies across firm characteristics and policy environments, interaction models are employed to test heterogeneity mechanisms related to ownership structure and policy exposure. To examine institutional heterogeneity in the FIO–R&D relationship, this study tests Hypotheses 3 and 4 using interaction terms. These models assess whether the governance effect of foreign investors varies by state ownership (H3.3) or policy exposure under MC2025 (H3.4).

(1) Ownership Heterogeneity: SOE × FIO

The first dimension considers whether the FIO–R&D relationship differs between SOEs and non-SOEs. The interaction model is specified as follows:

Equation 3.7

$$\ln\_RD_{it} = \alpha + \beta_1 FIO_{it} + \beta_2 SOE_i + \beta_3 (FIO_{it} \times SOE_i) + \gamma' X_{it} + \delta_t + \varepsilon_{it}$$

Where:

SOE_i is a time-invariant dummy for state-owned firms.

$\beta_3$captures whether the marginal effect of FIO differs for SOEs.

In Equation 3.7, the interaction term β₃ (FIO × SOE) tests whether the effect of FIO differs between SOEs and non-SOEs. Under Hypothesis 3.3, β₃ is expected to be negative, reflecting weaker governance effects in state-owned firms due to political

constraints and soft budget constraints. This approach builds on prior studies (Boubakri et al., 2013), which find that SOEs may respond differently to external governance due to state involvement and policy constraints.

(2) Policy Heterogeneity: MC2025 × FIO

The second interaction investigates whether the effect of FIO differs in industries targeted by the "Made in China 2025" initiative. The following specification is used:

Equation 3.8

$$\ln\_RD_{it} = \alpha + \beta_1 FIO_{it} + \beta_2 MC2025_i + \beta_3 (FIO_{it} \times MC2025_i) + \gamma' X_{it} + \delta_t + \varepsilon_{it}$$

Where:

$MC2025_i$ is an indicator equal to 1 if firm *i* belongs to a targeted industry.

β3 tests whether the policy environment moderates the FIO–R&D relationship.

In Equation 3.8, the interaction term β_3 (FIO × MC2025) assesses whether the innovation effect of FIO is more potent in industries supported by MC2025. Under Hypothesis 3.4, β_3 is expected to be positive, as policy support complements external monitoring in shaping innovation incentives. This interaction aligns with literature on conditional institutional effects (Howell, 2020). To support the validity of the difference-in-differences (DID) specification used in robustness checks (Section 3.7), a parallel trends test is conducted. The test compares the pre-treatment R&D intensity trajectories of MC2025 and non-MC2025 firms before 2015. The absence of statistically significant pre-treatment differences supports the parallel trends assumption.

3.4.6 Model Assumptions and Identification

This section discusses the underlying assumptions of empirical models, potential identification challenges, and the limitations of the study. By addressing these issues,

the robustness and interpretability of the results can be better evaluated.

Assumptions underlying the empirical models: The fixed-effects OLS model assumes strict exogeneity of regressors, no omitted time-varying confounders, and linear relationships. In the Cox model, the proportional hazards assumption requires that the hazard ratios remain constant over time (Cleves et al., 2010). For the Two-Part Model, independence between the decision to initiate R&D and the intensity of R&D, conditional on covariates, is assumed (Belderbos et al., 2004).

Identification and endogeneity concerns: A primary challenge in evaluating the causal effect of foreign institutional ownership is the potential for endogeneity arising from reverse causality (e.g., high-R&D firms attracting more foreign investors) or omitted variable bias. While the study mitigates this risk by controlling for a rich set of firm characteristics and year fixed effects, and by employing models such as Cox that emphasise timing rather than levels, the estimates should be interpreted as associations rather than strict causal effects. To strengthen identification, the empirical analysis in Section 3.7 additionally employs a policy-based difference-in-differences approach using MC2025 industry exposure. These methodological foundations provide the empirical basis for the regression results reported in Sections 3.6 to 3.8. The combined use of alternative model specifications, robustness checks, and policy-based identification strategies significantly mitigates endogeneity concerns, enhancing the credibility of the empirical results (Roberts and Whited, 2013; Atanasov and Black, 2016).

The econometric models introduced above are tightly aligned with the hypotheses under investigation. Each specification corresponds to a distinct theoretical channel, namely governance enhancement (H3.1), timing adjustment (H3.2), ownership heterogeneity (H3.3), and policy complementarity (H3.4), thereby ensuring that the estimation strategy is aligned with the underlying theoretical framework.

3.5 Empirical Results

3.5.1 Panel Regression: Baseline Model

To examine whether FIO affects firms' innovation input, a panel data regression uses firm-level R&D intensity as the dependent variable. This approach is consistent with Czarnitzki and Hottenrott (2011), who emphasise R&D Intensity as a proxy for firm-level innovation commitment in empirical studies. Given that some firms report extremely low or zero sales figures, which may produce undefined or distorted ratios, observations with sales ≤ 1 are excluded. To address the strong positive skewness of the R&D Intensity distribution, a natural logarithmic transformation with a slight constant adjustment was applied. The resulting variable, ln_R&D = ln (R&D /Sales + 0.0001), is used in the baseline regression. This transformation reduces the influence of outliers, enabling meaningful comparisons across firms and years.

Control variables include firm size (log of total assets), leverage, profitability (return on assets, ROA), Tobin's Q, and asset tangibility. Profitability and Tobin's Q are winsorised at the 1st and 99th percentiles. These controls account for firm heterogeneity in financial capacity, investment incentives, and capital structure. The selection of control variables follows prior studies such as Hall and Lerner (2010), Aghion et al. (2013), and Himmelberg et al. (1999), which identify firm size, leverage, profitability, and growth opportunities as key drivers of R&D investment.

3.5.2 Main Regression Results and Interpretation

This section presents the baseline regression results for testing Hypothesis 3.1 (H3.1), which posits a positive association between foreign institutional ownership and firm-level R&D intensity. The empirical results are reported in Table 3.4, based on a pooled OLS specification with year fixed effects and heteroskedasticity-robust standard errors clustered at the firm level.

The model estimates the following equation:

Equation 3.9

$$lnRD_{it} = \alpha + \beta_1 \cdot fio\_avg_{it} + X'_{it}\gamma + \delta_t + \varepsilon_{it}$$

In this equation, $lnRD_{it}$ denotes the natural logarithm of R&D intensity for firm *i* in year *t*, and fio_avg_{it} represents the average proportion of shares held by foreign institutional investors during the observed period. The control vector $X'_{it}\gamma$ includes firm size, leverage, profitability, Tobin's Q, and asset tangibility. Year fixed effects (δ_t) are included to account for standard macroeconomic shocks, and ε_{it} captures the idiosyncratic error term.

The choice of fio_avg, defined as a time-aggregated measure of foreign institutional ownership, reflects the cumulative and strategic nature of institutional influence. Compared to year-specific ratios such as ratio_foreign_total, this variable aligns more closely with the long-horizon commitment associated with innovation outcomes. This modelling logic is consistent with Flannery and Rangan (2006), who argue against fixed effects when the regressor is persistent, and with Wooldridge (2010), who cautions that near time-invariant variables may yield biased or inefficient estimates under fixed-effects estimation.

The results suggest a statistically significant and positive relationship between foreign institutional ownership and R&D intensity, supporting H3.1. This finding aligns with earlier research such as Chemmanur et al. (2014) and Hall and Lerner (2010), which document the positive role of external capital providers in fostering innovation, particularly in environments with weak internal governance. However, the magnitude of the effect is more moderate than that reported by Bena and Li (2014) in the U.S. context. This divergence may reflect differences in institutional environments, levels of investor activism, or the composition of foreign ownership (active vs. passive) across countries. In contrast to developed markets, foreign investors in China may face higher informational frictions or weaker legal protection, potentially diluting their governance impact (Ferreira et al., 2010).

Overall, the empirical evidence confirms the theoretical expectation that foreign institutional ownership positively contributes to firm-level R&D intensity in China, albeit with nuanced differences from Western studies. The following sections explore whether this effect varies across firms with different institutional characteristics and policy exposure.

3.5.2.1 Key Findings

The regression results in Table 3.4 show that the coefficient on fio_avg is –0.495, significant at the 5% level, indicating that higher foreign institutional ownership is associated with *lower* R&D intensity. This is contrary to the initial theoretical expectation posited in H3.1, which predicted a positive association. Economically, a 10-percentage-point increase in foreign ownership corresponds to a 0.0495 reduction in the natural logarithm of R&D intensity. This translates into an approximate 4.8% decline in actual R&D intensity, a considerable drop given that the average value is just 0.015.

While this result appears inconsistent with prior studies in developed markets (e.g., Aghion et al., 2013; Chemmanur et al., 2014), it aligns with recent empirical evidence from emerging markets suggesting that foreign institutional investors may exhibit risk-averse behaviour. In environments with weaker legal protections, less transparent financial reporting, and high information asymmetry, foreign investors may exert conservative influence over firm strategy, favouring short-term efficiency or earnings stability over long-term R&D commitments (Almazan et al., 2005). The negative association may therefore reflect a precautionary investment approach that mitigates the perceived uncertainty of innovation under institutional constraints.

In this context, foreign institutional ownership may be better understood as a disciplining force that constrains managerial discretion, which, while beneficial for reducing overinvestment, may also suppress high-risk, intangible-intensive innovation.

This negative association may reflect the fact that foreign institutional ownership, particularly in China's markets with limited investor protection and high information asymmetry, often prioritise short-term financial efficiency over long-term strategic investments. As R&D expenditures are inherently uncertain and yield deferred payoffs, foreign investors may discourage excessive innovation spending to ensure stable accounting performance, thereby reducing R&D intensity at the firm level (Bena et al., 2017).

3.5.2.2 Control Variables

The coefficients on control variables in Table 3.4 offer additional insights into firm-level R&D behaviour.

Firm size (size) is significantly negatively associated with R&D intensity at the 1% level, suggesting that larger firms may exhibit lower innovation intensity relative to revenue. This finding is consistent with the notion that large firms may face bureaucratic inertia or rely more on existing technology than on frontier R&D (Cohen and Klepper, 1996).

Leverage (lev) is also significantly negative, supporting the view that financial constraints hinder innovation, as highly leveraged firms may have fewer internal funds available for risky and long-term R&D (Hall and Lerner, 2010; Aghion et al., 2004).

Profitability (roa_winsor) exhibits a positive but only marginally significant effect ($p \approx 0.057$). This weak relationship may indicate that R&D spending does not necessarily scale with short-term profits in the Chinese context, where capital allocation decisions may be affected by ownership structure and regulatory incentives.

Tobin's Q, often considered a proxy for investment opportunity or market valuation, surprisingly shows a negative and significant coefficient. This may suggest that high-valuation firms in China are not necessarily those that invest in R&D, possibly

reflecting speculative bubbles or performance-chasing behaviour by investors (Kim et al., 2018).

Asset tangibility (tang) is positively and significantly related to R&D intensity, contrary to the traditional view that tangible assets crowd out R&D. In China's case, firms with more tangible assets may enjoy easier access to collateral-based financing, thereby facilitating greater capacity to fund innovation (Chen and Strange, 2005).

Collectively, these findings underscore the complex nature of R&D determinants in China's markets, where traditional finance-based predictors may interact with policy factors, institutional ownership, and strategic constraints. The model exhibits strong explanatory power, with an R-squared of 0.767 across more than 47,000 firm-year observations.

3.5.3 The Impact of FIO on the Speed of R&D Convergence

3.5.3.1 Defining Innovation Convergence: Survival Outcome and Variable Construction

This section examines how foreign institutional ownership (FIO) affects the *speed* at which firms converge toward industry-average levels of R&D intensity. The analysis directly tests Hypothesis 3.2 (H3.2), which predicts that firms with higher FIO reach the innovation benchmark faster. Convergence speed captures the dynamic adjustment dimension of innovative behaviour and reflects how quickly firms transition from the onset of foreign investment to achieving typical industry R&D levels. It is measured as the duration between the first year of positive foreign ownership (*start_year*) and the year when a firm's R&D intensity first exceeds the industry–year median, following the framework introduced in Section 3.3.2. This approach enables the assessment of whether foreign investors not only increase firms' R&D intensity but also accelerate their progression toward optimal innovation levels, consistent with the governance and long-term orientation mechanisms discussed earlier.

To model this adjustment process, a survival analysis framework is applied, which estimates the time required for firms to reach a discrete innovation state rather than a continuous outcome (Cleves et al., 2010). In this context, the survival outcome represents the *time to innovation convergence*, and the Cox proportional hazards model is used to evaluate the probability of reaching the innovation threshold over time. This method is particularly suitable for capturing temporal dynamics in innovative behaviour, where firms differ in both the pace and likelihood of achieving R&D transformation milestones.

To align with the temporal logic of the survival framework, the explanatory variable average foreign institutional ownership (*fio_avg*) is defined as the mean foreign ownership during the entire ownership duration—from *start_year* to *event_year*. This specification captures cumulative exposure to foreign monitoring and governance influence, rather than year-to-year fluctuations. The event indicator (*failure = 1*) equals one when a firm's R&D intensity reaches or exceeds the industry–year median for the first time, and zero otherwise. The Cox model thus measures how FIO affects the *speed of R&D convergence*, providing direct evidence on the dynamic governance mechanism underlying foreign ownership and innovation.

3.5.3.2 Model Specification

The event of interest is defined as the first year in which a firm's R&D intensity reaches or exceeds the industry-year median. The duration variable is calculated as the number of years from the start of foreign ownership to the event year. Firms that do not reach the benchmark during the sample period are right-censored.

Rather than focusing solely on static levels of R&D, this approach allows for capturing the speed and persistence of innovative commitment across firms. Following Cleves et al. (2010), the event of interest was defined as the firm's first year of achieving the industry median R&D intensity and treated years before that as survival time. The key

explanatory variable is the firm's average foreign ownership ratio (fio_avg) during the ownership period. The model includes standard controls such as firm size (size) and leverage (lev), in line with prior literature on capital structure and innovation adjustment (Aghion et al., 2013; Cumming and Johan, 2009).

The hazard function is expressed in Equation 3.10, where h(t|Z) denotes the hazard rate conditional on the covariates Z, $h_0(t)$ is the unspecified baseline hazard, FIO_i represents the foreign institutional ownership, and X_i is a vector of control variables including firm size, leverage, and other firm characteristics. The primary explanatory variable is fio_avg, the average foreign institutional ownership during the exposure period. Control variables, including firm size and leverage, are measured at the start of the foreign ownership period. The Cox model is specified as:

Equation 3.10

Cox Proportional Hazards Model – Time to R&D Benchmark

$$h(t|Z) = h_0(t)\exp(\beta_1 FIO_i + \beta_2 X_i)$$

3.5.3.3 Main Results

Table 3.5 presents the estimation results. In both specifications, the coefficient on fio_avg is negative and highly significant at the 1% level. The corresponding hazard ratios are approximately 0.316 (without controls) and 0.271 (with controls), suggesting that firms with higher foreign institutional ownership are significantly more likely to reach the R&D benchmark earlier. The coefficients are interpreted in terms of hazard ratios, where a positive coefficient implies a higher rate of reaching the R&D benchmark (i.e., shorter survival time). This model is particularly well suited for examining H3.2, as it allows the timing effect of foreign ownership to be assessed on the baseline hazard (Cleves et al., 2010).

In both columns, the coefficient on Average Foreign Ownership is negative and statistically significant at the 1% level. This implies that higher levels of foreign ownership are associated with a higher hazard rate and, consequently, a shorter survival time, indicating that firms with greater foreign institutional presence tend to reach the innovation benchmark more rapidly. Firm size is positively associated with the hazard rate, while leverage shows a significantly negative effect, consistent with prior findings that high leverage may constrain innovation (Aghion et al., 2004).

These findings support Hypothesis 3.2 (H3.2), indicating that sustained foreign ownership plays a meaningful role in facilitating timely innovation adjustment. This result is consistent with governance-based arguments in the literature (Ferreira et al., 2008; Aghion et al., 2013). In Model (1), without any controls, fio_avg exhibits a significantly negative coefficient (–1.151, $p < 0.01$), corresponding to a hazard ratio of approximately 0.316, indicating that firms with higher foreign institutional ownership reach the innovation target more quickly.

In Model (2), after controlling for firm size and leverage, the coefficient on fio_avg remains strongly significant (–1.306, $p < 0.01$), and the effect becomes even more pronounced. This reinforces the hypothesis that foreign ownership accelerates firms' innovation upgrading, consistent with prior findings that institutional investors enhance firm-level innovation through improved governance, transparency, and monitoring (Ferreira and Matos, 2008; Bena and Li, 2014). Additionally, larger firms tend to upgrade faster due to greater resource availability, whereas highly leveraged firms may face constraints on innovation funding (Aghion et al., 2013).

The selection of control variables in the main Cox regression model is based on both theoretical relevance and empirical significance. Specifically, the Tangible assets ratio (tang) is included as a proxy for firms' asset structure and collateral value. As noted by Rajan and Zingales (1995) and Almeida and Campello (2007), firms with more tangible assets may face lower external financing frictions, which in turn affects the role of foreign investors in innovation. Return on Assets (ROA) represents firm-level

profitability. More profitable firms are more likely to engage in continuous R&D investment (Hall, 2002; Himmelberg et al., 1999). Firm age (age) is included to capture firm lifecycle effects. Younger firms may be more innovation-driven, whereas older firms tend to be more stable and conservative (Coad et al., 2013; Laursen and Foss, 2003). Firm-specific risk (asset_r_vol) is measured as the standard deviation of asset returns. Prior studies suggest that higher idiosyncratic risk may hinder sustained innovation activities (He and Tian, 2013; Manso, 2011).

3.6 Robustness Checks and Heterogeneity

This section examines the robustness and external validity of the baseline findings by testing alternative model specifications, subgroup heterogeneity, and potential explanatory mechanisms. This study also examines interaction effects between firm ownership and policy industry affiliation to understand how foreign institutional ownership operates in various corporate contexts.

3.6.1 Robustness Checks: Alternative Models and Sample Restrictions

3.6.1.1 Random Effects Panel Regression

To address the possible issue of multicollinearity in fixed-effects regressions, especially in subsample tests with limited variation, such as state-owned enterprises or R&D-inactive firms, this study follows the practice of Ferreira and Matos (2008) in re-estimating the heterogeneity models using pooled OLS with firm-clustered standard errors. Unlike the fixed-effects model, OLS retains both between- and within-firm variation, allowing for the estimation of variables with limited within-firm changes, such as average or lagged foreign institutional ownership (Flannery and Rangan, 2006). This is particularly useful when the firm-level variable of interest is relatively stable within firms but varies meaningfully across firms. While the OLS model does not remove firm-specific unobserved heterogeneity and thus cannot establish causal inference, it is suitable for testing the directional consistency of results and validating

robustness. Accordingly, the pooled OLS results are interpreted as a complementary robustness check, rather than a replacement for the baseline fixed-effects specification (Flannery and Rangan, 2006).

To ensure robustness against multicollinearity and firm-level unobserved heterogeneity, this section re-estimates the main models using random-effects and pooled OLS specifications, following Ferreira and Matos (2008). This model is appropriate when the key regressor, such as average foreign institutional ownership, exhibits low within-firm variation but meaningful cross-sectional differences (Ferreira and Matos, 2008).

Equation 3.11

$$\ln(RD_{it}) = \alpha + \beta \cdot \mathrm{FIO}_{it} + \gamma X_{it} + \lambda_t + u_i + \varepsilon_{it}$$

Where u_i represents unobserved firm-specific effects, and λ_t denotes year fixed effects.

The random-effects regression shows a significantly negative association between foreign institutional ownership and firm-level R&D intensity, consistent in direction and magnitude with the baseline fixed-effects results. The findings confirm the robustness of the main conclusion even when accounting for between-firm variation. However, the negative sign suggests that foreign investors may prefer firms with less aggressive R&D spending, highlighting potential agency or short-termism concerns. The random-effects approach retains both within-firm and between-firm variation, allowing for time-invariant firm characteristics. The estimated coefficient on fio_avg remains negative and statistically significant, consistent with the main finding. These results suggest that the observed relationship between foreign ownership and R&D intensity is not solely driven by within-firm variation. These findings therefore do not support Hypothesis 3.1, which predicts a positive association between foreign institutional ownership and firm-level R&D intensity. The direction and statistical significance of the coefficient are consistent with the baseline estimates in Table 3.4, confirming that the negative relationship is not model-dependent.

To ensure the robustness of the results under alternative model assumptions, this study further estimates a random-effects panel model. This approach allows for the inclusion of time-invariant firm characteristics and combines both within- and between-entity variation. As shown in Table 3.6, the estimated coefficient on foreign institutional ownership (FIO) is −0.495 and statistically significant at the 5 percent level, indicating a negative association between FIO and firms' R&D intensity. This relationship remains robust after controlling for observable firm characteristics and year fixed effects, suggesting that the observed pattern is not simply driven by time-specific factors. The result is consistent with Bena and Li (2014), who argue that in markets with relatively weak investor protection, foreign institutional investors tend to adopt conservative investment strategies and prioritise short-term capital efficiency over long-term innovation. These findings establish a consistent baseline for the subsequent robustness and heterogeneity analyses.

3.6.1.2 The cases of SOE vs non-SOE firms

To examine whether the impact of foreign institutional ownership (FIO) on R&D investment differs by firm ownership type, this study conducts split-sample regressions for state-owned enterprises (SOEs) and non-SOEs. The role of ownership structure is particularly salient in China, where SOEs operate under distinct governance frameworks and incentive constraints (Fan, Wong, and Zhang, 2007; Jiang and Kim, 2015). Prior research suggests that foreign investors may exert greater monitoring effectiveness in non-SOEs, where market discipline and managerial autonomy are more pronounced (Ferreira and Matos, 2008). The regressions are estimated using the same pooled OLS specification as the baseline model, with year fixed effects and firm-level clustered standard errors. Results are reported in Table 3.7.

Equation 3.12

$$\ln(RD_{it}) = \alpha + \beta \cdot \mathrm{FIO}_{it} + \gamma X_{it} + \lambda_t + \varepsilon_{it}$$

This equation is estimated separately for SOEs and non-SOEs using pooled OLS with year fixed effects.

Table 3.7 shows that the coefficient on FIO is significantly negative in both SOEs (Panel A) and non-SOEs (Panel B), although the magnitude is somewhat larger in the SOE group. Specifically, the coefficient in SOEs is −0.880 ($p < 0.01$), compared to −0.574 ($p < 0.05$) in non-SOEs. This indicates that higher foreign ownership is associated with lower R&D intensity across ownership types. The significant effect among SOEs suggests that foreign investors may exert some degree of governance pressure even in firms with state control, possibly through reputation concerns or indirect channels such as board influence or analyst coverage (Guedhami, Pittman, and Saffar, 2009). In non-SOEs, the robust negative relationship aligns with the theory that foreign investors act as effective monitors in privately controlled firms, enhancing financial discipline and innovation efficiency (Khanna and Palepu, 2000; Gillan and Starks, 2003). These results indicate that the negative relationship between FIO and R&D investment is consistent across ownership groups, reinforcing the robustness of the baseline finding under different ownership structures.

3.6.1.3 Tobit Model

Given that a substantial proportion of firms in the sample report zero R&D intensity, a Tobit model is estimated to account for the left-censored nature of the dependent variable. This model jointly evaluates both the likelihood of engaging in R&D and the conditional level of investment. It is particularly suitable for R&D studies, as zero observations may reflect latent but unobservable innovative potential (Hall et al., 1986; Himmelberg and Petersen, 1994). This model captures both the decision to conduct R&D and the intensity conditional on doing so (Hall et al., 1986; Hall and Mairesse, 1995; Himmelberg and Petersen, 1994).

Equation 3.13

$$RD_{it}^{*} = \alpha + \beta \cdot \mathrm{FIO}_{it} + \gamma X_{it} + \lambda_t + \varepsilon_{it}$$

$$RD_{it} = \begin{cases} 0, & \text{if } RD_{it}^{*} \leq 0 \\ RD_{it}^{*}, & \text{if } RD_{it}^{*} > 0 \end{cases}$$

To account for the large number of firms reporting zero R&D intensity, this study estimated a Tobit regression model with lower censoring at zero. This specification jointly models both the decision to engage in R&D and the level of investment. It captures the latent R&D inclination that may not be observed due to financial or institutional constraints. Table 3.8 presents the results. The Tobit model is particularly suitable for modelling innovation behaviour when the dependent variable is semi-continuous, with zero values for many firms and a right-skewed distribution for the remainder. It captures two distinct dimensions of firm-level R&D behaviour: (1) the decision to engage in any R&D activity (extensive margin), and (2) the intensity of R&D investment conditional on participation (intensive margin). In this context, the estimated coefficient on FIO reflects whether foreign investors influence firms' general propensity for innovation, not merely marginal R&D spending among already innovative firms.

As shown in Table 3.8, the coefficient on FIO is significantly negative (−1.548, $p < 0.01$), indicating that higher foreign ownership is associated with lower latent R&D intensity, even after controlling firm characteristics. This confirms the robustness of the baseline findings and highlights that the negative relationship persists even after accounting for the censored structure of the R&D variable. The substantially larger magnitude of the Tobit coefficient (−1.548) compared to OLS estimates suggests that traditional models may underestimate the suppressing effect of foreign ownership on R&D due to censoring bias. The consistency of the Tobit results with the OLS estimates provides additional support for the baseline inference.

This finding is consistent with the baseline estimates in Table 3.4 but does not support Hypothesis 3.1 (H3.1), which posits a positive relationship between FIO and firm-level R&D intensity. The significantly negative Tobit coefficient implies that foreign institutional investors may play a restrictive governance role, discouraging innovation-related spending due to its uncertain payoffs and accounting opacity. Such a pattern aligns with prior evidence that foreign investors, particularly in China's markets, tend to favour predictable and financially transparent operations over long-horizon innovation (Bena et al., 2017). In this context, FIO may reinforce budget discipline and reduce excessive experimentation, thereby lowering observable R&D intensity despite potential long-term gains.

3.6.2 Ownership-Based Heterogeneity: SOE vs. Non- SOE Firms

In addition to governance structure and incentive misalignment, SOEs in China are often subject to soft budget constraints and political interference, which may weaken the disciplining role of foreign shareholders. H3.3 that the effect of foreign institutional ownership on R&D investment is weaker in state-owned enterprises than in non-SOEs is tested. This study estimates the following OLS regression model to test whether the relationship between foreign institutional ownership and R&D investment varies with ownership structure:

Equation 3.14

$$\ln(RD_{it}) = \beta_0 + \beta_1 \cdot FIO_{it} + \beta_2 \cdot SOE_i + \beta_3 \cdot (FIO_{it} \times SOE_i) + X'_{it\gamma} + \lambda_t + \varepsilon_{it}$$

Where $\ln(RD_{it})$: Log R&D intensity of firm *i* in year *t*; FIO_{it}: Foreign institutional ownership (%); SOE_i: State-owned enterprise dummy (1 = SOE, 0 = otherwise); $FIO_{it} \times SOE_i$: Interaction term; $X'_{it\gamma}$: Control variables (size, lev, roa, tobinq, tang); λ_t: Year fixed effects; ε_{it}: Error term.

The core independent variable is foreign institutional ownership (fio_avg). The

interaction term $FIO_{it} \times SOE_i$ captures whether the effect of foreign ownership differs between state-owned and non-state-owned firms. Control variables include firm size, leverage, profitability, growth opportunities, and asset tangibility. Year fixed effects (i. year) are included to account for macroeconomic shocks, and standard errors are clustered at the firm level (cluster(firm_numid)).

To examine whether the effect of FIO on corporate R&D varies across ownership types, this study estimates a pooled OLS model with an interaction term between FIO and a state ownership dummy (SOE). This specification tests hypothesis H3.3. A significant interaction term would suggest that foreign investors have a differential impact on SOEs and non-SOEs. The results are reported in Table 3.9 Panel A. As shown in Table 3.9 Panel A, the coefficient on FIO is significantly negative (−0.651, $p < 0.01$), indicating that foreign institutional ownership is associated with lower R&D intensity in non-SOEs. The coefficient on the interaction term (FIO × SOE) is small and statistically insignificant, suggesting that the relationship does not differ significantly between SOEs and non-SOEs. This finding does not support hypothesis H3.3 and implies that foreign investors exert a similar influence on innovative behaviour across different ownership types. This result contrasts with previous research suggesting that foreign institutional investors may face greater constraints when engaging with SOEs, owing to political influence and weaker responsiveness to external governance mechanisms (Boubakri et al., 2013). One possible explanation is that many SOEs have undergone significant governance reforms and market-oriented restructuring, diminishing the ownership-based disparity in investor influence.

3.6.3 Policy-Based Heterogeneity and Identification Strategy

3.6.3.1 Interaction Model: FIO × MC2025

To examine whether the effects of FIO vary under strategic policy settings, this section

focuses on the “Made in China 2025” (MC2025) initiative, a national industrial policy introduced in 2015 to promote innovation and technological upgrading. The policy exhibits sectoral targeting and exogeneity, as it was implemented uniformly by the central government, applies only to ten prioritised industries such as robotics, aerospace, and pharmaceuticals, and offers explicit incentives including tax subsidies, innovation grants, and financing support. These characteristics render MC2025 a suitable quasi-natural experiment for identifying how foreign investors respond to state-led innovation strategies (Chen et al., 2023; Xu, 2022). To test whether the governance impact of foreign ownership differs between policy and non-policy sectors, this study includes an interaction term between FIO and a dummy variable for the MC2025 industry classification. A significant interaction term would suggest that foreign institutional investors exhibit policy-sensitive behaviour, consistent with evidence on investor responsiveness to government signalling (Hsu and Tian, 2023). The regression results are presented in Table 3.9, Panel B.

Equation 3.15

$$\ln(RD_{it}) = \alpha + \beta_1 \cdot \mathrm{FIO}_{it} + \beta_2 \cdot \mathrm{MC2025}_i + \beta_3 \cdot (\mathrm{FIO}_{it} \cdot \mathrm{MC2025}_i) + \gamma X_{it} + \lambda_t + \varepsilon_{it}$$

As shown in Table 3.9 Panel B, the coefficient on FIO is significantly negative (−0.816, $p < 0.01$), confirming that foreign institutional ownership is associated with lower R&D intensity in non-policy industries. The coefficient on the interaction term (FIO × MC2025) is positive and marginally significant (0.742, $p = 0.062$), indicating that the negative effect of FIO on R&D is weaker or potentially reversed in MC2025 industries. Notably, the baseline coefficient on FIO is negative, while the interaction term is positive, suggesting that foreign investors respond differently to policy-oriented environments by reducing their inhibiting effect on innovation. These findings provide partial support for hypothesis H3.4 and suggest that foreign investors may react more flexibly to policy signals in strategic sectors.

Compared with the baseline regression results in Table 3.6, where the estimated coefficient on foreign institutional ownership (FIO) is −0.495, the coefficient in non-policy sectors remains negative (−0.816), while the interaction term partially offsets this effect in MC2025 industries. This suggests that the observed adverse effect is not uniform across sectors and may be weakened in policy-targeted environments. These results are consistent with Hsu and Tian (2023), who highlight the catalytic role of MC2025 policy incentives in attracting and reshaping investor behaviour. The attenuation of FIO's adverse effect in strategic industries may reflect greater policy certainty, innovation subsidies, or enhanced signalling of long-term value creation.

3.6.3.2 Sub-sample Regressions by Policy Support Industry Type

To assess whether the effect of foreign institutional ownership (FIO) on R&D differs by policy relevance, the sample is divided into MC2025 industries, classified as strategic sectors under China's "Made in China 2025" initiative, and non-MC2025 industries. Separate OLS regressions are estimated for each group to evaluate whether the FIO–R&D relationship varies across policy-backed and non-prioritised sectors. This approach complements the earlier interaction model by offering more intuitive evidence on the moderating role of industrial policy. The results are reported in Table 3.10.

Equation 3.16

$$\ln(RD_{it}) = \alpha + \beta \cdot \mathrm{FIO}_{it} + \gamma X_{it} + \lambda_t + \varepsilon_{it}$$

As shown in Table 3.10, the coefficient on FIO is statistically insignificant in MC2025 industries (0.022, p = 0.949), suggesting that foreign institutional ownership does not significantly influence R&D investment in strategic policy sectors. In contrast, in non-MC2025 industries, the coefficient on FIO is significantly negative (−0.844, $p < 0.01$), indicating that foreign ownership is associated with lower R&D intensity in non-policy

sectors. These results are consistent with the earlier interaction model (Table 7.5) and support hypothesis H3.4, which posits that the effect of foreign ownership on innovation is conditional on industry-level policy context. One possible explanation is that MC2025 sectors are subject to greater government oversight, funding access, and strategic guidance, which may buffer or crowd out external monitoring from foreign shareholders (Hsu and Tian, 2023; Aggarwal et al., 2011).

These results support Hypothesis H3.4 and align with the findings of Hsu and Tian (2023), who argue that firms in policy-supported sectors rely more on government incentives and less on external investor scrutiny. Moreover, Aghion et al. (2013) suggest that strategic government intervention can partially substitute for private monitoring by reducing uncertainty and providing long-term signals of innovation, thereby mitigating foreign investors' typical risk aversion. These findings provide partial support for Hypothesis 3.4, suggesting that the negative impact of FIO on R&D is significantly mitigated in MC2025 industries. While foreign institutional ownership does not appear to promote substantial innovation in policy-backed sectors, the absence of a significant negative effect indicates a more accommodative stance towards long-term innovation, consistent with the policy–investor complementarity channel (Howell, 2017; Hsu and Tian, 2023). Thus, the governance role of FIO appears more context-sensitive and strategically aligned in MC2025 industries.

3.6.3.3 DID Analysis: MC2025 Policy Shock

A difference-in-differences (DID) design is employed to evaluate the policy effect of “Made in China 2025” by interacting industry policy classification with the post-2015 period. The treatment group consists of firms in MC2025-designated industries, and the post-treatment period begins in 2015. This approach estimates the average treatment effect conditional on group status and time (Hsu and Tian, 2023). The interaction term

treated × post-2015 captures the net policy effect, where a significantly positive coefficient would indicate that industrial policy effectively promotes R&D investment in strategic sectors.

Equation 3.17

$$\ln(RD_{it}) = \alpha + \beta_1 \cdot \text{Treat}_i + \beta_2 \cdot \text{Post}_t + \beta_3 \cdot (\text{Treat}_i \cdot \text{Post}_t) + \gamma X_{it} + \lambda_t + \varepsilon_{it}$$

As shown in Table 3.11, the DID interaction term is positive and highly significant (coefficient = 1.934, $p < 0.001$), suggesting that the implementation of the MC2025 policy significantly increased R&D investment in the targeted industries relative to others. This supports H3.4 by showing that policy incentives reshape investment behaviour in strategic sectors. These findings suggest that the negative baseline effect of FIO on R&D is mitigated, and potentially reversed, following the introduction of the MC2025 policy. Furthermore, the coefficient on FIO remains significantly negative, indicating that foreign ownership continues to constrain R&D intensity, particularly in non-priority sectors.

Equation 3.18

$$\ln(\text{RD}_{\text{it}}) = \alpha_0 + \alpha_1 \text{FIO}_{\text{it}} + \alpha_2 \text{Treat}_{\text{i}} + \alpha_3 \text{Post}_{\text{t}} + \alpha_4 (\text{Treat}_{\text{i}} \times \text{Post}_{\text{t}}) + \text{X}'_{\text{it}} + \gamma_{\text{t}} + \varepsilon_{\text{it}}$$

In contrast to the basic DID model, this equation introduces FIO_{it} to capture the direct impact of foreign funding while controlling for the interaction term $\text{Treat}_{\text{i}} \times \text{Post}_{\text{t}}$ to identify policy impacts. The triple interaction term FIO×Treat×Post is the key to the determining mechanism of this model, which estimates whether foreign investment plays a stronger role as an innovation driver in the policy industry after the policy is implemented. To further investigate whether foreign institutional ownership responds differently to industrial policy, a triple interaction model is estimated between foreign ownership, the MC2025 industry classification, and the post-2015 policy period. This model helps identify whether the effect of foreign ownership on R&D intensity is contingent on both the policy context and its timing. The results, shown in Table 3.7.8,

offer important insights into the mechanism of institutional response. H3.4: The impact of foreign institutional ownership on corporate R&D investment is moderated by government industrial policy.

To test whether the effect of foreign institutional ownership is conditional on both industry and policy timing, this study estimates a triple interaction model. This approach enables a more granular identification of governance responses to policy contexts (Hsu and Tian, 2023; Aghion et al., 2013; Huang and Zhu, 2015).

Equation 3.19

$$\ln(RD_{it}) = \alpha + \beta_1 \cdot \mathrm{FIO}_{it} + \beta_2 \cdot \mathrm{Treat}_i + \beta_3 \cdot \mathrm{Post}_t + \beta_4 \cdot (\mathrm{FIO}_{it} \cdot \mathrm{Treat}_i) + \beta_5 \cdot (\mathrm{FIO}_{it} \cdot \mathrm{Post}_t) + \beta_6 \cdot (\mathrm{FIO}_{it} \cdot \mathrm{Treat}_i \cdot \mathrm{Post}_t) + \gamma X_{it} + \lambda_t + \varepsilon_{it}$$

Table 3.12 shows that the triple interaction term (fio × treat × post2015) is strongly positive and highly significant (coefficient = 5.277, $p < 0.001$), suggesting that foreign institutional ownership significantly enhances R&D investment in MC2025 industries after the policy introduction. Before 2015, the effect of foreign ownership in these sectors was negative (fio × treat = −1.087, $p < 0.01$), and in non-policy industries, foreign ownership continued to suppress R&D after the policy (fio × post = −5.480, $p < 0.001$). These findings support the view that institutional investors respond strategically to government signals in policy-oriented industries, consistent with Hsu and Tian (2023) and Aghion et al. (2013). Importantly, the FIO × Treat and FIO × Post terms are significantly negative, whereas the triple interaction term is positive and significant, implying that foreign investors shift towards a pro-innovation stance only in response to explicit policy alignment after 2015.

The significant and positive coefficient of the triple interaction term (FIO × MC2025 × post2015) provides strong evidence that foreign institutional ownership actively responds to government policy signals in strategic sectors. Consistent with Hsu and Tian (2023), the MC2025 policy framework likely reduced uncertainty and increased

strategic clarity for firms in supported industries, thereby enhancing foreign investors' willingness to support long-term innovation. This finding is also aligned with Aghion et al. (2013), who argue that institutional ownership effects are contingent upon the institutional environment.

Figure 3.1 plots the parallel trend test based on the MC2025 policy support classification. The blue solid line represents non-policy-supported industries (MC2025 = 0), while the red dashed line denotes industries classified as policy-supported (MC2025 = 1). The y-axis reports the estimated ln_RD, and the x-axis shows event years relative to the benchmark year 2015. This finding is consistent with prior evidence that innovative policies, such as MC2025, have more potent effects on firms in targeted industries (Hsu and Tian, 2023). Before the policy introduction (2004–2014), the R&D investment trends of the two groups exhibit relatively parallel trajectories, suggesting that the parallel trend assumption underlying the DID design is reasonably satisfied. After 2015, the gap in ln_RD between the two groups widens progressively, with policy-supported industries showing a faster increase in R&D investment intensity, indicating a potential positive effect of the MC2025 policy on firm innovation behaviour.

The shaded area represents 95% confidence intervals around group means. Notably, during the post-treatment period, the red line (treatment group) remains consistently above the blue line (control group), further suggesting that the MC2025 policy may have encouraged higher R&D efforts in targeted sectors. This pattern aligns with prior literature on targeted industrial policy and innovation incentives, such as Hsu and Tian (2023), who found that state-supported sectors respond more positively to innovation subsidies and institutional reforms. This result aligns with the earlier triple interaction model, which showed that foreign investors only enhanced R&D engagement in MC2025 sectors after policy implementation. In contrast, the coefficients on FIO × Treat and FIO × Post remain negative and significant, indicating that in non-policy

industries or before the policy period, foreign investors were generally more conservative regarding R&D investment.

This shift illustrates a strategic adaptation in foreign ownership behaviour. Government-led industrial policies like MC2025 may reduce investment risk and information asymmetry through tax incentives, direct subsidies, and enhanced market signals (Hsu and Tian, 2023). In this context, foreign investors are more likely to act as collaborative governance partners rather than short-term profit seekers (Aghion et al., 2013). Moreover, the results resonate with the view that institutional investors respond not only to market fundamentals but also to policy frameworks. A recent study by Bena et al. (2017) suggests that industrial policies can shape market governance by altering the incentives of external investors, thus enhancing the policy's transmission effect and innovation outcomes.

3.6.4 Summary and Implications

The empirical findings presented in this chapter underscore the complex role of FIO in shaping corporate R&D behaviour in China. While the baseline OLS regressions reveal a negative and statistically significant association between long-term FIO and R&D intensity, consistent with the literature highlighting concerns about investor-induced short-termism (Bushee, 1998; Ferreira et al., 2010; Huang and Zhu, 2015), the survival analysis offers a contrasting perspective. Specifically, the Cox model results suggest that FIO is positively associated with the speed at which firms reach the industry-average innovation level, indicating that foreign investors may facilitate timely adjustment rather than discourage innovation outright. This contrast highlights the importance of distinguishing between the intensity and the timing of innovation, with FIO seemingly exerting pressure for strategic conformity rather than for increased investment levels (Cleves et al., 2010).

The heterogeneity analyses further illuminate the conditional nature of FIO's influence.

Although state-owned enterprises (SOEs) exhibit a more pronounced negative association, the interaction terms lack statistical significance, suggesting that ownership structure does not substantially alter the primary relationship. In contrast, the effect of FIO becomes neutral or even positive in sectors supported by the "Made in China 2025" policy, as evidenced by interaction models and triple-difference estimates. These findings imply that policy environments can reshape institutional investors' governance preferences and their tolerance for innovation risk (Howell, 2020; Aghion et al., 2015; Hsu and Tian, 2023). In sum, the impact of FIO on innovation is neither inherently positive nor negative, but rather shaped by firm characteristics and institutional context.

3.7 Mechanisms and Dynamic Effects

3.7.1 Two-Part Model

To further explore the heterogeneous role of foreign institutional ownership in shaping corporate innovation behaviour, this section adopts a two-part model to distinguish between the extensive and intensive margins of R&D investment. While previous sections have focused on the average effect of foreign ownership on R&D intensity, the two-part model disaggregate this influence into: (i) the likelihood that a firm engages in any R&D activities (R&D participation), and (ii) the amount of R&D expenditure conditional on engagement (R&D intensity conditional on positive R&D). This approach follows established empirical practice in innovation-related research (Czarnitzki and Lopes-Bento, 2013; Hall and Van Reenen, 2000) and is particularly suitable for contexts like China where a significant number of firms report zero R&D investment each year.

The first part of the model uses a binary Probit regression to estimate the probability that a firm reports a positive R&D investment. The second part applies an OLS regression to explain the variation in R&D intensity conditional on R&D being positive. Formally, the two-part model is specified as follows:

Part I (Extensive Margin): Equation 3.20

$$\Pr(\text{R\&D}_i > 0) = \Phi(\alpha_0 + \alpha_1 \text{FIO}_i + \alpha_k X_i + \varepsilon_i)$$

Where:

Φ = cumulative distribution function of the standard normal distribution (Probit model)

FIO_i = foreign institutional ownership of firm *i*

X_i = vector of control variables (e.g. size, leverage, profitability)

ε_i = error term

Part II (Intensive Margin): Equation 3.21

$$\log\left(\frac{\text{R\&D}}{\text{Sales}}\right)_i = \beta_0 + \beta_1 \text{FIO}_i + \beta_k X_i + \mu_i$$

Where:

$\log(\text{R\&D/Sales})_i$ = log of R&D intensity for firm *i*

$\text{FIO}_{\boldsymbol{i}}$ = foreign institutional ownership

X_i = control variables (same as above)

μ_i = error term

This two-stage framework enables richer insights into how foreign institutional ownership may influence not only whether a firm conducts R&D, but also the intensity of that investment, conditional on its occurrence. In doing so, it helps address potential selection bias arising from firms with zero R&D and offers a more comprehensive evaluation of FIO's role in firm-level innovation. Relevant empirical literature has widely adopted this approach in the context of innovative studies. For example, Czarnitzki and Lopes-Bento (2013) employ a similar model to analyse the impact of public subsidies on R&D behaviour. In the Chinese context, the distinction between R&D engagement and intensity is crucial given institutional incentives and disclosure practices (Teng and Yi, 2017).

As shown in Table 3.13, the two-part model indicates that foreign institutional ownership significantly reduces the probability of a firm engaging in R&D, while having no significant effect on the intensity of R&D once such activity occurs.

Discussion of Two-Part Model Results

Table 3.13 presents the estimation results from the two-part model, which disaggregates the impact of FIO into two dimensions: the extensive margin (i.e., the likelihood of engaging in R&D) and the intensive margin (i.e., the R&D intensity conditional on participation). This approach addresses the issue of zero-inflated R&D observations, which are prevalent among Chinese listed firms, and follows established empirical strategies in innovation research (Czarnitzki and Lopes-Bento, 2013; Aghion et al., 2013).

Column (1) presents the results from a Probit regression where the dependent variable is a binary indicator for whether a firm engages in any R&D activity. The coefficient on fio_avg is significantly negative at the 10% level, suggesting that firms with higher levels of foreign institutional ownership are less likely to report positive R&D expenditure. This finding is consistent with the hypothesis that foreign investors may prefer less risky, short-term return-oriented firms and may not actively promote innovation at the extensive margin (Aghion et al., 2013; Ferreira and Matos, 2008).

In contrast, Column (2) shows that once a firm has committed to R&D investment, the level of FIO has no significant impact on the intensity of that investment. The coefficient of fio_avg is positive but not statistically significant, indicating that foreign investors are not significantly associated with either the promotion or suppression of innovation intensity. This aligns with prior evidence that FIOs often adopt a passive governance style in emerging markets (Aggarwal et al., 2011), particularly when

operating in institutional environments with information opacity and limited shareholder activism.

Among the control variables, firm size and leverage have a substantial adverse effect on both R&D participation and intensity. In contrast, Tobin's Q is negatively related to R&D engagement but positively associated with R&D intensity. Notably, profitability (ROA) increases the likelihood of R&D engagement but negatively correlates with R&D intensity, suggesting that once profitable firms enter R&D, they may maintain conservative investment levels. The two-part model reveals an asymmetric influence of foreign institutional ownership: they are associated with a reduced probability of innovation participation, but conditional on participation, their impact on the magnitude of investment is statistically neutral. These results reinforce the importance of differentiating innovative incentives across decision stages and highlight the nuanced role of foreign investors in shaping corporate R&D strategies.

In summary, the results of the two-part model reveal a nuanced mechanism by which foreign institutional ownership influences corporate innovation. They appear to act as a selective force at the entry stage of R&D but exert a neutral influence on the intensity of investment once a firm commits to R&D activities. These findings provide partial support for Hypothesis 3.1, indicating that foreign institutional ownership acts as a screening force at the R&D participation stage, but do not significantly alter the level of investment once firms engage in R&D (Ferreira and Matos, 2008; Aggarwal et al., 2011). Compared with the baseline regression, the negative effect of FIO appears concentrated on the extensive margin, suggesting that foreign investors may discourage firms from initiating innovation activities, while remaining neutral thereafter.

3.7.2 Mechanism Analysis: Investor Type Heterogeneity

This section investigates the heterogeneous effects of different types of foreign institutional investors (FIIs) on corporate R&D decisions. The study evaluates foreign

investors based on their investment behaviour into four categories: active vs. passive, and long-term vs. short-term investors. Prior literature suggests that investor characteristics significantly shape monitoring intensity, investment horizons, and corporate influence channels (Bushee, 1998; Aggarwal et al., 2011). Therefore, examining such heterogeneity can provide deeper insight into the mechanisms by which FIO affect firm innovation.

To operationalise investor type, the following variables are constructed based on investor characteristics and classification: foreign_active, foreign_passive, foreign_longterm, and foreign_shortterm (Yan and Zhang, 2009). These variables are constructed from investor-level ownership data and reflect firm-year level aggregated measures. To empirically test these categories, a series of panel regressions is estimated as follows. A series of panel regressions is calculated using the following baseline specification.

3.7.2.1 Foreign Investor Type and R&D Investment

Equation 3.22

$$\log\left(\frac{\text{R\&D}}{\text{Sales}}\right)_{it} = \gamma_0 + \gamma_1 \text{FIOtype}_{it} + \gamma_k X_{it} + \lambda_t + \varepsilon_{it}$$

where FIOtype_{it} refers to each of the four investor type variables entered separately in the model. X_{it} is a vector of firm-level controls including size, leverage, profitability, Tobin's Q, and fixed asset ratio. λ_t denotes year fixed effects, and standard errors are clustered at the firm level.

To explore the heterogeneity in the influence of foreign institutional ownership, Table 3.14 Panel A distinguishes among four categories of FIO: active, passive, long-term, and short-term, and examines their respective effects on R&D intensity. These classifications are motivated by the literature on institutional ownership heterogeneity (Bushee, 1998; Ferreira et al., 2010), which suggests that different investment strategies

and time horizons may lead to distinct corporate outcomes, particularly in innovation-related decisions.

Results indicate a clear divergence in the effects of different types of FIO. The coefficients for active and long-term ownership are statistically insignificant, implying no systematic influence on firm innovation. By contrast, passive foreign investors exhibit a marginally positive effect on R&D, suggesting a "quiet capital" role that provides stability without direct interference (Ferreira et al., 2010). Most notably, short-term foreign investors are significantly associated with lower R&D intensity ($p < 0.01$), consistent with concerns that transient capital may discourage long-horizon investments due to pressure for short-term returns (Bushee, 1998).

These findings provide valuable insights into how the characteristics of foreign investors influence their governance role in innovation. The significantly negative association between short-term foreign ownership and R&D intensity suggests that investors with shorter investment horizons may exert pressure for near-term financial performance, thus deterring firms from undertaking longer-horizon innovative projects (Bushee, 1998; Chen, Harford, and Li, 2007). In contrast, passive foreign investors demonstrate a marginally positive effect, which is consistent with the "quiet capital" hypothesis, where passive institutions provide monitoring benefits without direct interference (Ferreira et al., 2010). The statistically insignificant coefficients for active and long-term investors may reflect institutional frictions in China's capital market, such as limited shareholder rights, weak legal enforcement, and high information asymmetry (Aggarwal et al., 2011; Allen, Qian, and Qian, 2005), which constrain the ability of even committed investors to influence firm behaviour.

Compared with the baseline regression in Table 3.6, which finds a significantly negative effect of aggregated foreign ownership on R&D, the disaggregated results suggest that short-term investors mainly drive such discouraging effects. This finding reinforces the importance of distinguishing between investor types when assessing the governance role of FIOs. It also implies that regulatory and policy frameworks should consider

investor heterogeneity, especially when designing mechanisms to attract foreign capital into strategic innovation-intensive sectors (Bena et al., 2017; Aggarwal et al., 2011). Taken together, these results provide partial support for Hypothesis 3.1 and highlight that not all foreign institutional ownership exerts the same influence; some may promote innovation, while others hinder it, depending on their time horizons and engagement styles.

3.7.2.2 Interaction with State-Owned Enterprises

Equation 3.23

$$\log\left(\frac{\text{R\&D}}{\text{Sales}}\right)_{it} = \gamma_0 + \gamma_1 \text{FIOtype}_{it} + \gamma_2 \text{FIOtype}_{it} \times \text{SOE}_i + \gamma_k X_{it} + \lambda_t + \varepsilon_{it}$$

to examine differential impacts in state-owned enterprises.

Panel B investigates whether the impact of different foreign investor types on R&D investment varies between SOEs and non-SOEs. According to institutional theory, SOEs often suffer from weaker internal governance, soft budget constraints, and misaligned managerial incentives, which may limit the effectiveness of external monitoring mechanisms (Shleifer and Vishny, 1994; Kornai, Maskin, and Roland, 2003; Qian, 1996). These characteristics can dampen the influence of both transient and patient capital.

The regression results in Table 3.14 Panel B indicate that both short-term and long-term foreign ownership exhibit significantly negative interaction terms with the SOE dummy ($p < 0.01$), suggesting that even sustained or committed ownership fails to stimulate innovation when state control dominates the firm's strategy. These findings reinforce concerns in the literature that persistent institutional frictions in SOEs, such as politically motivated objectives and limited managerial accountability, may undermine the disciplinary role of capital markets (Allen et al., 2005; Bai et al., 2004).

Interestingly, the interaction between active foreign ownership and SOE status is

marginally positive ($p < 0.1$), albeit economically small, indicating that active investors may provide limited governance benefits in state-owned firms, possibly through increased disclosure demands or minority shareholder engagement (Aggarwal et al., 2011). However, the magnitude of this effect is modest, and the overall evidence implies that ownership type does not fully compensate for the structural limitations of SOEs in promoting innovation.

These results reinforce the broader view that structural constraints in SOEs limit the effectiveness of foreign institutional governance, regardless of investor type. These findings provide support for Hypothesis 3.3, which posits that the governance effect of foreign institutional ownership is weaker in state-owned enterprises due to structural and political constraints. Compared with the baseline regression in Table 3.6, where aggregated foreign ownership is significantly negatively associated with R&D intensity, the interaction results here suggest that such discouraging effects are predominantly concentrated among SOEs. This reinforces the importance of distinguishing ownership structures when evaluating investor influence. Consistent with Bena and Li (2014), who show that ownership and governance context critically shape firms' innovation incentives and outcomes, the entrenched nature of state ownership can dilute external governance mechanisms. Moreover, the asymmetric role of investor types aligns with Bushee's (1998) findings, which suggest that short-term capital is particularly sensitive to internal governance rigidity. These results collectively emphasise that the effectiveness of FIO as an innovative governance mechanism is highly contingent on the institutional ownership context.

3.7.2.3 Interaction with MC2025 Policy

In addition to governance-related heterogeneity, policy environments such as strategic industry designation may further shape how different types of FIOs influence innovation. Panel C examines whether foreign investor effects vary across industries

targeted by the Made in China 2025 (MC2025) initiative. Strategic policy support may alter the risk-reward structure for innovation and shape the responsiveness of different investor types to R&D incentives (Hsu and Tian, 2023).

Equation 3.24

$$\log\left(\frac{\text{R\&D}}{\text{Sales}}\right)_{it} = \gamma_0 + \gamma_1 \text{FIOtype}_{it} + \gamma_2 \text{FIOtype}_{it} \times \text{MC2025}_i + \gamma_k X_{it} + \lambda_t + \varepsilon_{it}$$

Equation 3.24 captures investor heterogeneity across strategic industries.

In Table 3.14 Panel C, the interaction between short-term foreign ownership and MC2025-supported industries is positive and highly significant ($p < 0.01$), implying that industrial policy incentives may mitigate short-termism and encourage R&D investment. Similarly, the interaction between long-term foreign ownership is positively significant, underscoring the complementarity between stable investment horizons and state-led innovation agendas. These findings demonstrate that investor influence is conditioned not only by ownership type but also by the institutional and policy environment.

Notably, all three types of investors—passive, long-term, and even short-term—exhibit significantly positive effects within MC2025 industries. The most substantial effect is found for short-term investors, suggesting that policy incentives and signalling may be powerful enough to overcome short-termism. These findings align with recent research indicating that targeted policies can redirect investors' focus toward long-term outcomes (Hsu and Tian, 2023). These findings provide clear support for Hypothesis 3.4, which posits that the influence of foreign institutional ownership on innovation is more substantial in policy-supported sectors. Compared with the baseline regression in Table 3.6, which shows a negative association between aggregated foreign ownership and R&D intensity, the significantly positive interaction terms here suggest that the MC2025 policy incentives effectively reverse the discouraging effect of certain investor types, especially short-term investors. This indicates that targeted policy support can reshape investor preferences and neutralise short-term pressures, thereby enhancing

innovative outcomes. These results are consistent with Howell's (2017) argument, which suggests that government industrial policy can redirect capital allocation toward long-term innovation through enhanced signalling and risk-sharing mechanisms. Collectively, this highlights the policy–investor complementarity channel in the Chinese institutional context.

3.7.3 Stratified Survival Model

To address methodological challenges in measuring FIO in survival models, this section employs the average FIO over the survival observation window rather than using contemporaneous annual values. This approach aligns with the assumption of time-invariant covariates in Cox models (Cleves et al., 2010) and mitigates potential temporal mismatches that may occur when foreign investors enter shortly before or after the innovation event (Bena and Li, 2014). Moreover, average FIO better captures long-term exposure and persistent governance effects, which are more relevant for shaping innovation outcomes than short-term ownership fluctuations (Flammer and Bansal, 2017).

Building on this setup, a stratified Cox proportional hazards model is employed to investigate whether the timing of innovation convergence varies across different institutional and policy environments. Specifically, stratification is performed by SOE status, MC2025 industry classification, and 2-digit industry groups, allowing the baseline hazard to vary while estimating a common effect of FIO on the likelihood of reaching the industry-average R&D intensity.

Equation 3.25

$$h(t \mid \mathrm{FIO}_i, X_i) = h_0^{(s)}(t) \cdot \exp(\beta_1 \cdot \mathrm{FIO}_i + \beta_k \cdot X_i)$$

$h(t \mid \text{FIO}_i, X_i)$ = the hazard rate at time *t* for firm *i*, given its covariates;

$h_0^{(s)}(t)$ = the baseline hazard function for stratum *s* (e.g., SOE group, MC2025 group, industry group);

FIO_i = foreign institutional ownership for firm *i*;

X_i = vector of firm-level control variables;

β_1 and β_k = coefficients estimated by the stratified Cox proportional hazards model.

To enhance the robustness of the survival analysis and to examine potential heterogeneity in innovation convergence, this study applies stratified Cox proportional hazards models. These models allow the baseline hazard function to vary across defined groups, such as SOEs versus non-SOEs, MC2025 versus non-MC2025 sectors, and industry classifications, while estimating a common effect of FIO on the likelihood of reaching the industry-average level of R&D intensity. Stratified models are particularly appropriate when the proportional hazards assumption holds within, but not across, groups (Cleves et al., 2010; Kalbfleisch and Prentice, 2002; Allison, 2010). This approach enables the analysis to capture policy- and ownership-driven differences in innovation timing, in line with recent research on heterogeneous R&D responses under institutional and regulatory conditions (Aghion et al., 2013). The first application of this framework focuses on SOE versus non-SOE firms, as reported in Table 3.15A.

3.7.3.1 Stratified Cox Model: SOE vs. non-SOE firms

Table 8.3A presents the results from a stratified Cox proportional hazards model, where the sample is divided by SOE status. This model investigates whether FIO affects the speed at which firms reach industry-average R&D intensity differently across state-owned and non-state-owned enterprises.

The results show that the hazard ratio for fio_avg is 0.368 ($p < 0.10$), suggesting that firms with higher foreign institutional ownership reach innovation benchmarks more rapidly. This finding is consistent with the monitoring hypothesis (Aggarwal et al.,

2011), which posits that foreign investors improve governance and reduce information asymmetries, particularly among firms with weaker internal structures. These results also complement Aghion et al. (2013), who demonstrate that long-term institutional investors contribute to faster innovation in emerging economies.

Figure 3.2A. Kaplan–Meier Curves by SOE Ownership plots the cumulative probability of firms reaching the industry-average R&D intensity over time, stratified by SOE status. The solid line represents non-SOEs, while the dashed line represents SOEs. Firms with foreign institutional ownership appear to converge slightly faster in the non-SOE group. While the survival curves indicate that firms with foreign institutional ownership tend to reach the R&D benchmark more quickly, the degree of convergence varies across different groups. Notably, the presence of crossing curves may suggest potential violations of the proportional hazards' assumption. This does not invalidate the Cox model results but highlights the importance of stratification and robustness checks, as emphasised in Kleinbaum and Klein (2012), when interpreting duration effects across heterogeneous firm groups (Cleves et al., 2010). Future research may consider time-varying covariates or accelerated failure time models to address such patterns more precisely.

These findings provide support for Hypothesis 3.2, which posits that foreign institutional ownership accelerates the speed at which firms achieve innovation benchmarks. Compared with the baseline Cox model in Table 3.5, where the hazard ratio for fio_avg is 0.419 ($p < 0.05$), the stratified result of 0.368 ($p < 0.10$) suggests a consistent and potentially stronger effect among non-SOE firms. The hazard ratio below one indicates a higher likelihood of earlier convergence to industry-average R&D intensity, reinforcing the governance channel through which FIO operates. These results are consistent with the monitoring hypothesis (Aggarwal et al., 2011) and support the arguments by Flammer and Bansal (2017) that long-term foreign ownership enhances innovation by reducing agency friction and promoting long-term orientation. The use of average FIO over the survival window further strengthens the validity of

this conclusion, as it reflects persistent exposure rather than short-term fluctuations.

Overall, the evidence suggests that the innovation-enhancing effect of FIO is both statistically significant and economically meaningful, particularly when firm ownership structure allows external governance mechanisms to function more effectively.

3.7.3.2 Stratified Cox Model: MC2025 Industries

Table 3.15 B reports a stratified Cox model where the sample is split according to whether a firm operates in an MC2025-targeted industry. This approach controls policy-induced heterogeneity in innovative environments and tests the consistency of foreign ownership effects across sectors.

The coefficient for foreign ownership is −1.043 ($p < 0.10$), reinforcing the finding that foreign institutional ownership accelerates firms' progress toward innovation benchmarks. This finding aligns with Hsu and Tian (2023), who show that policy signals under 'Made in China 2025' enhance firms' innovation responsiveness. It also supports Hsu and Tian (2023), who argue that foreign ownership can reduce time-to-innovation even in policy-heavy environments.

The crossing of Kaplan–Meier survival curves, as shown in Figure 3.2B, may indicate a deviation from the proportional hazards' assumption, justifying stratification (Cleves et al., 2010). This figure displays the cumulative probability of reaching the industry-average R&D intensity, comparing firms in MC2025-targeted industries with those in other sectors. MC2025 firms appear to converge more rapidly, consistent with state-led policy incentives. Similarly, in Figure 3.8.3B, the more rapid convergence of MC2025 firms is consistent with the targeted effects of industrial policy. The divergence in slope between strategic and non-strategic sectors further supports the hypothesis that institutional context moderates the impact of foreign ownership on innovation timing. The survival curves further support the regression results. This pattern aligns with Zhang et al. (2023) and Hsu and Tian (2023) regarding policy-aligned investor

behaviour.

The stratified survival models and Kaplan–Meier curves provide robust evidence that foreign institutional ownership accelerates the convergence of innovation. These effects are consistent across ownership types and policy-supported industries (Aggarwal et al., 2011; Aghion et al., 2013; Hsu and Tian, 2023; Zhang et al., 2023). These findings provide further support for Hypothesis 3.2, which suggests that foreign institutional ownership accelerates firms' convergence toward industry-average innovation levels. Compared with the baseline Cox regression in Table 3.5, where the effect of FIO on innovation timing is already significant, the stratified results in Table 3.15 B confirm that this effect is particularly pronounced within MC2025-targeted industries.

The statistically significant coefficient (-1.043, $p < 0.10$) indicates that policy-aligned sectors benefit more from the presence of foreign investors, likely due to enhanced external incentives and reduced perceived risk of innovation. This result reinforces the view that institutional and policy contexts moderate the effectiveness of investor governance, as proposed by Zhang et al. (2023) and Hsu and Tian (2023). In line with Aghion et al. (2013), the evidence suggests that state-led innovation strategies can amplify the role of committed foreign capital. This is further supported by Flammer and Bansal (2017), who find that long-term institutional investors are more responsive to environmental and innovation-related objectives, especially when aligned with regulatory or policy incentives. The convergence effect is, therefore, both robust and economically meaningful, especially when aligned with national strategic priorities. This emphasises the complementarity between capital market mechanisms and industrial policy, highlighting how investor behaviour responds to broader institutional signals. In line with Howell (2017), targeted industrial policies may serve as credible signals to the market, reducing uncertainty and mobilising external capital towards long-horizon innovation. The MC2025 framework, in this regard, appears to reshape investor incentives and foster collaborative governance dynamics in innovation-intensive sectors.

3.7.4 Summary

This section examined the mechanisms and dynamic channels through which foreign institutional ownership shapes corporate innovation in China. Empirical findings suggest that FIOs influence R&D decisions selectively, reducing the probability of innovation participation at the extensive margin while exerting limited impact on investment intensity once R&D is initiated (Bushee, 1998; Czarnitzki and Lopes-Bento, 2013). Further heterogeneity emerges across investor types: passive foreign investors are marginally associated with higher R&D intensity, whereas long-term investors display mixed or even negative effects in contexts such as state-owned enterprises. Stratified Cox models reveal that FIOs accelerate the timing of innovation convergence across both ownership types and policy-supported sectors, with Kaplan–Meier curves visually reinforcing these results (Aghion et al., 2013; Howell, 2017; Flammer and Bansal, 2017). Collectively, these findings indicate that FIOs can act as filters at the innovation entry stage and as accelerators in aligning firms with industry benchmarks. The nature and magnitude of these effects are conditional on investor identity and institutional context.

3.8 Summary and Conclusions

3.8.1 Summary of Key Findings

This chapter investigated the relationship between foreign institutional ownership and corporate innovation in Chinese listed firms. Using a combination of panel regressions, interaction models, and survival analysis, the results offer four key insights.

First, higher foreign institutional ownership is associated with significantly lower R&D intensity. This suggests that foreign investors, on average, may adopt a conservative stance toward firms' innovative activities. This finding is consistent with the short-termism hypothesis (Bushee, 1998) and reflects foreign investors' tendency to favour

firms with more predictable cash flows and transparent accounting practices (Ferreira et al., 2010; Bena et al., 2017). Firms with higher foreign institutional ownership reach the industry-average level of R&D intensity more quickly. This finding is supported by Cox proportional hazards models and Kaplan–Meier survival curves, indicating that foreign ownership accelerates innovation convergence. The result aligns with studies emphasising the role of long-term investors in improving innovation efficiency (Aghion et al., 2013; Flammer and Bansal, 2017).

Third, the positive effect of foreign ownership on innovation is weaker in state-owned enterprises. This reflects institutional constraints on governance mechanisms in SOEs, such as political objectives, soft budget constraints, and reduced board independence (Shleifer and Vishny, 1994; Qian, 1996; Fan et al., 2007). The findings imply that external governance by foreign investors is limited when internal agency problems are entrenched. Finally, firms operating in MC2025 policy-supported industries experience a more substantial positive effect of foreign ownership on innovation. The interaction is particularly notable among short-term investors, implying that policy incentives can amplify foreign investors' willingness to support R&D activities, even when investment horizons are limited (Howell, 2017; Hsu and Tian, 2023). These results are further supported by interaction terms involving investor types, indicating that governance effects vary by both investment horizon and institutional context (Flammer and Bansal, 2017; Zhang et al., 2023).

3.8.2 Contributions

This study contributes to the literature on corporate governance, institutional ownership, and innovation primarily through its empirical evidence drawn from an emerging-market setting. It extends existing work on foreign institutional investors by examining how their presence shapes innovation outcomes within China's hybrid institutional environment. Whereas most prior research has focused on developed economies, the findings demonstrate that foreign institutional ownership (FIO) can influence firms'

R&D behaviour even in contexts characterised by state intervention and evolving market institutions. In this sense, the analysis provides evidence that foreign investors may facilitate innovation convergence and strategic adjustment through long-term monitoring and governance alignment mechanisms (Aghion et al., 2013; Flammer and Bansal, 2017).

The results also underscore the importance of contextual heterogeneity in shaping the governance effects of foreign ownership. By examining the interaction between FIO, ownership structure (SOE versus non-SOE), and policy orientation (MC2025 sectors), the study identifies conditions under which external monitoring is more or less effective. The empirical evidence indicates that foreign investors tend to exert stronger influence in policy-supported industries, whereas their governance effect is weaker in state-controlled firms. These findings are consistent with perspectives on institutional embeddedness and governance complementarity in transitional economies (Fan et al., 2007; Howell, 2017).

Finally, while the study adopts a survival analysis framework to capture the speed of R&D convergence, this approach should be viewed as an empirical extension rather than a methodological innovation. The use of Cox proportional hazards models allows for a more dynamic examination of firms' innovation adjustment processes and provides a robust test of the proposed mechanisms under different ownership and policy conditions. Overall, the chapter's contribution lies in offering systematic empirical evidence that clarifies how foreign institutional ownership operates as a governance force influencing innovation dynamics in an emerging-market context.

3.8.3 Implications

The findings of this study yield several policy and practical implications for regulators, corporate managers, and institutional investors.

For policymakers, the results underscore the value of sustained capital market

liberalisation. Foreign institutional investors, when granted stable and credible access to domestic equity markets, can promote corporate innovation through improved governance and long-term engagement. Ensuring transparent investment rules, reliable legal protection, and information disclosure standards can enhance the effectiveness of foreign capital in advancing national innovation goals (OECD, 2017; Lewellen and Lewellen, 2021). Furthermore, the results suggest that industrial policies such as MC2025 can be designed to complement, rather than crowd out, external governance. When public incentives are combined with market discipline, especially in strategic sectors, innovation outcomes improve (Howell, 2017). Policymakers may therefore consider encouraging foreign investor participation in policy-supported sectors through targeted equity programmes or relaxed ownership limits.

For corporate decision-makers, particularly in state-owned enterprises, the findings underscore the potential benefits of more effectively integrating foreign institutional ownership into governance processes. Allowing greater board-level access, reducing administrative opacity, and aligning managerial incentives with innovation targets can enable firms to leverage external governance resources better. This may be especially important in institutional contexts where internal constraints or political objectives traditionally limit innovation-driven decision-making (Fan et al., 2007; Bai et al., 2004).

Lastly, for institutional investors, particularly those with long-term strategies, the results provide empirical support for engaging with firms in innovation-intensive sectors. In China's policy-guided economy, understanding institutional features such as ownership structure and industrial policy alignment is essential for identifying governance opportunities that deliver innovation value (Aggarwal et al., 2011; Hsu and Tian, 2023). These insights also reinforce the strategic relevance of institutional complementarity, where market-based and state-led mechanisms can jointly shape investor behaviour and innovation outcomes.

Table 3.1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
fio_avg	0.107	0.182	0.0	1.0
ln_RD	-10.878	4.734	-13.816	5.523
size	7.616	1.578	0.0	15.926
lev	0.191	0.173	0.0	1.0
roa_winsor	0.051	0.08	-0.277	0.297
tobinq_winsor	1.727	1.958	0.0	11.207

Note: Table 3.1 presents the descriptive statistics for the core variables used in the main empirical analysis. The variable fio_avg captures the average annual proportion of foreign institutional ownership in each firm-year observation. ln_RD represents the natural logarithm of R&D expenditure, where the original R&D value is transformed by taking the logarithm of (R&D + 1) to accommodate zero values. size is defined as the natural logarithm of total assets, serving as a proxy for firm scale. lev denotes the book leverage ratio, calculated as the total liabilities divided by total assets. roa_winsor refers to the return on assets, winsorised at the 1st and 99th percentiles to mitigate the influence of outliers and computed as net income over total assets. Similarly, tobinq_winsor denotes Tobin's Q, calculated as the market value of the firm divided by the replacement cost of assets, and is also winsorised. All continuous variables have been winsorised at both tables (1% and 99%) to ensure robustness.

Table 3.2: Pearson Correlation Matrix

	fio_avg	ln_RD	size	lev	roa_winsor	tobinq_winsor
fio_avg	1					
ln_RD	-.065*	1				
size	.198*	.082*	1			
lev	.029*	-.171*	.304*	1		
roa_winsor	-.044*	-.030*	-.248*	-.350*	1	
tobinq_winsor	-.054*	.022*	-.076*	-.172*	-.123*	1

Note: Table 3.2 reports the Pearson correlation coefficients among the main variables used in the regression analysis. The variable fio_avg measures the average annual proportion of foreign institutional ownership. ln_RD denotes the natural logarithm of R&D expenditure, adjusted to accommodate zero values. size is defined as the logarithm of total assets, capturing firm scale. lev refers to the book leverage ratio, calculated as total liabilities divided by total assets. roa_winsor is the winsorised return on assets, representing profitability, while tobinq_winsor is the winsorised measure of Tobin's Q, indicating market valuation. Statistically significant correlations are denoted by an asterisk (* $p < 0.10$). While some correlations are statistically significant, their magnitudes are generally low, suggesting limited multicollinearity concerns among the explanatory variables. For precise variable definitions, see Table 3.3: Variable Definitions, Data Sources and Transformation.

Table 3.3: Variable Definitions, Data Sources and Transformation Methods

Variable Name	Definition	Construction / Transformation	Source / Reference
ln_RD	Log of R&D expenditure (in CNY), winsorised	Logged after winsorisation at 1% and 99%	CIQ database; Section 4.2
RD_Intensity	R&D intensity, measured as R&D/Sales	Ratio; winsorised at 1% and 99%	CIQ database; Hall & Lerner (2010)
fio_avg	Average foreign institutional ownership during sample period	Averaged over firm's active years; from CIQ institutional ownership data	CIQ institutional ownership files; Ferreira et al. (2010)
foreign_active	Indicator for active foreign institutional ownership (1 = active > passive)	Constructed from shareholding data; activity classified by portfolio churn	Own calculation based on Bushee (1998); Bena et al. (2017)
foreign_passive	Indicator for passive foreign institutional ownership (1 = passive ≥ active)	Constructed from shareholding data; passivity by complement	Own calculation based on Bushee (1998); Bena et al. (2017)
foreign_longterm	Indicator for long-term foreign institutions (based on portfolio turnover)	Portfolio holding ≥ threshold duration (e.g., 1 year); label-based	Defined per investment duration; Aghion et al. (2013)
foreign_shortterm	Indicator for short-term foreign institutions (based on portfolio turnover)	Portfolio holding < threshold duration (e.g., 1 year); label-based	Defined per investment duration; Aghion et al. (2013)
SOE	State-owned enterprise dummy (1 = SOE, based on CSRC classification)	Derived from CIQ or CSRC official classification (binary)	CSRC classification; Fan et al. (2007)
MC2025	Dummy for firms	Based on sectoral	Wübbeke et al.

	in MC2025 target industries	matching with MC2025 policy document	(2016); Hsu and Tian (2023)
lev	Leverage = Total Debt / Total Assets	Calculated from balance sheet items (CIQ)	CIQ balance sheet data; Flannery and Rangan (2006)
size	Firm size = ln(Total Assets)	Log transformation of Total Assets (CIQ)	CIQ; standard in finance literature
profitability	Profitability = Net Income / Total Assets	From CIQ; standard accounting ratio	CIQ; consistent with Almeida & Campello (2007)
tobinq	Tobin's Q ≈ (Market Cap + Total Debt) / Total Assets	Approximated from market and accounting values	Fama & French (1993); market cap + debt / assets
tang	Asset tangibility = Fixed Assets / Total Assets	Fixed Assets / Total Assets (CIQ)	CIQ; Belderbos et al. (2004)
age	Firm age = Current year – Year of IPO	Derived from firm founding or IPO year (CIQ)	CIQ firm data; Bena & Li (2014)
industry_median_rd	Median R&D intensity of the firm's industry-year (excluding focal firm)	Calculated annually for each industry (2-digit CSRC)	Own calculation; industry-adjusted method
failure	Event indicator: 1 if firm reaches industry median RD_Intensity	Binary outcome in survival model	Cleves et al. (2010)
duration	Time (in years) from baseline to event or censoring	Constructed for Cox model; censoring applied if no event observed	Cleves et al. (2010); Cox model setup

Table 3.4 Baseline Regression Results

Variable	Coefficient	Std. Err.	t	P>|t|
fio_avg	-0.495***	0.199	-2.49	0.013
size	-0.139***	0.018	-7.83	0.000
lev	-0.779***	0.128	-6.11	0.000
roa_winsor	0.578*	0.304	1.90	0.057
tobinq_winsor	-0.060***	0.010	-5.95	0.000
tang	0.227**	0.112	2.02	0.043
Year FE	Yes			
Clustered SE (firm)	Yes			
Observations	47,111			
R-squared	0.767			

Note: Table 3.4 presents the baseline panel regression results examining the relationship between foreign institutional ownership (fio_avg) and firms' R&D intensity. The model is estimated using ordinary least squares (OLS) with year fixed effects and firm-clustered robust standard errors. Firm fixed effects are not included because the specification incorporates firm-level averages and lagged variables that are time-invariant within firms, which would be absorbed by firm dummies. The coefficient on fio_avg is negative and statistically significant at the 1% level, indicating that higher foreign ownership is associated with lower R&D intensity. Control variables include size (firm scale), lev (leverage), roa_winsor (return on assets), tobinq_winsor (market valuation), and tang (asset tangibility). All control variables show expected signs and are statistically significant in most cases. Detailed definitions and sources of all variables are provided in Table 3.3. Standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.5: Cox Proportional Hazard Models – Foreign Ownership and Time to R&D Benchmark

Variables	Model (1) No Controls	Model (2) Controls: size, lev
Average Foreign Ownership (fio_avg)	-1.151*** (0.350)	-1.306*** (0.346)
Firm Size (size)		0.188*** (0.045)
Leverage (lev)		-0.761** (0.357)

Note: Table 3.5 presents the results of Cox proportional hazard models assessing the effect of average foreign institutional ownership (fio_avg) on the time firms take to reach the industry benchmark for R&D intensity. In Model (1), without controls, fio_avg shows a significantly negative coefficient (−1.151, $p < 0.01$), suggesting that firms with higher foreign ownership tend to reach the R&D threshold more quickly. Model (2) introduces firm-level controls, including firm size (size) and leverage (lev). The coefficient on fio_avg remains negative and statistically significant (−1.306, $p < 0.01$), reinforcing the robustness of the result. The positive effect of firm size and the negative effect of leverage align with expectations, indicating that larger firms are faster to innovate, while highly leveraged firms face greater constraints. Variable definitions and data sources are detailed in Table 3.3. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.6 Baseline Random Effects Regression of Foreign Institutional Ownership on Innovation Convergence

	(1) ln_RD
fio_avg	-0.495**
	(0.199)
size	-0.139***
	(0.018)
lev	-0.779***
	(0.128)
roa	0.578*
	(0.304)
tobinq	-0.060***
	(0.010)
tang	0.227**
	(0.112)
Constant	-12.525***
	(0.146)
Observations	47111
r^2	0.767

Note: Table 3.6 reports the baseline panel regression examining the relationship between foreign institutional ownership (FIO) and firms' R&D intensity. The dependent variable is the natural logarithm of R&D expenditure (ln_RD). The estimated coefficient on FIO (−0.495, $p < 0.05$) indicates a negative and statistically significant association, suggesting that firms with higher levels of foreign ownership tend to exhibit lower R&D intensity. Control variables are included as defined in Table 6.1. Year fixed effects are controlled for but not reported for brevity. Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 3.7 Heterogeneous Effects of Foreign Institutional Ownership on Innovation Convergence: SOEs vs Non-SOEs

VARIABLES	(1) SOE Firms	(2) Non-SOE Firms
fio_avg	-0.880***	-0.574**
	(0.301)	(0.224)
size	0.001	-0.129***
	(0.024)	(0.024)
lev	-1.153***	-0.622***
	(0.172)	(0.174)
roa_winsor	-0.162	0.407
	(0.381)	(0.376)
tobinq_winsor	0.009	-0.082***
	(0.019)	(0.012)
tang	-0.296*	0.395***
	(0.167)	(0.141)
Constant	-13.297***	-12.620***
	(0.210)	(0.186)
Observations	14,531	32,580
R-squared	0.731	0.781

Note: Table 3.7 presents the results of separate regressions for state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs) to examine the heterogeneous impact of foreign institutional ownership (fio_avg) on the speed of innovation convergence. In both samples, the coefficient on fio_avg is negative and statistically significant, indicating that foreign ownership accelerates innovation adjustment. However, the effect is more pronounced among SOEs (-0.880, $p < 0.01$) than in non-SOEs (-0.574, $p < 0.05$), suggesting that foreign investors may play a particularly important role in enhancing innovative discipline in state-controlled firms. Among controls, leverage (lev) consistently shows a negative effect, while profitability (roa_winsor) is insignificant in both groups. Notably, firm size is only negatively associated with innovation timing in non-SOEs, and tangibility shows opposite effects between groups. All variables are defined in Table 3.3. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 3.8 – Robustness Check: Tobit Regression of R&D Intensity

Variable	Coefficient	Std. Err.	P-value
fio_avg	-1.548***	0.551	0.005
size	0.622***	0.172	0.000
lev	-6.018***	1.679	0.000
roa_winsor	-6.122***	2.244	0.006
tobinq_winsor	-0.138***	0.050	0.006
tang	1.576***	0.595	0.008
_cons	-7.395***	2.064	0.000

Notes: Table 3.8 presents the results of a Tobit regression model used as a robustness check to account for the left-censoring nature of R&D intensity, which is bound at zero for non-reporting firms. The dependent variable is RDIntensity, left-censored at zero. The core explanatory variable, fio_avg, remains negatively and significantly associated with R&D intensity (coefficient = –1.548, $p < 0.01$), consistent with the baseline findings. Control variables such as firm size and leverage also show significant and expected effects. The model includes firm-clustered robust standard errors to adjust for heteroscedasticity. This specification strengthens the robustness of the core findings by addressing potential censoring bias in the distribution of R&D data. Tobit model left-censored at 0. The Tobit model does not produce a conventional R-squared. Model fit can be assessed using the pseudo-R-squared derived from the log-likelihood ratio. Robust standard errors clustered at the firm level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent variable: RDIntensity (left-censored at zero). Tobit regression results with firm-level clustered standard errors.

Table 3.9: Interaction Models of Foreign Institutional Ownership with Ownership and Policy Contexts

Panel A: FIO × SOE – Ownership Heterogeneity in Innovation Effects

Variable	Coefficient	Std. Err.	P-value
fio_avg	-0.651***	0.218	0.003
soe	-0.382***	0.045	0.000
FIO × SOE	0.023	0.371	0.950
size	-0.099***	0.018	0.000
lev	-0.805***	0.127	0.000
roa_winsor	0.388	0.306	0.205
tobinq_winsor	-0.059***	0.010	0.000
tang	0.202*	0.112	0.071
_cons	-12.592***	0.145	0.000
Observations	47,111		
R-squared	0.75		

Notes: Table 3.9 Panel A presents the results from an OLS regression estimating the impact of foreign institutional ownership (FIO), state ownership (SOE), and their interaction on firms' R&D intensity. The dependent variable is the natural logarithm of R&D intensity (ln_RD). The coefficient on fio_avg is negative and statistically significant at the 1% level, indicating that foreign institutional ownership is generally associated with reduced innovation intensity. The SOE dummy (soe) also shows a strong negative effect, while the interaction term FIO × SOE is statistically insignificant, suggesting that the effect of FIO on innovation does not vary significantly across state and non-state firms in this specification. Year fixed effects are included to control for time-specific shocks, and standard errors are robust to heteroscedasticity and clustered at the firm level. Statistical significance is denoted as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.9

Panel B: FIO × MC2025 – Policy Industry Heterogeneity in Innovation Effects

Variable	Coefficient	Std. Err.	P-value
fio_avg	-0.816***	0.209	0.000
mc2025	0.661***	0.042	0.000
FIO × MC2025	0.742*	0.398	0.062
size	-0.101***	0.017	0.000
lev	-0.307**	0.124	0.013
roa_winsor	0.515*	0.292	0.078
tobinq_winsor	-0.064***	0.010	0.000
tang	0.360***	0.108	0.001
_cons	-13.234***	0.146	0.000
Observations	47,111		
R-squared	0.76		

Notes: OLS regression of ln (R&D intensity) on FIO, MC2025 policy industry dummy, and their interaction term. Robust standard errors clustered at the firm level. Year fixed effects included. * p < 0.10, ** p < 0.05, *** p < 0.01. Dependent variable: ln_RD (log R&D intensity). OLS regression with FIO, MC2025 dummy, and their interaction. Firm-clustered standard errors. Year fixed effects included.

Table 3.10

VARIABLES	(1) MC2025 Industries	(2) Non-MC2025 Industries
fio_avg	0.022	-0.844***
	(0.339)	(0.196)
size	-0.145***	-0.093***
	(0.024)	(0.024)
lev	-0.456***	-0.285*
	(0.166)	(0.168)
roa_winsor	-0.868**	2.298***
	(0.395)	(0.387)
tobinq_winsor	-0.095***	-0.046***
	(0.012)	(0.015)
tang	0.522***	0.227
	(0.152)	(0.147)
Constant	-12.636***	-13.049***
	(0.202)	(0.196)
Observations	23,475	23,636
R-squared	0.861	0.674

Notes: Table 3.10 reports the regression results comparing the effects of foreign institutional ownership on R&D intensity between industries targeted by the "Made in China 2025" (MC2025) policy and those that are not. In Column (1), which includes MC2025 industries, the coefficient on fio_avg is positive but statistically insignificant, suggesting no clear relationship between foreign ownership and R&D intensity in these policy-favoured sectors. In contrast, Column (2) shows a significantly negative coefficient (−0.844, $p < 0.01$) in non-MC2025 industries, indicating that in less policy-supported sectors, foreign ownership is associated with reduced innovation investment. Other control variables perform as expected, and the models include year fixed effects. Standard errors are clustered at the firm level and robust to heteroskedasticity. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 3.11 – DID Regression: MC2025 Policy and R&D Intensity

Variable	Coefficient	Std. Err.	P-value
treat	-0.055**	0.027	0.044
post2015	4.262***	1.333	0.001
treat × post2015	1.934***	0.075	0.000
fio_avg	-0.442**	0.192	0.021
size	-0.114***	0.017	0.000
lev	-0.340***	0.119	0.004
roa_winsor	0.547*	0.285	0.055
tobinq_winsor	-0.075***	0.009	0.000
tang	0.376***	0.106	0.000
_cons	-12.855***	0.143	0.000

Notes: This table presents DID regression results identifying the effect of the 'Made in China 2025' policy on R&D intensity in targeted industries. The variable 'treat' equals 1 for MC2025 industries. 'post2015' equals 1 for years from 2015 onward. 'did' is the interaction term. All regressions include firm-level controls and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent variable: ln_RD (log of R&D intensity). OLS regression with DID specification using MC2025 industry classification. The interaction term (treat × post2015) captures the policy effect. Firm-clustered robust standard errors. Year fixed effects included.

Table 3.12 – Triple Interaction Regression: FIO × MC2025 × post-2015

Variable	Coefficient	Std. Err.	P-value
fio_avg	1.115***	0.107	0.000
treat	0.632***	0.042	0.000
post2015	6.690***	1.219	0.000
fio × treat	-1.087***	0.322	0.001
fio × post2015	-5.480***	0.438	0.000
fio × treat × post2015	5.277***	0.677	0.000
size	-0.121***	0.017	0.000
lev	-0.272**	0.120	0.023
roa_winsor	0.501*	0.284	0.078
tobinq_winsor	-0.071***	0.009	0.000
tang	0.378***	0.106	0.000
_cons	-13.248***	0.145	0.000

Notes: This table presents results from a triple interaction regression assessing whether the effect of FIO on R&D intensity varies based on both policy industry status (MC2025) and the post-policy period (year ≥ 2015). The interaction term 'fio_treat_post' identifies the joint effect. * p < 0.10, ** p < 0.05, *** p < 0.01. Dependent variable: ln_RD (log of R&D intensity). OLS regression includes a triple interaction term between foreign ownership, MC2025 policy industry status, and the post-policy period (post-2015). Firm-level controls and year fixed effects are included. Standard errors are clustered at the firm level.

Table 3.13: Two-Part Model – Foreign Ownership and R&D

	(1) has_rd	(2) ln_RD
main		
fio_avg	-0.425*	0.0537
	(0.243)	(0.197)
size	-0.136***	-0.364***
	(0.0236)	(0.0212)
lev	-0.819***	-2.058***
	(0.178)	(0.202)
roa_winsor	0.790**	-2.088***
	(0.335)	(0.377)
tobinq_winsor	-0.0849***	0.0626***
	(0.0101)	(0.00958)
tang	0.0358	0.0952
	(0.141)	(0.141)
_cons	-1.145***	-0.401
	(0.204)	(0.416)
N	47185	10693

Note: ln_RD = log(R&D/Sales); fio_avg = average foreign institutional ownership over observation window.Table 8.1: Two-part model regression results. Column (1) reports a Probit estimation on the probability of engaging in R&D activities, while Column (2) presents an OLS regression on the log R&D intensity conditional on participation. The key explanatory variable is average foreign institutional ownership (fio_avg). All models control firm size, leverage, profitability, Tobin's Q, asset tangibility, and year fixed effects. Robust standard errors clustered at the firm level are reported in parentheses. Standard errors in parentheses $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

Table 3.14 Panel A: Foreign Investor Type and R&D Investment

	(1) Active	(2) Passive	(3) Long-Term	(4)Short-Term
Foreign Active	0.000			
	(0.000)			
Foreign Passive		0.000*		
		(0.000)		
long-term ownership			-0.044	
			(0.074)	
Short-term ownership				-0.178***
				(0.057)
size	-0.144***	-0.144***	-0.066	-0.064
	(0.018)	(0.017)	(0.042)	(0.042)
lev	-0.710***	-0.715***	-1.169***	-1.176***
	(0.127)	(0.127)	(0.211)	(0.211)
roa,Winsorized	0.551*	0.549*	-0.004	-0.114
	(0.309)	(0.309)	(0.545)	(0.539)
tobinq,Winsorized	-0.052***	-0.052***	0.059***	0.055***
	(0.011)	(0.010)	(0.020)	(0.021)
tang	0.235**	0.235**	0.019	0.028
	(0.114)	(0.114)	(0.181)	(0.180)
Constant	-12.589***	-12.583***	-12.835***	-12.749***
	(0.151)	(0.151)	(0.406)	(0.403)
Observations	46109	46109	17948	17948

Notes: This table reports OLS regressions of R&D intensity (log of R&D/Sales) on four types of foreign institutional ownership: active, passive, long-term, and short-term. All regressions control for firm size, leverage, profitability (winsorized ROA), Tobin's Q, asset tangibility, and year fixed effects. Standard errors are clustered at the firm level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.14 Panel B. Interaction Effects between Foreign Investor Types and SOE Status
Dependent Variable: ln_RD (log of R&D Intensity)

	(1) Active	(2) Passive	(3) Long-Term	(4)Short-Term
foreign_active	0.000			
	(0.000)			
SOE Dummy	-0.349***	-0.339***	-0.075	-0.133*
	(0.036)	(0.035)	(0.124)	(0.074)
SOE × Active	0.000*			
	(0.000)			
foreign_passive		0.000		
		(0.000)		
SOE × Passive		-0.000		
		(0.001)		
long-term ownership			0.119	
			(0.102)	
SOE × Long-Term			-0.384***	
			(0.139)	
short-term ownership				-0.030
				(0.081)
SOE × Short-Term				-0.368***
				(0.108)
size	-0.110***	-0.109***	-0.034	-0.029
	(0.018)	(0.018)	(0.042)	(0.042)
lev	-0.721***	-0.729***	-1.174***	-1.162***
	(0.127)	(0.127)	(0.211)	(0.211)
roa,Winsorized	0.376	0.385	-0.235	-0.305
	(0.312)	(0.312)	(0.542)	(0.536)
tobinq,Winsorized	-0.050***	-0.050***	0.056***	0.054***
	(0.010)	(0.010)	(0.020)	(0.021)
tang	0.212*	0.211*	0.001	0.020
	(0.114)	(0.114)	(0.180)	(0.180)
Constant	-12.650***	-12.656***	-13.056***	-12.981***
	(0.151)	(0.150)	(0.406)	(0.408)
Observations	46109	46109	17948	17948

Notes: This table reports interaction regressions between foreign investor type and a dummy for state-owned enterprises (SOE). The dependent variable is ln_RD. All regressions include the same controls and fixed effects as Panel A. Interaction terms capture heterogeneity in the effect of foreign investors within SOEs versus non-SOEs. Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.14 Panel C. Interaction Effects between Foreign Investor Types and MC2025 Policy Support

	(1) Active	(2) Passive	(3) Long-Term	(4)Short-Term
Foreign Active	0.000			
	(0.000)			
MC2025 Dummy	0.727***	0.725***	0.761***	0.407***
	(0.035)	(0.035)	(0.134)	(0.088)
MC2025 × Active	0.000			
	(0.000)			
Foreign Passive		0.000		
		(0.000)		
MC2025 × Passive		0.002***		
		(0.000)		
Foreign Long-term			-0.226**	
			(0.102)	
MC2025×Long-term			0.357**	
			(0.142)	
Foreign Short-term				-0.593***
				(0.065)
MC2025 × Short-term				0.926***
				(0.111)
size	-0.108***	-0.108***	-0.036	-0.033
	(0.017)	(0.017)	(0.040)	(0.040)
lev	-0.240*	-0.241**	-0.344*	-0.340*
	(0.123)	(0.123)	(0.205)	(0.204)
roa, Winsorized	0.435	0.425	0.126	0.075
	(0.298)	(0.298)	(0.521)	(0.513)
tobinq, Winsorized	-0.056***	-0.057***	0.034*	0.034*
	(0.010)	(0.010)	(0.019)	(0.020)
tang	0.364***	0.369***	0.335**	0.341**
	(0.109)	(0.109)	(0.169)	(0.168)
Constant	-13.308***	-13.303***	-13.616***	-13.390***
	(0.151)	(0.151)	(0.384)	(0.371)
Observations	46109	46109	17948	17948

Notes: This table presents OLS regression results testing the moderating role of MC2025 policy support on the relationship between foreign institutional investor types and firm-level R&D intensity. The dependent variable is ln_RD. All models control firm characteristics (size, leverage, ROA, Tobin's Q, tangibility) and include year fixed effects. Standard errors are clustered at the firm level. Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.15 A: Stratified Cox Model by SOE Ownership

	Time to R&D Benchmark
fio_avg	-0.999*
	(0.554)
size	0.188***
	(0.064)
lev	-1.187***
	(0.363)
Observations	938

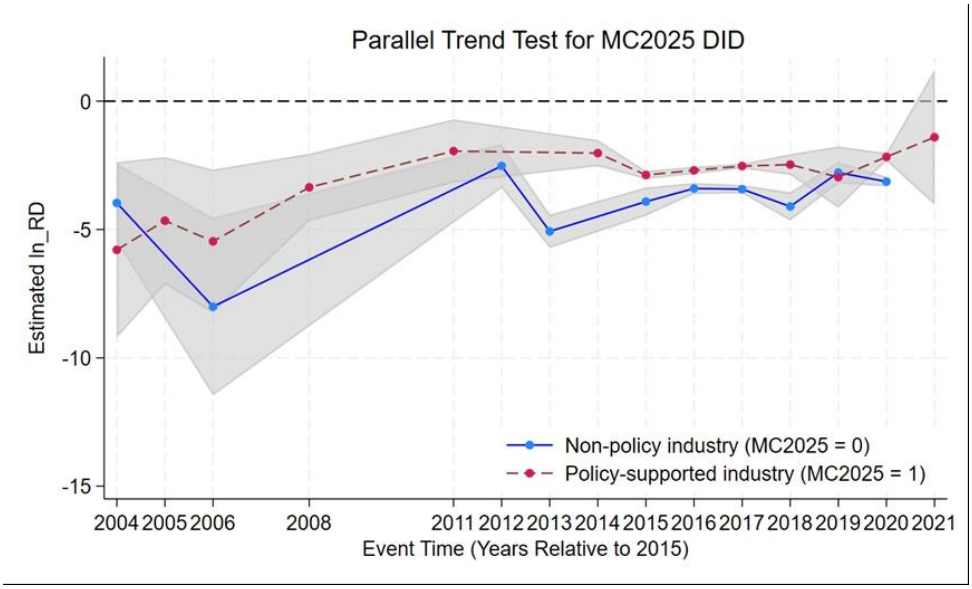
Notes: Table 3.15A presents the results from a stratified Cox proportional hazard model estimating the impact of foreign institutional ownership on the time to reach the industry-average level of R&D intensity, stratified by SOE versus non-SOE firms. The model includes fio_avg, firm size (size), and leverage (lev) as covariates. The coefficient for fio_avg is negative and marginally significant ($p < 0.10$), suggesting that higher foreign institutional ownership is associated with a faster convergence to the R&D benchmark, particularly when stratified by ownership type. The model reports hazard ratios with robust standard errors clustered at the firm level. This stratified approach allows for non-proportional baseline hazards across SOE and non-SOE groups. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3.15B: Stratified Cox Model by MC2025 Industry

	Time to R&D Benchmark
fio_avg	-1.043*
	(0.554)
size	0.200***
	(0.067)
lev	-1.144***
	(0.367)
Observations	938

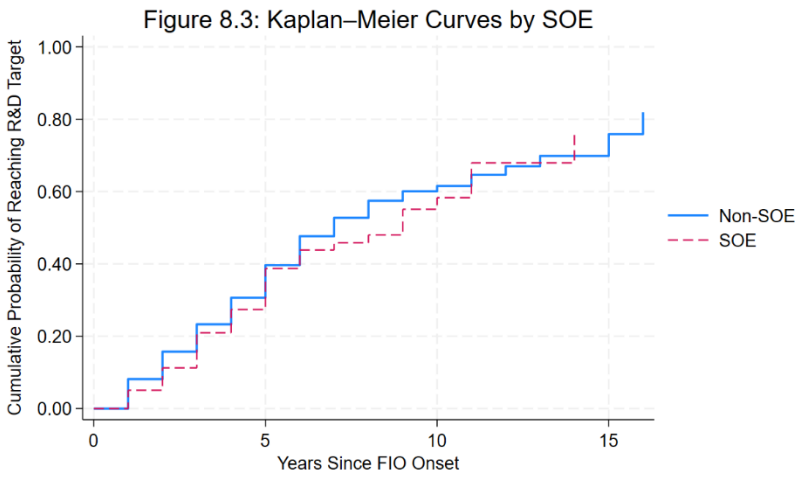
Notes: Table 3.15 B displays the results of a stratified Cox proportional hazard model estimating the association between foreign institutional ownership (fio_avg) and the time it takes for a firm to reach the industry-average R&D intensity level, stratified by MC2025 industry classification. The model includes fio_avg, firm size (size), and leverage (lev) as covariates. The coefficient for fio_avg is negative and statistically significant at the 10% level, indicating that foreign institutional ownership may accelerate innovation convergence particularly in MC2025-supported industries. Robust standard errors clustered at the firm level are reported. The stratification allows for heterogeneous baseline hazards across policy-targeted and non-targeted sectors. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Figure 3.1: Parallel Trend Test for MC2025 DID



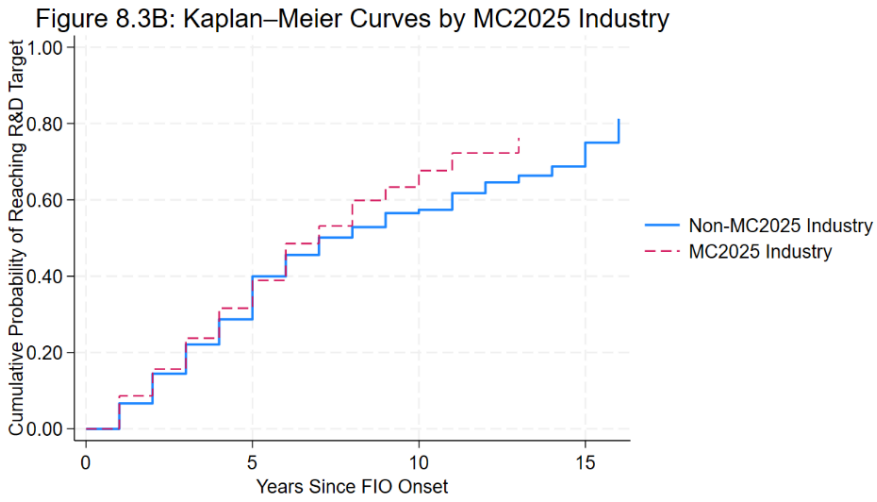
Note: Figure 3.1: Parallel Trend Test for MC2025 DID This figure presents the event-study estimates of ln_RD for firms in policy-supported industries (MC2025 = 1, red dashed line) versus non-policy industries (MC2025 = 0, blue solid line), centred around the policy benchmark year 2015. The trends prior to the policy exhibit near-parallel movement, supporting the parallel trend assumption required for the DID estimation. Post-2015, policy-supported firms show consistently higher R&D intensity, suggesting a positive policy effect.

Figure 3.2 A. Kaplan–Meier Curves by SOE Ownership



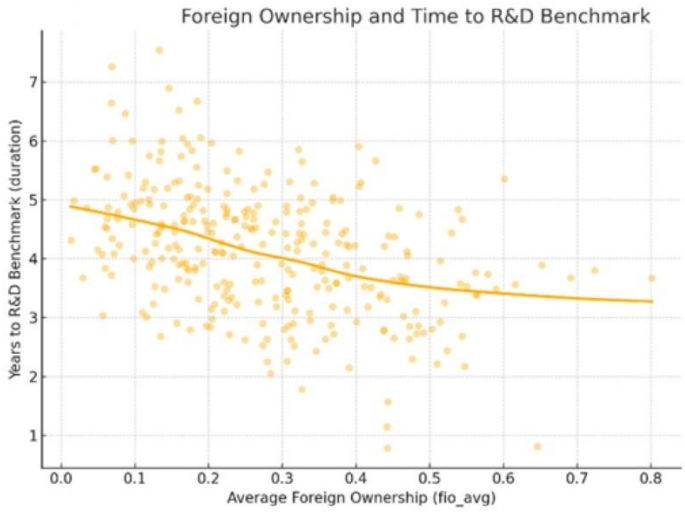
Notes: This figure plots the Kaplan–Meier survival curves for SOE and non-SOE firms, where the event of interest is reaching the industry median level of R&D intensity for the first time. The x-axis represents the number of years since foreign institutional ownership (FIO) onset, and the y-axis denotes the cumulative probability of reaching the R&D benchmark. The dashed red line corresponds to SOEs, while the solid blue line represents non-SOEs. The figure shows that non-SOE firms tend to reach the R&D target faster than SOEs, consistent with the weaker governance effects of foreign ownership in state-owned firms (Hsu and Tian, 2023).

Figure 3.2 B. Kaplan–Meier Curves by MC2025 Industry



Notes: This figure illustrates the Kaplan–Meier survival curves by industry classification, distinguishing between firms in MC2025-targeted industries and those outside the policy scope. The event of interest is defined as the first time a firm reaches the industry median R&D intensity. The horizontal axis measures years since the onset of foreign institutional ownership (FIO), and the vertical axis shows the cumulative probability of reaching the R&D target. The dashed red line represents firms within MC2025 industries, while the solid blue line denotes firms in other sectors. The steeper curve for MC2025 firms suggests that policy-supported industries benefit more from foreign investor presence, consistent with enhanced incentives for innovation alignment (Aghion et al., 2013; Hsu and Tian, 2023).

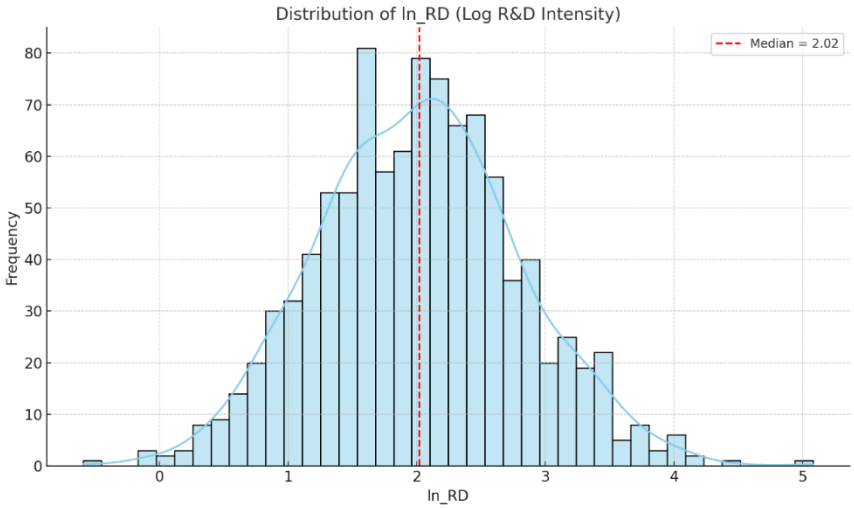
Figure 3.3: Foreign Institutional Ownership and Time to Innovation Benchmark



Notes: Figure 3.3. Foreign Ownership and Time to R&D Benchmark**.** This figure illustrates the relationship between the average foreign institutional ownership (fio_avg) and the number of years it takes for firms to reach the industry R&D benchmark. The fitted trend line suggests a negative association: firms with higher sustained foreign ownership tend to reach innovation benchmarks more quickly.

Appendix B: Chapter 3

Appendix Figure B3.1 Distribution of industry-adjusted R&D intensity



Notes: This figure presents the distribution of the log-transformed R&D intensity variable (ln_RD), adjusted by industry median. The histogram reflects the frequency of observations across ln_RD values, while the blue kernel density overlay illustrates smoothed distribution. The vertical red dashed line indicates the sample median (2.02). The distribution is approximately normal with slight right skewness, suggesting a central tendency around the industry benchmark.

CHAPTER 4
FOREIGN INSTITUTIONAL OWNERSHIP AND FIRM PERFORMANCE

4.1 Introduction

Over the past two decades, China has progressively liberalised its capital markets to facilitate foreign institutional participation. Policy initiatives such as the Qualified Foreign Institutional Investor (QFII) programme, the Renminbi QFII scheme (RQFII), and the Shanghai-Hong Kong Stock Connect have substantially increased the accessibility of China's A-share market to global asset managers (Huang and Zhu, 2015). Within this unique institutional context, foreign institutional investors are widely hypothesised to act as external governance agents by enhancing board oversight, improving disclosure quality, and imposing market discipline (Ferreira and Matos, 2008; Aggarwal et al., 2011). These governance channels may potentially translate into improved firm-level outcomes, including financial performance. Nevertheless, empirical consensus on this relationship remains elusive.

While a growing body of literature has established a positive association between FIO and firm performance in developed economies (Cornett et al., 2007; Bena et al., 2017), relatively little is known about how such effects manifest in emerging markets. In particular, the extent to which foreign capital enhances or undermines corporate performance in transitional economies such as China, characterised by concentrated ownership structures, soft budget constraints, and political interference, warrants further context-specific investigation.

This chapter offers a more granular analysis of how foreign institutional ownership impacts the performance of firms in China. Rather than assuming a uniform governance effect, this analysis examines how different types of foreign investors, distinguished by investment horizons and engagement styles, may exert heterogeneous influences (Bushee, 1998; Chen, Harford, and Li, 2007). Specifically, the chapter examines the roles of active versus passive investors and long-term versus short-term holders,

providing empirical evidence on how their investments shapes firm-level financial outcomes (Gaspar, Massa, and Matos, 2005). By identifying the performance consequences of distinct types of foreign investors, the chapter aims to clarify the conditions under which global capital serves as a value-enhancing force in China's economy. In doing so, it contributes to ongoing debates on the governance role of foreign ownership and the contextual contingencies of capital market globalisation.

4.1.1 The Objectives

The rise of foreign institutional ownership in China's equity markets has introduced new dynamics to corporate governance and performance evaluation within the Chinese context. Unlike developed markets, where legal protection and investor activism are well institutionalised, China presents a hybrid landscape combining state control, evolving regulatory frameworks, and a large base of speculative retail investors (Allen et al., 2005; Fan et al., 2007). This structural complexity raises an important research question: To what extent does FIO influence firm performance in China, and through what mechanisms?

Empirical studies on FIO have predominantly focused on developed markets, finding positive associations with profitability, valuation, and governance efficiency (Ferreira and Matos, 2008; Aggarwal et al., 2011; Bena et al., 2017). However, the applicability of these findings to emerging markets remains theoretically and empirically uncertain. In China, FIO may face constraints stemming from limited board access, information asymmetries, and conflicts with state-influenced firm objectives (Huang and Zhu, 2015; Aggarwal et al., 2011). Therefore, the relationship between FIO and corporate performance cannot be inferred simply from the results but instead requires careful background analysis.

To address this question, this chapter empirically investigates the influence of FIO on firm performance using firm-level panel data from 2004 to 2023. It employs key

performance indicators, including return on assets (ROA), earnings before interest and taxes (EBIT), and return on equity (ROE), while also using Tobin's Q to capture market-based evaluations. Multiple strategies are employed to mitigate endogeneity, including the use of lagged ownership variables and a quasi-natural experiment based on the Shanghai-Hong Kong Stock Connect reform (Liu et al., 2021). Ultimately, this research aims to offer a comprehensive understanding of how global institutional capital interacts with China's distinctive market environment to shape firm-level outcomes. By doing so, it contributes to both the international corporate governance literature and policy debate surrounding ownership liberalisation in China.

4.1.2 Chapter Structure

This chapter is organised into eight sections, each contributing to a comprehensive investigation of how foreign institutional ownership influences corporate performance in China. The remainder of the chapter is structured as follows. Section 4.2 reviews the theoretical and empirical literature on FIO and firm performance, and develops four hypotheses based on monitoring theory, ownership structure, and governance channels. Section 4.3 describes the data sources and variable construction, while Section 4.4 outlines the empirical methodology, including baseline regression and identification strategies. Section 4.5 presents the main regression results using ROA, EBIT, and ROE as key performance indicators. Section 4.6 conducts a series of robustness checks to address endogeneity and measurement concerns. Section 4.7 examines the mechanisms and heterogeneity of FIO effects, with a focus on investor concentration, breadth, and institutional types. Finally, Section 4.8 concludes with a summary of key findings and discusses implications for research and policy.

4.2. Literature Review and Hypotheses

4.2.1 Performance Metrics and Theoretical Relevance in FIO Research

To accurately evaluate the influence of foreign institutional ownership (FIO) on firm performance, it is essential to employ multiple indicators that capture distinct dimensions of corporate value creation. This study adopts three core accounting-based measures—return on assets (ROA), return on equity (ROE), and earnings before interest and taxes (EBIT)—which have been widely applied in the corporate governance and international finance literature as proxies for internal efficiency, profitability, and operational performance (Cornett et al., 2007; Aggarwal et al., 2011; Ferreira and Matos, 2008).

ROA, defined as net income divided by total assets, reflects the efficiency with which a firm utilises its asset base to generate earnings. It is a direct indicator of managerial capability and operational discipline (Demsetz and Villalonga, 2001). Empirical evidence suggests that FIO enhances ROA through improved resource allocation and monitoring efficiency. Recent studies show that foreign institutional investors promote more effective cost management and investment decisions in emerging markets (Choi et al., 2020; Kim et al., 2023). Similarly, Gul et al. (2010) find that foreign blockholders in Chinese firms are associated with higher ROA, particularly when internal governance mechanisms are weak.

ROE, calculated as net income divided by shareholders' equity, measures the return generated for equity holders and incorporates the effects of leverage and capital structure. Prior research links institutional ownership to higher ROE through enhanced incentive alignment and reduced agency costs (Cornett et al., 2007). More recent work provides consistent evidence that foreign investors, especially those with long-term orientations, improve profitability by disciplining management and promoting financial transparency (Chen et al., 2021; Jeon et al., 2022). In the Chinese context, Gul et al. (2010) and Li and Li (2019) report that FIO contributes positively to ROE, especially among firms with better information environments and limited state interference.

EBIT, or earnings before interest and taxes, isolates a firm's core operating performance from the effects of financing and taxation. It thus provides a neutral assessment of managerial productivity and resource allocation (Palepu and Healy, 2008). Damodaran (2007) argues that EBIT is particularly effective for cross-national studies of governance and performance, as it is not influenced by differences in capital structures or tax regimes. More recent evidence confirms that EBIT-based performance measures better capture the operational consequences of foreign monitoring, particularly in emerging markets with limited transparency (Zhang and Xie, 2021; Han and Shen, 2024).

The use of multiple accounting-based indicators also mitigates a common methodological challenge: performance metrics can be sensitive to firm characteristics and market volatility. Market-based measures such as Tobin's Q, although informative about investor expectations, are often distorted by speculative sentiment and valuation noise (Mitton, 2006; Dang et al., 2023). By contrast, accounting-based indicators like ROA, ROE, and EBIT offer more stable and comparable assessments of firm fundamentals, particularly in markets characterised by information asymmetry and behavioural trading patterns, such as China's A-share market (Fan et al., 2007; Li et al., 2020).

Drawing upon these theoretical insights and empirical findings, the following hypothesis is proposed:

H4.1: *Foreign institutional ownership is positively associated with firm performance, as measured by ROA, ROE, and EBIT.*

This hypothesis reflects monitoring, discipline, and information-based mechanisms through which foreign institutional ownership may enhance managerial accountability, resource efficiency, and ultimately financial outcomes, particularly in emerging markets where internal governance frameworks remain underdeveloped (Ferreira and Matos, 2008; Choi et al., 2020; Kim et al., 2023).

4.2.2 Measurement Robustness: Alternative Performance Metrics

The validity of empirical evidence in corporate governance research depends critically on the choice of performance metrics. Different indicators capture distinct dimensions of firm success, such as operational efficiency, profitability, and market valuation, each reflecting different theoretical mechanisms. To ensure robustness and generalisability, this study examines whether the observed relationship between foreign institutional ownership (FIO) and firm performance remains consistent across alternative performance measures.

A key forward-looking indicator is Tobin's Q, which represents the market valuation of a firm relative to the replacement cost of its assets. Higher values of Tobin's Q signal stronger investor confidence and are often interpreted as evidence of better governance and lower agency costs (Demsetz and Villalonga, 2001; Mitton, 2006). More recent studies reaffirm its relevance in emerging markets, showing that FIO enhances market valuation through improved disclosure and investor recognition (Li et al., 2020; Kim et al., 2023; Han and Shen, 2024). However, because Tobin's Q reflects market expectations, it is also vulnerable to short-term sentiment and volatility, particularly in China's retail-dominated equity market. To complement this market-based indicator, accounting-based measures such as ROA, ROE, and EBIT provide more stable evaluations grounded in realised financial outcomes. ROA and EBIT capture operational efficiency and managerial productivity, while ROE incorporates both operational performance and capital structure decisions. These indicators help identify whether FIO improves internal resource allocation and profitability through governance and monitoring mechanisms (Cornett et al., 2007; Aggarwal et al., 2011; Jeon et al., 2022). Recent evidence suggests that accounting-based measures yield more reliable results in less efficient markets, where prices may deviate from fundamentals (Zhang and Xie, 2021; Dang et al., 2023).

Existing findings remain mixed regarding which metric best captures governance effects. Some studies report stronger FIO–performance associations when using

accounting-based indicators, suggesting that foreign investors improve internal efficiency and capital allocation (Cornett et al., 2007; Choi et al., 2020). Others find more pronounced effects on market-based measures, reflecting enhanced investor perception rather than operational change (Aggarwal et al., 2011; Kim et al., 2023). These discrepancies underscore the importance of applying multiple performance measures to avoid overstating results derived from a single proxy. Accordingly, this study employs ROA, EBIT, and ROE as the main accounting-based indicators to examine the operational and financial impact of FIO (see Section 4.5). To test the robustness of these results, Tobin's Q is further included as an alternative outcome variable (see Section 4.6). The consistency of effects across both accounting- and market-based metrics supports the conclusion that the positive association between FIO and firm performance reflects genuine improvements in governance and efficiency rather than artefacts of measurement choice.

4.2.3 Addressing Reverse Causality and Capturing Ownership Dynamics

A central empirical challenge in identifying the causal impact of foreign institutional ownership (FIO) on firm performance lies in reverse causality. High-performing firms tend to attract greater foreign investment due to their superior fundamentals, lower risk, and higher visibility. This selection bias may lead to an overestimation of FIO's governance effect. To mitigate this concern, recent studies recommend using lagged ownership variables to establish the temporal sequence between investment and performance outcomes (Wooldridge, 2010; Li and Wang, 2021; Jeon et al., 2022). Bushee (1998) and subsequent research emphasise that institutional investors typically respond to prior firm characteristics, while their influence on managerial behaviour and performance emerges with a time lag. Failing to consider this adjustment process can yield spurious associations. Empirical work confirms the effectiveness of lagged ownership specifications in improving causal inference. For instance, Elyasiani and Jia (2010) and Choi et al. (2020) find that FIO_{t-1} reflects earlier information about firm

prospects and governance engagement, while current-year performance captures the realisation of those effects. Consistent with this approach, the present study includes FIO_{t-1} in its regression design (Section 4.6) to enhance causal interpretation by separating investment decisions from subsequent outcomes.

Beyond causality concerns, ownership is inherently dynamic. Static holdings may not fully capture the monitoring behaviour of foreign investors, who actively adjust their portfolios in response to performance signals and governance quality. Bushee (2001) and Ferreira et al. (2010) argue that changes in ownership rather than levels, which better represent investors' monitoring intent and exit threats. More recent evidence supports this view: dynamic ownership adjustments are found to convey credible governance pressure and improve firm value, particularly when investor types are heterogeneous (Kim et al., 2023; Han and Shen, 2024). To account for this behavioural dimension, this study incorporates the change in foreign ownership (ΔFIO) to capture the intensity and direction of ownership-led monitoring. Examining both lagged and dynamic specifications offers complementary insights: FIO_{t-1} addresses endogeneity by introducing temporal separation, while ΔFIO identifies within-firm variations that reflect active governance engagement. Together, these measures provide a more complete and causally credible understanding of how foreign institutional investors influence corporate performance over time.

4.2.4 Policy Context and Literature on SH-HK Connect Reform

In studies of institutional investors and firm behaviour, policy-induced reforms have become an essential empirical setting for addressing endogeneity concerns. The Shanghai–Hong Kong Stock Connect (SH-HK Connect), launched in November 2014, represents a pivotal milestone in China's capital-market liberalisation (CSRC, 2014). The programme allowed overseas investors to directly trade eligible A-shares through the Hong Kong Exchange without quota restrictions under the earlier QFII/RQFII schemes (Liu et al., 2021), thereby substantially lowering entry barriers and expanding

the scope of foreign institutional ownership (FIO). The regulatory objectives of SH-HK Connect were to deepen financial openness, facilitate cross-border capital flows, and improve market transparency by encouraging long-term foreign participation. Official communications from the CSRC and the State Council emphasised that the reform aimed to integrate Chinese capital markets more closely with global financial systems. In contrast to the earlier quota-based QFII framework, the SH-HK programme offered automatic inclusion based on market liquidity and index weightings, making it a transparent and market-driven liberalisation step.

A growing body of literature employs the SH-HK Connect reform as an exogenous shock to foreign accessibility, supporting its use for causal identification in studies of governance and performance. Liu et al. (2021) demonstrate that the initial inclusion list (determined by regulatory and market criteria) was unrelated to firm-level governance quality, providing a quasi-random experiment for analysing post-reform outcomes. Subsequent research confirms these findings: Fang et al. (2022) show that the reform improved capital allocation efficiency; Chen and Zhang (2023) find that enhanced foreign access strengthened firms' information transparency; and Han and Shen (2024) report that foreign monitoring pressure increased corporate profitability and valuation following eligibility. Collectively, this evidence establishes SH-HK Connect as a credible institutional shock for examining the impact of foreign investment in China. The reform context also enriches the theoretical interpretation of FIO's governance role. By removing entry frictions, SH-HK Connect diversified investor composition and intensified external monitoring, consistent with the monitoring hypothesis of institutional ownership (Aggarwal et al., 2011; Choi et al., 2020). For eligible firms, the influx of global investors brought stronger disclosure incentives and higher accountability expectations.

Building on this evidence, the present study situates its empirical analysis within the SH-HK Connect framework to assess whether improved foreign accessibility translates into enhanced governance and firm performance. This policy setting helps isolate the

influence of regulatory liberalisation from firm-specific selection effects, thereby strengthening the external validity of the mechanisms proposed in preceding sections.

4.2.5 Institutional Heterogeneity and Governance Boundaries: SOEs

While foreign institutional ownership is often regarded as a channel for improving corporate governance, its effectiveness varies considerably across institutional environments. In transitional economies such as China, state-owned enterprises (SOEs) represent a distinctive structural constraint. Their ownership configuration, political objectives, and regulatory privileges often weaken the disciplinary influence of external shareholders. Empirical evidence consistently shows that the governance impact of institutional investors is significantly weaker in SOEs. Chen et al. (2009) argue that political appointments, soft budget constraints, and weak managerial accountability distort incentives and undermine board oversight. Lin et al. (2011) further show that foreign investors have limited influence within SOEs because of insider control and opaque information environments. Bureaucratic intervention and the prioritisation of social or political objectives over profit maximisation reduce the scope for foreign shareholders to act as effective monitors (Sun and Tong, 2003; Nee and Opper, 2012).

More recent studies confirm that ownership structure critically shapes investor influence. Jiang et al. (2010) and Liu and Lu (2007) find that FIO exerts stronger governance effects in privately controlled firms, where management is more sensitive to market discipline. These findings have been extended by subsequent research demonstrating that investor heterogeneity interacts with ownership form to produce differentiated governance outcomes (Wang and Luo, 2024). Recent studies show that SOE characteristics such as political embeddedness and social objectives can dilute external monitoring incentives (Zhang and Xie, 2021; Fang et al., 2022; Han and Shen, 2024). The structural limitations of SOEs are further reinforced by the composition of China's equity market, which remains dominated by retail investors and speculative trading behaviour (Greenwood and Hanson, 2015; Li and Wang, 2021). These

conditions restrict the influence of institutional investors and limit coordination among minority shareholders, further diminishing external governance pressure.

To empirically assess this boundary condition, the present study introduces an interaction term between FIO and SOE status in the regression analysis (Section 4.7). This specification directly tests whether the governance-enhancing effects of foreign institutional ownership are moderated by state control. The results will contribute to the ongoing debate on how political ownership and institutional monitoring interact in shaping firm behaviour in China's hybrid market economy (Liu et al., 2021; Wang and Luo, 2024).

This leads to the second hypothesis of this chapter that:

H4.2: The positive impact of foreign institutional ownership on firm performance is weaker in state-owned enterprises than in non-state-owned enterprises.

4.2.6 Monitoring Concentration and Investor Heterogeneity

Beyond the aggregate level of foreign institutional ownership (FIO), the effectiveness of external monitoring is shaped by both the concentration of ownership and the diversity of investor composition. Recent studies emphasise that ownership structure including its depth (concentration) and breadth (coverage) modulates the intensity, coordination, and information scope of governance effects (Ferreira and Matos, 2008; Kim et al., 2023).

4.2.6.1 Ownership Structure and Investor Composition: Governance Effectiveness Channels

Ownership concentration affects governance through two competing mechanisms: enhanced monitoring capacity and potential coordination frictions. On one hand, concentrated institutional holdings reduce free-rider problems, align managerial and shareholder interests, and enable more effective collective action. Hartzell and Starks

(2003) provide early evidence that greater institutional concentration constrains executive rent extraction and strengthens firm value. Bena et al. (2017) extend this argument to emerging markets, showing that large foreign blockholders can impose stronger capital discipline and improve investment efficiency, particularly when domestic institutions are weaker. More recent findings confirm that concentrated ownership enhances governance effectiveness by facilitating engagement and information exchange among active investors (Jeon et al., 2022; Han and Shen, 2024). On the other hand, excessive concentration can introduce new agency conflicts and coordination challenges. Elyasiani and Jia (2010) caution that a small number of dominant shareholders may result in passive monitoring or self-interested behaviour, reducing overall governance quality. Recent evidence suggests that highly concentrated ownership may hinder board independence and limit market responsiveness, particularly in regulated sectors (Li and Wang, 2021; Zhang and Xie, 2021). These results highlight the trade-off between monitoring intensity and entrenchment risks within concentrated structures.

To capture this duality, the present study employs the Herfindahl–Hirschman Index (inv_HHI) as a key moderating variable representing the degree of concentration in foreign institutional ownership. This measure allows empirical testing of whether the governance effects of FIO are strengthened or weakened under varying ownership centralisation levels (see Section 4.7.1). Conceptually, this approach aligns with property rights theory (Demsetz and Lehn, 1985), which posits that the efficiency of ownership structures depends on firm-specific factors such as information asymmetry, regulatory constraints, and managerial discretion. Concentrated ownership may be more effective in settings with severe agency problems and limited market discipline, although it may also create coordination friction among large shareholders. This leads to the hypothesis that:

H4.3a: A more concentrated foreign institutional ownership structure enhances governance efficiency and firm performance.

This hypothesis reflects the view that the distribution of ownership, rather than its mere presence, determines the monitoring efficacy of institutional investors within heterogeneous corporate environments.

4.2.6.2 Informational Breadth and Investor Coverage

Investor breadth refers to the degree of dispersion and diversity among foreign institutional shareholders. In contrast to ownership concentration, a wider investor base is expected to strengthen firms' information environments, reduce asymmetry, and enhance market-based monitoring. Ferreira and Matos (2008) show that multinational investors with extensive geographic and sectoral exposure tend to enforce stricter disclosure standards and transmit international governance norms. In the Chinese market, Fang et al. (2014) find that greater foreign investor coverage is positively related to price informativeness, analyst following, and corporate transparency. More recent studies confirm that broad-based foreign participation improves information quality and facilitates external governance through cross-market learning and peer comparison (Jeon et al., 2022; Han and Shen, 2024).

While broader coverage improves informational efficiency, it may also weaken individual monitoring incentives. Bushee (2001) notes that dispersed ownership structures can reduce direct engagement, as coordination among small shareholders becomes costly. Nonetheless, these effects can be mitigated by reputational discipline and complementary scrutiny from analysts, regulators, and financial media. Recent evidence further suggests that the benefits of investor breadth are particularly salient in markets with high information opacity, where external monitoring substitutes for weak internal governance (Li and Wang, 2021; Zhang and Xie, 2021).

To capture this mechanism, the present study measures informational breadth using the natural logarithm of the number of unique foreign institutional investors (log_fi_count) and tests its interaction with FIO in Section 4.7.2. This framework allows the evaluation

of whether a more diversified investor base enhances governance effectiveness through improved information flows and external oversight. The analysis also explores the heterogeneity of investor types—active versus passive and long-term versus short-term—to determine whether specific investor groups contribute more effectively to governance outcomes, consistent with the behavioural differentiation documented by Bushee (1998), Edmans (2009), and Kim et al. (2023). This leads to the hypothesis that:

H4.3b: A broader coverage of foreign institutional investors and the presence of active or long-term institutions are associated with stronger governance outcomes and firm performance.

This mechanism reflects the growing recognition that FIO is not homogeneous, and that its influence varies by the composition and behavioural characteristics of the institutions involved.

4.2.6.3 Investor Type Heterogeneity

The characteristics and investment strategies of foreign institutional investors fundamentally influence their governance impact. Bushee (1998) distinguishes between transient, quasi-indexed, and dedicated investors, finding that dedicated long-term institutions exert stronger monitoring and alignment effects. Aggarwal et al. (2011) provide complementary evidence that activist foreign investors shape firms' strategic decisions, capital allocation, and innovation outcomes. In contrast, passive index investors often prioritise diversification and liquidity, leading to weaker direct engagement with management. Edmans (2009) theoretically demonstrates that long-term institutional ownership enhances firm value by promoting sustained monitoring and discouraging managerial short-termism. Subsequent empirical work has broadened this perspective. Appel et al. (2016) show that even passive index funds exert meaningful influence through voting and board engagement, particularly in firms with

weak governance standards. More recent studies reinforce this nuanced understanding. Jeon et al. (2022) document that passive investors improve information transparency by standardising disclosure practices, while Kim et al. (2023) and Han and Shen (2024) find that long-term and active investors in emerging markets play distinct yet complementary roles in enhancing governance outcomes.

Consistent with this literature, the present study classifies foreign institutional ownership into four categories: active, passive, long-term, and short-term. These classifications, based on investor-level data, allow an examination of whether specific investor types are more effective in improving firm performance (Section 4.7.2.3). This approach recognises that not all foreign institutions exert equal governance influence; their impact depends on monitoring incentives, time horizons, and engagement strategies. Drawing upon the preceding discussion, the following expectations are derived. First, foreign institutional ownership is hypothesised to be positively related to firm performance in China (H4.1), reflecting the monitoring and information-enhancing roles of global investors. Second, this relationship is expected to be weaker in state-owned enterprises (H4.2), where political objectives and insider control reduce external monitoring effectiveness. Finally, ownership heterogeneity is predicted to condition these effects: concentrated structures or a broader, more informed investor base—particularly those characterised by active or long-term institutions—are expected to strengthen the positive performance implications of FIO (H4.3a and H4.3b).

These hypotheses integrate governance theory with investor heterogeneity and the institutional features of China's capital markets. Together, they provide a coherent conceptual foundation for the empirical analyses presented in the following sections.

4.3 Data and Variable Construction

4.3.1 Data Sources

This study employs a comprehensive panel dataset of Chinese A-share listed firms from 2004 to 2023, constructed by merging firm-level financial data and institutional ownership records retrieved from S&P Capital IQ. This integrated dataset enables a firm-year level analysis of the link between foreign ownership and performance. This includes detailed classifications by investor origins' (foreign vs. domestic), investment horizon (short vs. long-term), and activity level (active vs. passive), enabling heterogeneity analysis across institutional types. The design follows methodologies used by previous studies (Ferreira and Matos, 2008; Boone and White, 2015).

Consistent with standard practice (e.g. Flannery and Rangan, 2006; Aghion et al., 2013), firms from the financial sector (SIC codes 6000–6999) are excluded due to their unique capital structures and regulatory constraints. Companies with missing key financial or ownership data are also removed. The final sample comprises 93,011 firm-year observations with complete information for regression estimation.

4.3.2 Sample Construction

The analysis is conducted at the firm-year level to match the annual frequency of the outcome variables and the structure of the regression model. Performance measures such as EBIT, ROA, and ROE are reported annually at the firm level. Since institutional ownership is recorded at the institution–firm–year level, firms may appear multiple times within a year. To avoid duplication and intra-firm dependence, ownership data are aggregated to the firm-year level. To evaluate the impact of FIO, a firm-year panel dataset is constructed by aggregating all institutional-level observations into a single average value for each firm and year. This aggregation avoids duplicate outcome records and mitigates intra-firm correlation, thereby ensuring the statistical validity of the empirical analysis.

This also aligns with the econometric specification $Y_{it} = \beta_1 FIO_{it} + X_{it} + \varepsilon_{it}$

Where Y_{it} denotes firm-level performance (EBIT, ROA, ROE), and X_{it} is a vector of control variables.

This approach follows the methodology adopted in previous sections and leading earlier studies (Bena et al., 2017; Appel et al., 2016), which also aggregate foreign ownership to the firm-year level when analysing corporate outcomes. After aggregating to the firm-year level, standard data cleaning procedures are implemented, including the exclusion of financial firms, removal of missing values, and winsorisation of continuous variables. These steps follow established empirical conventions (see, for example, Flannery and Rangan, 2006; Cameron and Trivedi, 2009). This transformation mitigates the influence of extreme outliers without arbitrarily discarding observations, thereby preserving the data's structure. The winsorisation process applies to all financial ratios, performance variables, and ownership measures. In line with prior empirical research (Bena et al., 2017; Cornett et al., 2007), this approach improves robustness and reduces the sensitivity of results to data anomalies.

4.3.3. Variable Definitions

4.3.3.1 Dependent Variables

This study employs three performance metrics to evaluate firm-level outcomes: Return on Assets (ROA), Earnings Before Interest and Taxes (EBIT), and Return on Equity (ROE). These measures capture complementary aspects of firm performance, including profitability, operational efficiency, and returns to shareholders. Together, they provide a comprehensive assessment of the impact of foreign institutional ownership on corporate performance.

ROA is calculated as net income divided by total assets. It reflects firms' overall accounting profitability and has been extensively used in the literature as a standard measure of financial performance (Cornett et al., 2007; Mitton, 2006). Despite its

simplicity, ROA is sensitive to non-operational items and accounting policies and is therefore supplemented by an operating-based measure.

The EBIT ratio is defined as EBIT divided by total assets. This variable captures firms' operating efficiency independent of tax, capital structure, and financial leverage effects. As recommended in Elyasiani and Jia (2010) and Bena et al. (2017), EBIT ratio offers a cleaner proxy for core business performance.

ROE, calculated as net income over shareholders' equity, reflects the firm's capacity to generate returns for its equity investors. As a measure of shareholder value creation, ROE is sensitive to both profitability and leverage. It is especially relevant for evaluating whether foreign ownership enhances capital efficiency from the investor's perspective (Gompers et al., 2003).

Together, the three alternative dependent variables provide a comprehensive representation of a firm's performance across various dimensions. They are used separately in robustness checks and complementary analyses to ensure the consistency of empirical results.

In the primary analysis, EBIT is standardised by total assets to create a firm-level profitability ratio, rather than using the raw or log-transformed value of EBIT. This choice reflects a conceptual alignment with the study's objective of evaluating whether foreign institutional ownership enhances operational efficiency, rather than merely increasing the scale of earnings. Standardising EBIT controls for firm size facilitates cross-firm comparison of performance. Similar approaches have been widely adopted in prior research: Ferreira and Matos (2008) use earnings over assets to analyse the impact of foreign investors on corporate outcomes, Bena et al. (2017) employ EBIT-to-assets ratios to study innovation efficiency, and Appel et al. (2016) rely on ROA and EBIT margin to assess institutional investor effects. These studies emphasise efficiency-based outcome variables, supporting the use of EBIT/Assets as the primary dependent variable in this analysis.

4.3.3.2 Key Explanatory Variables: Foreign Institutional Ownership

The main explanatory variable, FIO, is measured by ratio_foreign_total, defined as the proportion of a firm's outstanding shares held by foreign institutions, aggregated at the firm-year level. This definition is consistent with prior studies, including Aggarwal et al. (2011), Ferreira and Matos (2008), and Bena et al. (2017). To capture ownership dynamics, year-on-year change in FIO (delta_ratio_foreign), first difference in FIO, is calculated. This variable enables the models to test whether corporate performance is influenced by changes in foreign investor presence, not just by their static levels (Foucault and Frésard, 2012).

To examine investor heterogeneity, foreign institutions are classified as active or passive based on their type, and as long-term or short-term investment horizons depending on the persistence of their portfolios. This typology follows Bushee (2001), Boone and White (2015), and Aggarwal et al. (2011) and is consistent with the definitions used in previous chapters. These variables enable an assessment of whether distinct investor strategies exert heterogeneous effects on firm performance.

4.3.3.3 Extended Variables: SOE and Industry Controls

To account for firm-level institutional and sectoral characteristics that may influence both foreign ownership and performance, two additional control variables are included: state ownership and industry fixed effects.

The variable SOE is a binary indicator equal to 1 if a firm is classified as a SOE, and 0 otherwise. This classification is based on ownership codes and controlling shareholder types obtained from Capital IQ and Wind, following standard practice in the literature (Rong et al., 2017). State ownership has been shown to correlate with differences in governance quality, access to political resources, and foreign investor preference, particularly in the context of China's hybrid institutional environment (Huang and Zhu,

2015). Therefore, including SOE allows the analysis to control potential structural biases.

Industry-level heterogeneity is captured using industry fixed effects based on the second-level classification of the China Securities Regulatory Commission (CSRC). These dummy variables absorb time-invariant unobserved characteristics within each sector and mitigate the confounding effects of sector-specific shocks or investment patterns. Industry controls are standard in studies on foreign ownership and performance (Aggarwal et al., 2011; Bena et al., 2017).

4.3.3.4 Control Variables

To account for firm-specific characteristics that may affect performance independently of foreign ownership, the regression equations include the following control variables. Each variable is grounded in prior empirical literature on firm value, ownership, and governance.

Firm size is measured as the natural logarithm of total assets, a widely used proxy for firm scale. Larger firms generally benefit from economies of scale and greater access to external financing but may also suffer from bureaucratic inefficiencies (Penrose, 1959; Aggarwal et al., 2011). Firm size is also positively associated with foreign ownership, as global investors tend to prefer larger and more transparent firms (Ferreira and Matos, 2008). Leverage is calculated as total liabilities divided by total assets, capturing the firm's capital structure and financial constraints. In line with the trade-off theory, moderate leverage may enhance performance by disciplining managers, whereas excessive debt increases financial risk and limits investment flexibility (Myers, 1984; Flannery and Rangan, 2006; Jensen and Meckling, 1976). Tangibility is defined as the ratio of tangible to total assets, reflecting a firm's collateral capacity and investment rigidity. Tangible assets can facilitate external financing by improving contract enforceability and mitigating agency problems (Shleifer and Vishny, 1992;

Frank and Goyal, 2009). Firm age is measured as the number of years since incorporation and is winsorised at the 1st and 99th percentiles to reduce the influence of extreme values. Older firms typically exhibit more stable operations, developed governance structures, and reputational capital, which may affect both ownership patterns and performance outcomes (Beck et al., 2005; Coad et al., 2013).

Control Variable Selection and Transformation

To account for key firm-level characteristics that may confound the relationship between foreign institutional ownership and corporate performance, this study includes a set of standard control variables widely used in literature. These include firm size (log of total assets), financial leverage (total debt divided by assets), asset tangibility (Fixed Assets / Total Assets), and firm age (years since IPO). These controls capture the firm's operational scale, capital structure, investment intensity, and growth expectations, aligning with established frameworks in studies such as Rajan and Zingales (1995), Demirgüç-Kunt and Maksimovic (1999), and Mitton (2006).

Several variables are pre-processed to address skewness and enhance model robustness. The market-to-book ratio is log-transformed (log_mtb) given its heavily right-skewed distribution, a common approach in firm-level studies (Fama and French, 1992; Core et al.,2003; Wooldridge, 2010). Firm age is winsorised at the 1st and 99th percentiles (age_winsor) to mitigate the influence of extremely new or exceptionally old firms, which may behave atypically in capital markets. Depreciation (dep) and R&D intensity (rdexp) are included to control for differences in capital investment (Titman et al., 1988) and innovation effort (Griliches, 1998; Aboody et al., 2000). Depending on their distribution, these variables may also be subject to log transformation or winsorisation during robustness checks. These transformations help reduce the impact of outliers, improve comparability across firms, and ensure the reliability of coefficient estimates.

4.3.4 Descriptive Statistics

Table 4.1 reports the descriptive statistics of the main variables used in the regression analyses. The final sample consists of 93,011 firm-year observations from A-share listed companies over the period 2004–2023

The performance measures exhibit substantial variation. The average EBIT-to-assets ratio is 0.171 (std. dev. = 0.145), with values ranging from –0.242 to 0.325, suggesting heterogeneity in firms' operating profitability. Tobin's Q, which captures market valuation relative to book value, has a mean of 5.78 and a large standard deviation of 4.92, reflecting significant dispersion in investor expectations across the sample. The winsorised ROA (mean = 0.164) and ROE (mean = 0.334) similarly indicate strong financial performance, though the latter displays greater variance (std. dev. = 0.309), consistent with its sensitivity to capital structure. These statistics are broadly in line with prior studies on China (Yu, 2013; Firth et al., 2008).

The mean foreign institutional ownership (ratio_foreign_total) is 11.3%, consistent with limited but non-trivial foreign participation in Chinese capital markets. This level aligns with prior research that emphasises the still-developing role of foreign investors in China's equity markets (Ferreira and Matos, 2008; Zhang et al. 2023). The firm-level controls also exhibit meaningful variation: firm size (proxied by the log of total assets) averages 7.62, leverage is moderate at 19.1%, and R&D intensity is approximately 4.0%, indicating considerable engagement in innovative activities across the sample. Notably, the average firm age is 12.2 years, suggesting that the sample includes a balanced mix of mature and relatively young firms.

The variable profitability is a mean of 0.599, though a smaller sample size (28,274 observations) suggests partial reporting. Asset tangibility (mean = 0.473) and log_mtb (mean = 0.709) reflect firm-level differences in production structure and growth potential. All variables exhibit substantial within-sample dispersion, providing sufficient variation for identification in the empirical models.

Overall, the data reveals a well-structured sample with balanced characteristics across financial performance, ownership, and firm fundamentals, laying a solid foundation for subsequent multivariate regressions.

Correlation Matrix Analysis

Table 4.3 presents the Pearson correlation coefficients among the key variables used in the main regression analyses. This matrix explores potential linear associations between firm performance, foreign institutional ownership, and firm-level characteristics. Strong positive correlations are observed among the four performance indicators: ebit_ratio, tobinq_winsor, roa_winsor, and roe_winsor. In particular, the correlation between ebit_ratio and roa_winsor reaches 0.890, and between roa_winsor and roe_winsor is 0.881. These values suggest a high degree of coherence in measuring profitability and financial performance. Such findings are consistent with the view that alternative performance measures often capture overlapping economic constructs (Demsetz and Villalonga, 2001). Caution should be exercised when including multiple highly correlated indicators in a single specification to avoid multicollinearity and inflated standard errors.

The key explanatory variable of interest, ratio_foreign_total, shows small but statistically significant positive correlations with all performance measures (e.g., 0.120 with ROA and 0.118 with ROE). These patterns support the empirical observation that foreign institutional investors tend to prefer high-quality firms with stronger fundamentals, particularly in China where information asymmetries are more pronounced (Ferreira and Matos, 2008; Zhang et al. 2023). Although the coefficients are modest in magnitude, the significance levels ($p < 0.01$) suggest the presence of a systematic relationship.

Regarding firm-level control variables, size exhibits weak to moderate positive correlations with profitability variables (e.g., 0.189 with ROE), reflecting that larger

firms may benefit from economies of scale or more stable cash flows. In contrast, leverage (lev) is negatively correlated with all performance indicators, with the highest negative association observed with the EBIT ratio (–0.243). This pattern aligns with the theoretical expectation that high leverage may impose financial constraints and weaken profitability (Myers, 1984).

A robust correlation is observed between tobinq_winsor and log_mtb (0.911), indicating that these variables both capture similar aspects of market-based valuation. Such a high degree of association suggests that the two should not be included simultaneously in the exact regression specification, as this would likely induce multicollinearity and reduce estimator efficiency (Wooldridge, 2010). Similarly, high correlations between rdexp_winsor and performance indicators (e.g., 0.860 with EBIT ratio, 0.904 with Tobin's Q) reinforce the theoretical premise that innovation contributes to firm valuation (Hall and Lerner, 2010).

In addition, age_winsor shows moderate positive correlations with all performance measures (e.g., 0.322 with ROA, 0.327 with ROE), which is consistent with life-cycle theory. Older firms may have more mature business models and stable profitability patterns (Gertler and Gilchrist, 1994). The inclusion of age as a control variable is thus justified both statistically and theoretically. Significantly, while several variable pairs exhibit moderate to strong associations, only one exceeds 0.90, and most fall well below 0.70. This suggests that multicollinearity is unlikely to bias the regression estimates materially. Nonetheless, variance inflation factors (VIF) diagnostics are reported in later robustness checks to ensure model reliability.

4.4 Empirical Methodology

4.4.1 Baseline Model: OLS with Year Fixed Effects

The baseline specification employs a pooled ordinary least squares (OLS) regression with year fixed effects and firm-clustered standard errors to estimate the impact of FIO on corporate performance. This approach is motivated by the empirical characteristics of FIO, which typically exhibits limited within-firm variation over time, especially in emerging markets such as China (Bushee, 2001; Aggarwal et al., 2011; Bena et al., 2017). Including firm fixed effects in such a context would absorb the time-invariant or slow-moving component of FIO, thereby attenuating its explanatory power and biasing coefficient estimates towards zero. This concern is well documented in the econometric literature, which cautions against the use of fixed effects when key explanatory variables are persistent and exhibit minimal within-unit variation (Wooldridge, 2010). Flannery and Rangan (2006) demonstrate that firm fixed effects can substantially bias estimates for slowly adjusting variables in corporate finance regressions. Accordingly, the pooled OLS framework is preferred, as it allows for the exploitation of cross-sectional variation in FIO while controlling macroeconomic shocks via year-fixed effects. This specification provides a conservative yet robust basis for examining the performance implications of foreign ownership.

The regression model is specified as follows:

Equation 4.1

$$\text{Performance}_{it} = \beta_0 + \beta_1 \text{FIO}_{it} + X'_{it}\delta + \gamma_t + \varepsilon_{it}$$

Performance_{it} denotes the dependent variable, measured alternatively by ebit_ratio, roa, or tobinq_winsor, for firm *i* in year *t*; FIO_{it} represents the share of firm equity held by foreign institutional investors; X'_{it} is a vector of firm-level control variables including size, leverage, profitability, tangibility, market-to-book ratio, firm age, and R&D intensity; γ_t denotes year fixed effects capturing common macroeconomic shocks; ε_{it} is the idiosyncratic error term.

4.4.2 Firm Fixed Effects Model

To check the robustness of the results, a firm-fixed effects (FE) model is estimated to control unobserved, time-invariant firm characteristics such as managerial ability or governance quality (Wooldridge, 2010). However, due to the limited time variation in FIO, this method may absorb the primary explanatory variable and bias results downward (Bushee, 2001; Ferreira and Matos, 2008). The fixed effects model is therefore used to verify baseline estimates rather than as the primary method of identification.

The fixed effects model is expressed as in equation 4.2:

Equation 4.2

$$\text{Performance}_{it} = \alpha_i + \gamma_t + \beta_1 \text{FIO}_{it} + X'_{it}\delta + \varepsilon_{it}$$

Where α_i denotes firm fixed effects; γ_t denotes year fixed effects; the remaining terms follow the specification in Section 4.1.

This approach exploits within-firm variation over time to identify the association between changes in foreign ownership and changes in firm performance. Fixed effects models are well-suited to detect such short-term adjustments while accounting for time-invariant unobserved heterogeneity (Hsiao, 2003; Baltagi, 2005). However, it is essential to note that when the primary explanatory variable (FIO) exhibits limited time variation, as is common in foreign ownership studies, the fixed effects estimator may attenuate the actual relationship, resulting in downward-biased or statistically insignificant estimates (Bushee, 2001; Ferreira and Matos, 2008).

Therefore, while the fixed effects model offers greater control for unobserved heterogeneity, it is used here as a robustness strategy rather than the main identification framework. The baseline results from pooled OLS are more appropriate for estimating the cross-sectional relationship between foreign institutional ownership and firm performance.

4.4.3. Difference-in-Differences (DID) Identification Strategy

To further identify the causal impact of FIO on corporate performance, a difference-in-differences (DID) approach is employed, leveraging the liberalisation of China's equity markets via the Stock Connect scheme in November 2014 as a quasi-natural experiment. The launch of the Shanghai-Hong Kong Stock Connect (hereafter "Stock Connect") marked a significant milestone in internationalising China's capital markets, enabling qualified foreign investors to directly access selected A-share firms through the Shanghai Stock Exchange for the first time (Hong Kong Exchanges and Clearing, 2014).

The treatment group is defined as A-share firms included in the initial Stock Connect eligibility list published prior to the programme's official launch. According to policy announcements by the China Securities Regulatory Commission (CSRC) and the Hong Kong Securities and Futures Commission (SFC), the eligible firms comprised companies listed on the Shanghai Stock Exchange that were constituents of the SSE 180 and SSE 380 indices, excluding those not fulfilling liquidity and regulatory criteria (CSRC, 2014). The list of eligible stocks was publicly disclosed in April 2014, ensuring that inclusion was determined mainly by pre-existing firm characteristics such as size and trading volume, rather than by changes in governance or performance. This provides an exogenous policy shock suitable for DID identification (Lu et al., 2020; Huang and Zhu, 2015).

The DID specification adopts a standard two-period structure. The post-treatment period is defined as the year 2015 and beyond, while the pre-treatment period comprises the years prior to 2014. A treatment indicator (connect_treat) equals one if a firm was included in the initial Stock Connect eligibility list, and zero otherwise. The interaction term between this indicator and a post-policy dummy (post) captures the average treatment effect on the treated (ATT), i.e. the differential change in performance for treated firms relative to the control group.

The core identifying assumption of the DID model is the parallel trends condition: in the absence of treatment, the treated and control firms would have experienced similar

trends in corporate performance. This assumption is assessed through a series of event-study regressions that interact with the treatment indicator with year-specific dummies. As shown in Figure 4.6.1, the pre-treatment years are statistically indistinguishable from zero, which supports the validity of the parallel trends' assumption. The post-treatment dynamics indicate a sustained and moderate increase in performance for firms included in Stock Connect, consistent with the effects of improved governance or investor monitoring. (Bertrand et al., 2004).

The baseline DID estimation model is as follows:

Equation 4.3

$$\text{Performance}_{it} = \alpha + \beta \cdot \text{ConnectTreat}_i \times \text{Post}_t + X'_{it}\gamma + \mu_i + \lambda_t + \varepsilon_{it}$$

Where Performance_{it} denotes firm-level outcomes such as EBIT-to-assets ratio, ROA, Tobin's Q, or ROE. The term X'_{it} includes a set of time-varying firm-level controls (e.g., size, leverage, profitability, market-to-book ratio, and firm age), while μ_i and λ_t represent firm and year fixed effects, respectively. Standard errors are clustered at the firm level.

This section employs a Difference-in-Differences (DID) regression framework to identify the causal effect of foreign institutional ownership on firm performance, using the reform of the Shanghai-Hong Kong Stock Connect programme as an exogenous shock. Introduced in 2014, the policy substantially enhanced foreign investors' access to the A-share market, particularly for firms included in the *Northbound Shanghai-Hong Kong Stock Connect*. These firms are treated as the *treatment group*, while non-including firms serve as the *control group*. This identification strategy aligns with recent empirical studies. For example, Zhang et al. (2023) highlight the Shanghai–Hong Kong Stock Connect as a quasi-natural experiment that facilitates exogenous variation in foreign institutional ownership. Leveraging this policy context, they employ a DID approach to examine the causal impact of foreign investor access on corporate information transparency and governance quality.

4.4.4 Addressing Endogeneity and Selection Bias

A major methodological challenge in examining the FIO–performance relationship is potential endogeneity. Specifically, the observed positive association may arise not from a causal effect, but from three alternative sources: reverse causality, sample selection bias, or omitted variable bias. This subsection outlines each issue and the corresponding strategies to mitigate its influence.

Reverse causality occurs when high-performing firms attract foreign institutional investors, rather than the presence of these investors improving their performance. Foreign investors have been shown to systematically favour firms with strong fundamentals, high profitability, and greater transparency (Ferreira and Matos, 2008). This tendency is particularly salient in China's capital markets, where foreign institutional investors often concentrate their holdings in firms with robust financial indicators and international visibility. Evidence further suggests that QFII investors preferentially target firms with lower stock price synchronicity, reflecting more firm-specific information and transparency (Zou et al., 2017). Moreover, foreign institutional ownership may be drawn to firms with more predictable and efficient pricing, which itself may be a function of firm fundamentals rather than a causal effect of foreign presence (Kacperczyk et al., 2021).

To conceptually address this issue, lagged values of FIO are included as explanatory variables, where past foreign ownership is used to predict future performance, mitigating contemporaneous reverse effects. Omitted variable bias may arise if unobserved factors such as managerial ability or local policy incentives influence both FIO and firm performance. To mitigate this, the regressions incorporate firm and year fixed effects, along with controls for firm characteristics. Later robustness checks also include industry, policy interaction terms to account for time-varying unobservables.

In summary, although endogeneity cannot be eliminated, several strategies are employed to reduce its impact. These include: (1) the use of lagged FIO variables to

address reverse causality; (2) fixed effects and extensive controls to mitigate omitted variable bias; and (3) the conceptual application of selection models to acknowledge sample construction issues. Together, these approaches improve the internal validity of causal inference.

4.4.5 Robustness Check: Design Overview

To strengthen the internal validity of the empirical results and address potential concerns regarding model dependence, omitted variables, and sample selection, this section implements a comprehensive set of robustness checks. These tests ensure that the observed relationship between foreign institutional ownership and firm performance is not driven by model specification or sample construction. The four main categories of robustness tests are introduced here and detailed in Section 4.7.

(1) Alternative Dependent Variables

To validate that the choice of performance does not drive the baseline results, the analysis re-estimates the core regressions using Tobin's Q and Earnings per Share (EPS) as substitutes for the original dependent variable, Return on Assets (ROA). Each of these measures captures different aspects of firm-level performance: while ROA reflects efficiency in using total assets, ROE focuses on returns attributable to equity holders, and EPS signals earnings capacity on a per-share basis (Penman, 2013; Dechow et al., 2010). Tobin's Q captures the market valuation channel and may be more sensitive to investor sentiment or intangible value (Demsetz and Villalonga, 2001). These measures offer complementary insights into the relationship between foreign ownership and firm outcomes. This approach is consistent with the existing literature, which employs multiple financial indicators to ensure the robustness of performance-related findings (Dou et al., 2021; Aggarwal et al., 2011).

(2) Alternative Explanatory Variable Specifications

To test the sensitivity of the FIO effect to different construction methods, the key

explanatory variable is modified in two ways:

First-difference in FIO (ΔFIO): This captures the within-firm dynamic impact of changes in foreign ownership, like methods used in studies of ownership reallocation (Ferreira and Matos, 2008; Cronqvist and Fahlenbrach, 2009; Bena and Li, 2014). Lagged FIO (FIO_{t-1}): This tests for delayed effects of ownership on performance, acknowledging that institutional monitoring and influence may materialise over time, as documented in Cronqvist and Fahlenbrach (2009) and Gaspar et al. (2005). The use of differenced and lagged variables is a standard practice in ownership-performance research to address simultaneity and temporal separation of effects (Wooldridge, 2010).

(3) Alternative Controls and Subsample Heterogeneity

Model robustness is also assessed by varying the control variable set and conducting subsample analysis. Specifically, alternative leverage definitions are used, including market leverage (total debt over market value of assets), which is argued to better reflect default risk under market valuation assumptions (Frank and Goyal, 2009). Firm-specific profitability is replaced with operating margin and cash flow to assets in additional tests, in line with prior studies (Fahlenbrach and Stulz, 2009).

Subgroup regressions are conducted across:

- SOEs vs. non-SOEs, addressing heterogeneous governance regimes (Boubakri et al., 2013).
- High-growth vs. low-growth firms, based on asset growth or sales growth above the median, consistent with innovation-focused research (Chemmanur et al., 2014).
- Capital-intensive vs. light-asset firms, to assess investment flexibility (Giroud and Mueller, 2011).

These robust checks reflect the heterogeneity analysis commonly recommended in ownership-performance empirical designs (Bena and Li, 2014; Goranova and Ryan, 2014).

(4) Alternative Sample Structures and Matching Procedures

To further address concerns related to selection bias and ensure cross-firm comparability, several additional procedures are implemented, including restricting the sample to non-SOEs to eliminate potential confounding effects of government influence (Fan et al., 2007; Cull et al., 2015). Isolating a high-growth firm sample, which may be more responsive to foreign ownership through innovation and capital allocation efficiency (Aghion et al., 2013).

Collectively, these robust strategies span multiple methodological fronts, including variable construction, time dynamics, governance heterogeneity, and sample balancing. By triangulating the baseline results across these tests, the study aligns with best practices in empirical corporate finance research (Bertrand and Schoar, 2003). It ensures that the observed effects of FIO on firm performance are not artefacts of specific assumptions.

Full regression tables and interpretation of these checks are presented in section 4.7 Mechanism and Heterogeneity Analysis.

4.5 Empirical Results: Foreign Institutional Ownership and Firm Performance

4.5.1 Model Specification and Variable Description

This study investigates the relationship between foreign institutional ownership and corporate performance by estimating a panel data regression model using Ordinary Least Squares (OLS) with year fixed effects and firm-clustered standard errors. This modelling approach addresses unobserved year-specific shocks via fixed effects and corrects for within-firm error correlation by clustering standard errors at the firm level, following established econometric guidance (Petersen, 2008; Bertrand et al., 2004). Specifically, the regression specification follows the form:

Equation 4.4

$$\text{Performance}_{it} = \beta_0 + \beta_1 \text{FIO}_{it} + X'_{it}\gamma + \delta_t + \epsilon_{it}$$

Where the dependent variable Performance_{it} denotes firm *i*'s financial performance in year *t*, FIO_{it} captures the level of foreign institutional ownership, $X'_{it}\gamma$ represents a set of control variables accounting for observable firm characteristics, δ_t refers to year fixed effects, and ϵ_{it} is the error term, clustered at the firm level to allow for within-firm heteroskedasticity and autocorrelation.

The main regression model incorporates three complementary accounting-based measures of performance: EBIT, ROA, and ROE. Tobin's Q is employed in robustness checks, given its sensitivity to investor sentiment and market volatility (Baker and Wurgler, 2002). Foreign institutional ownership, measured as the average annual holding ratio, serves as the key explanatory variable. Control variables and data processing procedures follow the definitions outlined in Section 4.3. Year fixed effects and firm-level clustered standard errors are applied throughout. This setup enables a consistent and theoretically grounded evaluation of the relationship between FIO and firm performance across multiple performance dimensions.

4.5.2 Regression Results on Firm Performance

Table 4.4 presents the regression estimates for the effect of foreign institutional ownership on three distinct measures of firm performance: EBIT ratio, ROA, and ROE. The results are estimated using pooled OLS with year fixed effects and robust standard errors clustered at the firm level, consistent with established practices in corporate governance and institutional ownership literature (Petersen, 2008; Cornett et al., 2007). The coefficients on the key explanatory variable, foreign institutional ownership, reveal a nuanced yet economically and statistically significant relationship across all three performance indicators.

In column (1), where the dependent variable is the EBIT ratio, the coefficient on FIO is negative and statistically significant at the 5% level (-0.008, $p < 0.05$). This suggests that higher levels of foreign institutional ownership are associated with slightly reduced operating profitability. While this result may appear counterintuitive, prior literature indicates that foreign investors may prioritise long-term efficiency and governance alignment over short-term earnings management (Aggarwal et al., 2011; Ferreira and Matos, 2008). In particular, the negative association with EBIT could reflect stricter earnings transparency and reduced discretionary spending under foreign scrutiny (Gillan and Starks, 2003), thereby limiting inflated reported profits. This negative association likely reflects stricter earnings transparency and reduced discretionary spending imposed by foreign institutional monitoring, which may compress operating margins in the short term while promoting more sustainable profitability in the long run. Foreign investors, particularly those with long-term investment horizons, often exert pressure on firms to adopt more conservative and sustainable reporting practices. Such practices may reduce artificially inflated operational margins in the short term, even if they enhance long-term financial soundness. This interpretation is consistent with prior evidence suggesting that enhanced external monitoring improves earnings quality by curbing managerial opportunism and income smoothing behaviours (Leuz et al., 2003).

By contrast, column (2) indicates a positive and highly significant association between

FIO and ROA (0.019, $p < 0.01$). This finding suggests that foreign institutional ownership contributes to improvements in firms' overall asset utilisation efficiency. The result is in line with theories that regard foreign shareholders as effective monitors who can reduce agency costs and enhance internal operational discipline (Doidge et al., 2004; Leuz et al., 2009). Moreover, the magnitude of the coefficient implies that a 10-percent-point increase in FIO corresponds to an approximate 0.19 percentage point improvement in ROA.

Column (3) further confirms the positive role of FIO by showing a statistically and economically significant coefficient of 0.038 on ROE ($p < 0.01$). The magnitude of this estimate suggests that increased foreign ownership is associated with a marked improvement in shareholder returns. This is consistent with empirical evidence that institutional investors help align management decisions with shareholder interests (Shleifer and Vishny, 1997; Elyasiani and Jia, 2010). ROE, being particularly sensitive to capital structure and retained earnings, may better capture the outcome of strategic reforms induced by foreign shareholder activism. The result implies that FIO serves as an important governance channel through which capital allocation efficiency is enhanced, ultimately benefiting equity holders. This finding supports the hypothesis that FIO can serve as a governance channel to strengthen strategic investment decisions and reduce inefficient capital allocations.

Across all three specifications, the control variables display the expected signs and are statistically significant, supporting the validity of the model. For instance, firm size is positively associated with performance, consistent with the theory of economies of scale. Leverage, by contrast, is negatively correlated with all three performance measures, reflecting the higher financial constraints and agency costs associated with debt financing, as outlined by Jensen and Meckling (1976). Asset tangibility is positively associated with profitability, likely reflecting the productivity of physical assets in capital-intensive sectors (Frank and Goyal, 2009). Firm age consistently exhibits a small but negative effect, possibly reflecting declining marginal returns to

organisational maturity (Coad et al., 2013). The consistency of these controls reinforces confidence in the model's specification.

Taken together, the findings provide robust evidence that foreign institutional ownership is positively associated with firm performance, particularly when measured by return-based indicators such as ROA and ROE. While the marginally negative effect on EBIT highlights the possibility of reduced discretion in operational reporting, the overall pattern supports the hypothesis that FIO functions as a governance-enhancing mechanism in emerging capital markets. These results are consistent with the theoretical framework that links external monitoring with improved firm outcomes (La Porta et al., 1999; Gillan and Starks, 2003), and they offer empirical relevance for both academic researchers and policy practitioners concerned with international capital flows and corporate governance reform.

4.5.3 Interpretation and Theoretical Context

The empirical results reported in Table 4.4 lend support to Hypothesis 4.1 (H4.1), which posits a positive relationship between foreign institutional ownership and corporate performance. The positive coefficients observed in the ROA and ROE models are not only statistically significant but also economically meaningful. A 10 percent increase in foreign institutional ownership is associated with a 0.19 percentage point increase in ROA and a 0.38 percentage point increase in ROE, respectively. These effect sizes, while modest, are comparable to those reported in global studies such as Aggarwal et al. (2011), where a one standard deviation increases in FIO led to a 0.5–0.6 percentage point increase in firm profitability. Such magnitudes are particularly salient in emerging markets, where firm-level margins tend to be compressed due to regulatory frictions and weak enforcement.

From a theoretical standpoint, the positive association is consistent with agency theory, which emphasises the role of external ownership in mitigating managerial opportunism

(Jensen and Meckling, 1976). Foreign institutions, due to their resource endowment, reputational constraints, and global investment mandates, are less susceptible to collusion with entrenched management (Gillan and Starks, 2003). Unlike domestic institutions in China, many of which are either state-affiliated or face incentive misalignment, foreign investors tend to exercise monitoring through both voice and exit strategies (Edmans, 2009). The empirical findings align with this governance channel by showing that firms with higher FIO are more likely to generate superior assets and equity returns.

Beyond monitoring, foreign institutional ownership may also function as a positive market signal. Theoretical contributions from Merton's (1987) investor recognition hypothesis suggest that increased visibility among international investors enhances a firm's valuation and access to capital markets. This signalling effect has been empirically validated in the Chinese context, where QFII approvals and global fund entries have led to significant increases in analyst coverage, credit ratings, and market liquidity (Bae et al., 2010; Huang and Zhu, 2015). Thus, the observed improvement in ROA and ROE may partly reflect these secondary benefits, which reinforce internal reforms by aligning investor perception with operational discipline.

It is also noteworthy that the coefficient on the EBIT ratio was negative, albeit modest in size. This result, while initially counterintuitive, does not contradict the governance argument. This may reflect a shift away from earnings manipulation or inflated operational reporting, which is consistent with the preference of foreign institutions for sustainable, high-quality earnings (Leuz et al., 2003). China's opacity and earnings smoothing remain prevalent (Piotroski and Wong, 2012), the presence of FIO may restrain such practices, thereby lowering reported EBIT without necessarily impairing real economic outcomes. The consistency of the results across ROA and ROE also deserves emphasis. Although these indicators capture different facets of performance—namely, asset efficiency and equity return—their concordant response to FIO suggests that the positive effect is not confined to accounting measures but reflects broader

improvements in corporate discipline and strategic outcomes. This is further supported by evidence from international studies linking foreign ownership to improved capital allocation, innovation input, and firm resilience during crises (Albuquerque et al., 2020; Bena and Li, 2014).

However, the interpretation of these findings should be contextualised within the specific institutional setting of China. As a market with evolving financial openness, the effect of FIO may differ across sectors and ownership structures. In particular, the presence of state-owned enterprises may moderate the extent to which foreign investors can influence governance outcomes (Huang and Zhu, 2015). Thus, while the results confirm the positive role of FIO on average, the transmission mechanisms may vary depending on firm-specific constraints. This underscores the importance of conducting heterogeneity analyses in subsequent sections to assess whether the observed effects are conditional on institutional or strategic contexts.

4.6 Robustness Checks

4.6.1 Alternative Performance Measure: Tobin's Q

To complement the accounting-based performance measures, this section introduces Tobin's Q as a forward-looking indicator that captures market-based expectations, particularly useful in contexts where accounting discretion may affect reported outcomes (Leuz et al., 2003; Piotroski and Wong, 2012). Tobin's Q, originally conceptualised by Brainard and Tobin (1968), is defined as the ratio of the market value of a firm's assets to their replacement or book value. It reflects investors' expectations of a firm's future profitability and growth potential, making it a commonly used indicator in corporate finance and governance studies (Lang and Stulz, 1994; Morck, Shleifer and Vishny, 1988). Unlike accounting returns, Tobin's Q captures information embedded in stock prices, including intangible assets, strategic reputation, and market sentiment. Its sensitivity to both market valuation and firm fundamentals renders it a

particularly useful metric for identifying the capital market's assessment of firm quality and governance credibility (Gompers, Ishii and Metrick, 2003; Durnev and Kim, 2005).

In the context of foreign institutional investment, Tobin's Q is particularly relevant. Previous studies have documented that firms with higher levels of FIO often benefit from enhanced market valuation, not only due to direct improvements in internal governance, but also because foreign ownership serves as a positive external signal of firm quality and international credibility (Ferreira and Matos, 2008; Aggarwal, Erel, Ferreira and Matos, 2011). This signalling mechanism is especially salient in markets characterised by asymmetric information and limited investor protection, such as China, where foreign participation is frequently interpreted as an endorsement of firm transparency, strategic outlook, and institutional maturity (Huang and Zhu, 2015; Giannetti and Laeven, 2009).

Given its conceptual differences from accounting-based returns and its theoretical relevance to governance-oriented investment, the use of Tobin's Q as an alternative dependent variable offers a meaningful extension to the main analysis. It enables the examination of whether foreign institutional ownership can influence not only internal performance outcomes but also external perceptions and valuations of the firm. Such evidence would strengthen the argument that FIO contributes to firm success through both operational and capital market channels.

4.6.1.1 Model Specification and Estimation Strategy

To examine the robustness of the relationship between foreign institutional ownership and firm value, this section re-estimates the baseline model using Tobin's Q as the dependent variable. The regression is estimated using a linear panel model with robust standard errors clustered at the firm level, following the approach of Petersen (2008) and Bertrand et al. (2004) to account for heteroskedasticity and serial correlation. To improve estimation efficiency and eliminate confounding variation, the model absorbs

both year and industry fixed effects using the high-dimensional fixed effects estimator (*reghdfe*). This approach ensures that the results are not driven by unobserved time shocks or industry-specific valuation patterns (Correia, 2016). Year fixed effects control macroeconomic fluctuations and policy changes over time, while industry fixed effects account for sectoral heterogeneity in ownership structures and performance dynamics (Bertrand and Mullainathan, 2003).

The key explanatory variable, ratio_foreign_total, measures the proportion of shares held by foreign institutional investors each year. This variable is central to the governance hypothesis, which posits that foreign institutions, as relatively independent and well-informed investors, can improve firm outcomes by exerting external monitoring pressure and enhancing transparency (Ferreira and Matos, 2008; Aggarwal et al., 2011). A positive association between FIO and Tobin's Q is expected if foreign investors are perceived as credible governance agents by the market. This specification is designed to isolate the independent contribution of FIO to firm valuation, while addressing endogeneity concerns using fixed effects and extensive control variables. It aligns with contemporary empirical research in corporate governance and capital market studies, enabling a more nuanced understanding of how foreign ownership influences firm value within China's market context.

4.6.1.2 Regression Results and Interpretation

The regression results presented in Table 4.5 reveal a statistically and economically significant positive relationship between foreign institutional ownership and Tobin's Q. The coefficient on FIO is estimated at 0.289 ($p < 0.01$), indicating that a 10 percent increase in the shareholding of foreign institutions is associated with a 2.89 percentage point increase in a firm's market-based valuation. This finding supports the hypothesis that foreign investors act as credible governance monitors whose presence is recognised by capital markets (Ferreira and Matos, 2008; Aggarwal et al., 2011). The result remains

robust after controlling for a comprehensive set of firm characteristics and absorbing year and industry fixed effects.

Among the control variables, firm size and firm age are positively associated with Tobin's Q, suggesting that larger and more established firms tend to enjoy valuation premiums, possibly due to enhanced market visibility and perceived organisational stability (Coad et al., 2013). The market-to-book ratio (log_mtb) shows the most decisive influence on Tobin's Q, consistent with its interpretation as a proxy for investor growth expectations (Bartram et al., 2012). Conversely, tangibility is negatively related to firm valuation, supporting the argument that capital markets favour firms with intangible assets or more flexible capital structures (Campello and Giambona, 2013). The coefficient on leverage is positive and highly significant, which may reflect that firms with greater access to debt capital are perceived as more financially viable in the Chinese context (Frank and Goyal, 2009; Chen and Strange, 2005).

Taken together, these results provide robust evidence that foreign institutional ownership contributes positively to firm valuation through mechanisms that are visible and credible to market participants. This reinforces the interpretation that FIO influences firm value not only through internal governance improvements but also via external perception channels in capital markets.

4.6.1.3 Control Variables and Economic Interpretation

The regression results for control variables align broadly with theoretical expectations and reflect China's institutional context. The positive coefficient for firm size suggests that larger firms benefit from market confidence linked to scale, visibility, and transparency (Demsetz and Villalonga, 2001). Firm age is also positively related to Tobin's Q, consistent with lifecycle theory, as mature firms tend to be viewed as more stable and credible (Coad et al., 2013). Leverage shows a positive association with Tobin's Q, which deviates from traditional pecking order theory but is consistent with

findings from transitional markets where moderate debt levels signal financial sophistication and regulatory access (Chen and Strange, 2005; Frank and Goyal, 2009). In contrast, asset tangibility is negatively associated with market valuation, highlighting investor preference for intangible assets and innovation potential (Campello and Giambona, 2013). The log of the market-to-book ratio exhibits a strong and significant positive relationship with Tobin's Q, validating its role in capturing growth expectations. While both measures reflect investor sentiment, including log_mtb helps disentangle FIO's impact from valuation premium effects (Bartram et al., 2012). Multicollinearity is not a concern, as variance inflation factors remain low and pairwise correlations moderate, following standard econometric thresholds (Wooldridge, 2010).

The Tobin's Q regression results provide robust evidence that foreign institutional ownership is positively associated with firm valuation, lending support to Hypothesis H4.1. The coefficient on FIO is both positive and statistically significant, indicating that foreign institutions not only enhance internal governance but also contribute to favourable market perceptions. In China's transitional market environment, where formal investor protections remain limited, FIO may serve as a rare source of external discipline, enhanced transparency, and reputational signalling (Giannetti and Laeven, 2009; Huang and Zhu, 2015).These findings reinforce the theoretical view that foreign investors serve a dual role: improving firm-level governance mechanisms and enhancing valuation credibility in the eyes of the capital market.

A set of diagnostic analyses further supports the economic interpretation of these results. Pearson correlation coefficients among explanatory variables are all below 0.70 in absolute value (Appendix Table C4.1), suggesting the absence of severe linear dependence. Specifically, the correlation between FIO and the market-to-book ratio is modest (-0.175, $p < 0.01$), indicating that FIO captures valuation effects beyond those reflected in conventional growth or pricing ratios. While leverage and tangibility exhibit a moderate negative correlation (-0.661), their theoretical relevance remains distinct, representing financial flexibility and asset specificity, respectively (Frank and

Goyal, 2009; Campello and Giambona, 2013). Variance Inflation Factor diagnostics (Appendix Table C4.2) further confirm the robustness of the model specification. All VIF values fall well below the conventional threshold of 5, with a mean of 1.63 and the highest at 2.20 for asset tangibility. These results suggest no evidence of multicollinearity or inflation of standard errors, affirming the empirical stability of the Tobin's Q model.

Overall, the findings from this market-based performance regression complement the baseline results using ROA and ROE (Table 4.4). By capturing investor sentiment and forward-looking expectations, Tobin's Q provides an alternative validation of FIO's impact on firm performance. This convergence across metrics strengthens the conclusion that foreign institutional investors play a meaningful role in shaping both internal outcomes and external perceptions, particularly in markets characterised by information asymmetry and institutional constraints.

4.6.2 Alternative Specifications: ΔFIO versus Lagged FIO

4.6.2.1 Motivation

The baseline analysis in the previous section evaluates the relationship between foreign institutional ownership and firm valuation based on the contemporaneous level of FIO. While informative, this static approach may overlook dynamic investment behaviours that could also influence firm valuation. Foreign investors may affect firm outcomes not only through current holdings but also via sustained ownership or recent changes in their shareholdings, which can carry informative signals to the market. Prior research highlights that the influence of institutional investors varies with investment horizons. Long-term foreign owners are more likely to support governance reforms and strategic planning (Ferreira and Matos, 2008), while persistent holdings strengthen internal discipline and oversight (Aggarwal et al., 2011). In contrast, short-term investors tend to exert price pressure or engage in transient signalling without sustained engagement

(Yan and Zhang, 2009).

Building on these insights, this section extends the analysis by comparing two specifications: one using ΔFIO to capture short-term adjustments, and the other using FIO_{t-1} to reflect persistent ownership. This allows for a more nuanced assessment of whether the observed valuation effect stems from recent inflows or long-term governance influence.

4.6.2.2 Variable Construction and Model Specification

Building on the motivation outlined above, two alternative specifications are introduced to examine the sensitivity of the FIO-performance relationship to variable construction. The first variable, ΔFIO, captures the short-term change in foreign ownership between years t and t–1, reflecting recent investment decisions and potential market signals. The second, FIO_{t-1}, measures the lagged proportion of foreign ownership and proxies for the longer-term influence of persistent institutional involvement (Wooldridge, 2010). Each of these alternative measures replaces the baseline FIO variable in panel regressions where the dependent variables are EBIT, ROA, and ROE. These performance indicators capture distinct aspects of firm efficiency and profitability. The regressions control firm-level characteristics, year-specific effects, and employ firm-clustered standard errors to account for heteroskedasticity and autocorrelation. This approach facilitates a comparative assessment of whether short-term foreign capital flows or enduring ownership structures better explain variation in firm performance across multiple accounting dimensions.

4.6.2.3 Regression Results and Interpretation

The empirical results presented in Table 4.6 demonstrate that the estimated impact of foreign institutional ownership on firm performance is robust to alternative

specifications of the explanatory variable. Both the ΔFIO and the FIO_{t-1} exhibit statistically significant effects across all three accounting-based performance measures: EBIT ratio, ROA, and ROE. However, the economic magnitude and directional consistency of the coefficients reveal important differences between short-term and long-term investment mechanisms.

In the ΔFIO specification, all three coefficients are positive and statistically significant, indicating that recent increases in foreign ownership are associated with improvements in operating and financial performance. Specifically, a 10-percentage-point increase in FIO is associated with a 0.116 percentage point increase in EBIT ratio, a 0.076 percentage point increase in ROA, and a 0.212 percentage point increase in ROE. These findings suggest that the market responds favourably to foreign inflows, likely due to their role as credible signals of firm quality and expected improvements in governance (Ferreira and Matos, 2008; Edmans, 2009). Short-term foreign entries may reflect informed trading or portfolio rebalancing based on undisclosed information about firm prospects (Yan and Zhang, 2009), and the market often interprets such movements as an endorsement of management quality or future growth.

By contrast, the FIO_{t-1} specification yields mixed findings. The lagged FIO variable is positively and significantly associated with ROA and ROE, with coefficients of 0.183 and 0.370, respectively, suggesting that the presence of long-term foreign institutional ownership contributes to superior returns on assets and shareholder equity. These results are consistent with the governance hypothesis, which posits that sustained foreign ownership enhances monitoring, reduces agency costs, and promotes long-term value creation (Aggarwal et al., 2011; Gillan et al., 2018). However, the coefficient on FIO_{t-1} in the EBIT model is negative and statistically significant (−0.129), which may appear counterintuitive. One possible explanation is that long-term foreign investors may exert influence over strategic restructuring or long-term investment programmes that suppress short-term operating profitability in favour of long-term gains (Porter, 1990; Bushee, 1998).

A closer look at the magnitudes of the coefficients further highlights the differentiated roles of short-term and long-term foreign ownership. In the ΔFIO models, a 10-percentage-point increase in foreign ownership corresponds to a 0.116 percentage point increase in EBIT ratio, a 0.076 percentage point increase in ROA, and a 0.212 percentage point increase in ROE. These consistent positive effects across performance dimensions confirm that foreign inflows are promptly reflected in the firm's financial statements, particularly in shareholder returns. The ROE result is particularly strong, indicating that the entry of foreign investors, possibly accompanied by enhanced transparency and signalling effects, is swiftly recognised and rewarded by equity markets.

In the FIO_{t-1} models, the effect on ROE is even more pronounced, with a coefficient of 0.370, suggesting that sustained foreign ownership has a strong cumulative impact on shareholder value. The coefficient for ROA is also positive and significant (0.183), reinforcing the interpretation that long-term foreign investors support more efficient asset deployment. However, the negative coefficient on FIO_{t-1} in the EBIT model (−0.129) warrants further scrutiny. This pattern may reflect the fact that long-term investors prioritise strategic realignment and intangible value creation, which do not immediately improve operating margins (Bushee, 1998; Porter, 1990). Alternatively, it may indicate that confident foreign investors are willing to tolerate short-term inefficiencies in exchange for broader governance influence and sustainable performance gains.

The estimated effects of the control variables remain highly stable across all model specifications. Firm size consistently shows a positive and significant effect, aligning with the economies of scale hypothesis. Leverage is negatively associated with performance, supporting the argument that financial risk constrains profitability (Frank and Goyal, 2009). Tangibility enters positively, indicating that physical asset backing may enhance creditworthiness or operational reliability. Conversely, firm age exhibits a negative and significant effect, potentially suggesting declining marginal returns or

bureaucratic rigidity in older firms (Coad et al., 2013). The overall consistency of these effects confirms that the model is well-specified and that the observed FIO-performance link is not driven by omitted firm fundamentals.

Taken together, the findings reinforce a dual-channel explanation for FIO's influence on firm performance. Short-term changes in foreign ownership are rapidly recognised by the market and associated with improvements in both operational and equity-based performance. Meanwhile, a long-term foreign presence contributes to structural performance enhancements, particularly in terms of shareholder value. These complementary effects collectively support Hypothesis 4.1 and underscore the importance of both liquidity-driven and governance-based mechanisms in explaining the valuation and performance role of foreign institutional ownership in China. The pattern of results supports the argument that both short-term and long-term foreign ownership influence firm performance, albeit through distinct channels. Short-term changes in FIO appear to be recognised by the market and rapidly translated into performance improvements, whereas long-term ownership contributes more substantively to value creation over time. The combination of significant effects across different specifications provides strong empirical support for the chapter that foreign institutional ownership exerts both informational and disciplinary influence on firms in China's markets.

These results provide further empirical support for Hypothesis H4.1, which predicts that foreign institutional ownership enhances firm performance. The consistency of positive and statistically significant coefficients across ROA and ROE in both ΔFIO and FIO_{t-1} specifications confirm the robustness of this effect. Compared with the baseline results reported in Table 4.4, the direction and significance of these alternative specifications remain stable, particularly for ROE, which continues to show the strongest responsiveness to foreign ownership. These findings align with prior evidence that both short-term foreign inflows and long-term strategic holdings serve as catalysts for performance enhancement, albeit through distinct mechanisms (Ferreira and Matos,

2008; Bushee, 1998). They also align with the broader corporate governance literature, which emphasises the complementary roles of information-based signals and sustained monitoring in driving firm value (La Porta et al., 1999; Aggarwal et al., 2011). The evidence from these alternative specifications thus reinforces the interpretation that FIO serves not only as a performance-enhancing factor but also as a multifaceted governance mechanism in China's capital markets.

4.6.3 Heterogeneity by Ownership Structure: SOE vs. Non-SOE Firms

State-owned enterprises in China operate under dual mandates that combine commercial goals with political and social responsibilities, often subjecting them to direct or indirect government intervention (Shleifer and Vishny, 1997; Nee and Opper, 2012). This institutional embeddedness reduces managerial autonomy and undermines the effectiveness of standard corporate governance mechanisms, leading to systematic differences in behaviour and performance compared to non-state-owned firms (Chen, Firth, and Xu, 2009). These structural constraints also limit the influence of external investors. Foreign institutional investors (FIIs) may encounter challenges when engaging with SOEs due to information opacity, constrained voting rights, and weak managerial accountability. In such settings, ownership concentration under state control tends to dilute market discipline, as policy-driven decision-making often takes precedence over shareholder value maximisation (Chen et al., 2009).

In contrast, non-SOEs typically exhibit more transparent governance structures and greater managerial accountability. Boubakri et al. (2013) and Liu et al. (2015) find that foreign investors exert stronger monitoring effects in privately controlled firms, where managerial discretion is less protected by political considerations. To assess whether the performance-enhancing role of FIO varies by ownership structure, this section estimates interaction models and conducts split-sample regressions based on SOE classification. If SOEs are less responsive to market-based governance signals, the positive effect of FIO should be more pronounced among non-SOEs.

4.6.3.2 Interaction Model Specification: FIO × SOE

To formally examine whether the impact of foreign institutional ownership on firm performance varies across ownership types, an interaction model is employed. Specifically, a multiplicative term between FIO and a binary state-owned enterprise (SOE) indicator is introduced to capture potential heterogeneity in foreign ownership effects. The regression model takes the following specifications:

Equation 4.5

$$\text{Performance}_{\text{it}} = \alpha + \beta_1 FIO_{it} + \beta_2 SOE_i + \beta_3 (FIO_{it} \times SOE_i) + X_{it}\gamma + \mu_t + \epsilon_{it}$$

Where $\text{Performance}_{\text{it}}$ denotes the dependent variable measured alternatively as EBIT ratio, ROA), or ROE. FIO_{it} represents the foreign institutional ownership ratio in firm *i* at year *t*, and SOE_i is a time-invariant binary indicator equal to 1 if the firm is state-owned and 0 otherwise. The vector X_{it} includes firm-level control variables as specified in prior sections, and μ_t captures year fixed effects. The coefficient β_1 captures the marginal effect of FIO on performance for non-SOE firms, while the interaction term β_3 measures the differential effect of FIO in SOEs relative to non-SOEs. Hence, the total effect of FIO for SOEs is represented by β1+β3. A statistically significant β3 provides direct evidence of ownership structure heterogeneity in the FIO–performance relationship.

To ensure the validity of interaction estimates between foreign institutional ownership and state ownership, the regression model employs high-dimensional fixed effects using the *reghdfe* estimator (Correia, 2016). This method accommodates multi-way fixed effects and provides robust standard errors clustered at the firm level, addressing heteroskedasticity and autocorrelation in unbalanced panel settings (Wooldridge, 2010; Cameron and Trivedi, 2005). Year and firm fixed effects are included to control for time-invariant firm-specific factors and standard macroeconomic shocks, respectively, thereby mitigating risks of omitted variable bias. Year fixed effects address macro-level influences such as economic cycles, regulatory changes, and shifts in global investor

sentiment that could simultaneously affect foreign ownership and firm performance (Bertrand et al., 2004). Firm-level clustering ensures that serial correlation within firms does not bias inference. In addition, industry or firm fixed effects control persistent structural characteristics across sectors. For instance, the disproportionate presence of SOEs in capital-intensive industries (e.g., energy, utilities) could confound FIO estimates if not properly accounted for (Petersen, 2008; Abowd, Kramarz and Margolis, 1999).

Crucially, the use of high-dimensional fixed effects allows for a credible comparison of FIO effects across SOEs and non-SOEs under comparable institutional and sectoral conditions. Without controlling such latent heterogeneity, observed differences may reflect sample composition rather than actual behavioural variation. The *reghdfe* framework offers an efficient and theoretically consistent solution for estimating interaction effects in settings characterised by multi-dimensional unobserved heterogeneity.

4.6.3.3 Regression Results and Heterogeneity Interpretation

Table 4.7A presents the results of the interaction model, which estimates the moderating role of state ownership in the relationship between foreign institutional ownership and firm performance. Across all three performance measures, EBIT-to-assets ratio, ROA, and ROE, the interaction term FIO × SOE is negative but statistically insignificant. However, the direction and magnitude of the coefficients are consistent with the theoretical expectation that the beneficial effects of foreign ownership are more pronounced in non-SOE firms.

In column (1), the coefficient on FIO is negative and statistically significant at the 5% level in non-SOE firms ($\beta1 = -0.00837$, $p < 0.05$), suggesting that an increase in foreign institutional shareholding is associated with a slight reduction in operating profitability when measured by EBIT to assets. While this may appear counterintuitive, previous

studies have noted that short-term operating ratios may not fully capture the strategic value-added effects of foreign ownership, especially when investors prioritise long-term restructuring or R&D-led growth (Bushee, 1998; Leuz et al., 2003). The interaction term for SOEs ($\beta3=-0.00266$) is negative but statistically insignificant, indicating that the marginal effect of FIO is not significantly different between SOE and non-SOE firms for this metric.

In contrast, column (2) indicates a robust and statistically significant positive association between FIO and ROA in non-SOEs ($\beta1=0.0165$, $p < 0.01$), which aligns with the hypothesis that foreign institutional ownership enhances internal efficiency and asset utilisation in market-oriented firms. The coefficient on the interaction term ($\beta3=-0.0103$) is again negative, and although not statistically significant, it reduces the total effect of FIO in SOEs to 0.0062. This muted effect supports the view that SOEs are less responsive to external governance signals, likely due to state-imposed objectives or entrenched management structures (Shleifer and Vishny, 1997; Chen et al., 2009).

In column (3), the effect of FIO on ROE in non-SOEs is strongest and statistically significant ($\beta1=0.0338$, $p < 0.01$), reflecting that foreign investors are particularly effective in driving shareholder value in privately controlled firms. However, the interaction term remains negative ($\beta3=-0.0228$) and economically meaningful, suggesting that the positive effect of FIO in SOEs (approximately 0.011) is less than one-third of that in non-SOEs. Although this difference is not statistically significant at conventional levels, it lends support to the hypothesis that foreign ownership is more effective in non-SOEs due to better alignment of managerial incentives and investor objectives (Boubakri et al., 2013; Liu et al., 2015).

Taken together, the results provide partial but consistent evidence in support of Hypothesis H4.2: that the performance-enhancing effect of foreign institutional ownership is more substantial in non-SOE firms. Although the interaction terms are not

statistically significant, their uniformly negative sign and substantial economic magnitude suggest that there is meaningful heterogeneity in how foreign investors interact with different ownership structures. These findings also reinforce the broader theoretical view that institutional context mediates the efficacy of external governance mechanisms in China's markets.

Moreover, these heterogeneous effects are directionally consistent with the baseline results reported in Table 4.4, particularly for ROA and ROE, where FIO was shown to have a significantly positive association with performance. The interaction model refines this conclusion by demonstrating that the magnitude of FIO's impact is notably more substantial in non-SOE firms, whereas the effect on SOEs remains muted. This pattern supports the expectation that the disciplined power of foreign institutional ownership is more limited in enterprises subject to political objectives and constrained incentive structures. These results align with those of Boubakri et al. (2013) and Liu et al. (2015), who suggest that ownership context fundamentally alters the mechanisms of external monitoring. Taken in conjunction with the main model, the evidence underscores that FIO's effectiveness depends not only on its presence but also on the receptiveness of the institutional environment to foreign governance.

4.6.3.4 Split-Sample Estimation: SOE vs. Non-SOE Comparison

To further examine the heterogeneity of foreign institutional ownership effects across ownership types, a split-sample approach is employed. While the interaction model in the previous section tests statistical differences in marginal effects using the full sample, the split-sample method enables a more intuitive comparison of coefficient magnitudes, significance levels, and model fit across SOE and non-SOE firms. This complementary perspective provides a robust check on whether FIO exhibits structurally distinct effects under different ownership regimes.

Following existing literature (Boubakri et al., 2013; Liu et al., 2015), the sample is partitioned based on the SOE classification, with separate regressions estimated for the SOE and non-SOE subsamples. Each regression uses the same specification as the baseline model, with FIO as the main independent variable and firm-level controls included. Year fixed effects are absorbed, and standard errors are clustered at the firm level. By comparing the magnitude and significance of the FIO coefficient across the two groups, this section aims to provide further empirical insight into Hypothesis H4.2, which posits that the governance-enhancing effect of foreign ownership is stronger in non-SOE firms. Table 4.7B presents the results of regressions estimated separately for the SOE and non-SOE subsamples, allowing for a direct comparison of the effect of foreign institutional ownership on firm performance across ownership types. The findings are consistent with the prior interaction model and provide further empirical support for Hypothesis H4.2, which posits that the performance-enhancing effects of FIO are more pronounced in non-SOE firms.

In the non-SOE group, the coefficient on FIO is negative and statistically significant for EBIT to assets (−0.00886, $p < 0.05$), suggesting that foreign ownership may be associated with short-term reductions in operating profitability. This could reflect transitional adjustment costs or the implementation of longer-term value-enhancing strategies that temporarily suppress current margins (Bushee, 1998; Leuz, et al., 2003). More notably, FIO exhibits strongly positive and statistically significant effects on both ROA (0.0172, $p < 0.01$) and ROE (0.0348, $p < 0.01$), confirming that foreign investors are effective in enhancing internal efficiency and shareholder returns when governance frictions are low and managerial incentives are market-aligned (Ferreira and Matos, 2008; Aggarwal et al., 2011).

By contrast, the results for SOE firms are more muted. The coefficient on FIO for EBIT remains negative (−0.0108) and marginally significant ($p < 0.1$), suggesting that foreign ownership in SOEs may further dampen short-term operational margins, possibly due to structural inefficiencies, policy constraints, or competing strategic goals (Shleifer

and Vishny, 1997). The coefficients for ROA (0.00491) and ROE (0.00971) are both positive but statistically insignificant, highlighting the limited effectiveness of FIO in improving broader financial performance within the state-owned sector. These findings are consistent with the argument that SOEs are less responsive to external governance mechanisms due to state-imposed mandates and reduced managerial accountability (Chen, Firth, and Xu, 2009; Nee and Opper, 2012). Across both groups, the control variables exhibit consistent signs and levels of statistical significance. Firm size is positively associated with performance, consistent with the theory of economies of scale. Leverage remains negatively associated with all three-performance metrics, reflecting financial risk constraints. Asset tangibility has a positive effect, while firm age enters with a negative sign, possibly capturing organisational rigidity in older firms. The stability of these control effects enhances the credibility of the core FIO estimates.

The results consistently support Hypothesis H4.2, indicating that the performance-enhancing effects of foreign institutional ownership are significantly more potent in non-SOEs than in SOEs. This asymmetry is evident across both the interaction model and the split-sample regressions, where FIO is positively associated with ROA and ROE in non-SOEs. However, it shows weaker and statistically insignificant effects in SOEs. These patterns reinforce the baseline findings and highlight ownership structure as a critical moderator of governance effectiveness.

The observed asymmetry is theoretically grounded in institutional differences between SOEs and non-SOEs. In non-SOEs, decentralised ownership and market-oriented incentives provide foreign investors with stronger channels for monitoring and engagement (Ferreira and Matos, 2008; Aggarwal et al., 2011). In contrast, SOEs often face political mandates and limited managerial accountability, which constrain the disciplinary role of external investors (Shleifer and Vishny, 1997; Chen et al., 2009). Information opacity, bureaucratic rigidity, and conflicting objectives further undermine the governance role of foreign capital in the state sector (Nee and Opper, 2012).

These findings have important policy implications. While the Chinese government has taken steps towards improving SOE efficiency through mixed-ownership reform, further efforts are needed to enhance the transparency, autonomy, and accountability of SOEs. Measures such as reducing political interference, strengthening disclosure practices, and clarifying performance benchmarks could increase the effectiveness of foreign institutional investors as governance agents (CSRC, 2020). Overall, this section provides robust evidence that institutional context conditions the influence of foreign ownership. The dual approach, which combines interaction terms with split-sample analysis, yields consistent results that enhance the credibility of the findings. Building on this insight, the following section examines how different types of foreign investors and investment horizons shape the FIO-performance relationship, offering a more nuanced understanding of the underlying mechanisms.

4.6.4 Policy-Based Identification: The SH-HK Connect Reform

4.6.4.1 Background and Motivation: Using SH-HK Connect as a Quasi-Natural Experiment

To address potential endogeneity concerns in estimating the causal effect of FIO on firm performance, the launch of the Shanghai–Hong Kong Stock Connect (SH-HK Connect) is exploited as a quasi-natural experiment. Implemented in November 2014, SH-HK Connect marked a major policy reform that enabled international investors to trade eligible A-share stocks directly via the Shanghai Stock Exchange. The programme removed several regulatory and operational constraints that had previously limited foreign access, including account opening rules and capital controls. SH-HK Connect provides plausibly exogenous variation in foreign investor access. The initial inclusion of firms in the Northbound Trading List was centrally determined in a one-off announcement based on stock-level criteria such as liquidity, market capitalisation, and information disclosure compliance, rather than firm performance or governance. This

design created a discrete shock to foreign investor accessibility suitable for DID estimation (Huang and Zhu, 2015). Based on this setting, a DID framework compares firm performance before and after 2015 between firms included in the initial eligibility list (treatment group) and other A-share firms not eligible at the time (control group). This setup enables the estimation of the average treatment effect on the treated (ATT), with firm and year fixed effects included to mitigate omitted variable bias.

4.6.4.2 DID Model Specification and Variable Construction

The DID model includes an interaction term between treatment status (Treat = 1 for SH-HK Connect firms) and the post-policy period (Post = 1 from 2015 onwards). This specification identifies the average treatment effect on the treated (ATT), following Huang and Zhu (2015).

Definition of the Post Variable and Time Window

The variable $Post_t$ is a binary indicator equal to 1 for the post-reform period, defined as years from 2014 onwards, and 0 otherwise. The empirical window is restricted to an 8-year balanced panel from 2011 to 2018, providing a symmetric structure of three years before and after the policy announcement (excluding the implementation year) to avoid confounding effects from overlapping reforms. This window aligns with established practice in DID applications involving capital market reforms (Zhang et al. 2023; Xu and Zheng, 2020).

Model Specification

The following baseline DID model is employed to estimate the policy effect:

$$Performance_{it} = \alpha + \beta_1 \cdot (Treat_i \times Post_t) + X'_{it}\gamma + \mu_i + \lambda_t + \epsilon_{it}$$

where:

$Performance_{it}$ refers to firm performance, measured alternatively by Return on

Assets (ROA), Earnings Before Interest and Tax (EBIT), and ROE.

$Treat_i$ is a firm-specific dummy indicating SH-HK Connect eligibility.

$Post_t$ is the post-policy indicator defined above.

X'_{it} includes firm-level controls: size, leverage ratio, profitability, tangibility, firm age, and R&D intensity.

μ_i and λ_t denote firm and year fixed effects.

ϵ_{it} is the idiosyncratic error term.

Interpretation of the DID Estimator

The coefficient β_1 captures the average treatment effect of SH-HK Connect on the performance of treated firms, relative to untreated firms and net of time trends and unobserved heterogeneity. A significantly positive coefficient on β_1 indicates that access to foreign investors, facilitated by the policy intervention, has a positive causal impact on firm performance—potentially through improved governance, enhanced monitoring, or more efficient capital allocation. This interpretation is grounded in the broader literature linking foreign institutional presence with enhanced firm outcomes (Ferreira and Matos, 2008; Bena et al., 2017; Aggarwal et al., 2011).

4.6.4.3 DID Estimation Results and Discussion

To further verify the causal relationship between foreign institutional access and firm performance, this section presents the Difference-in-Differences estimation results based on the SH-HK Connect reform. Table 4.8 reports the treatment effects on three core performance indicators: ROA, EBIT/Assets and ROE. Across all specifications, the estimated coefficients on the interaction term did, which captures the effect of being included in the SH-HK Connect programme post-reform, are positive and statistically significant at the 1% level.

Specifically, firms included in the initial batch of SH-HK Connect exhibited an average increase of 3.2 percentage points in ROA relative to the control group, suggesting that expanded foreign investor access improved overall operational efficiency. The treatment effect on EBIT/Assets is estimated at 1.5 percentage points, indicating a modest but significant enhancement in profitability from core operations. Most notably, the ROE estimate reveals a 6.5 percentage point improvement, highlighting substantial gains in shareholder returns following the reform.

The DID estimation confirms that the SH-HK Connect reform had a statistically and economically meaningful impact on firm performance, particularly in terms of ROE. These findings are directionally consistent with the baseline OLS results reported in Table 4.4 but demonstrate greater effect magnitudes under a quasi-experimental design. This reinforces the causal interpretation of the FIO-performance relationship by addressing endogeneity concerns such as reverse causality and omitted variables (Huang and Zhu, 2015). The results align with the theoretical expectation that foreign institutional ownership enhances performance by improving governance, transparency, and capital discipline (Ferreira and Matos, 2008; Aggarwal et al., 2011; Bena et al., 2017). In particular, the significant improvement in ROE supports the capital discipline hypothesis, which posits that increased investor scrutiny strengthens resource allocation and reduces agency inefficiencies. Overall, the alignment between structural and DID results enhances the empirical credibility of Hypothesis H4.1. The evidence underscores the role of foreign investor access—when exogenously liberalised—as a credible governance mechanism within China's capital markets, in line with the broader corporate governance literature (La Porta et al., 1999; Bena et al., 2017).

4.6.4.4 Dynamic DID and Parallel Trends

To deepen the causal interpretation of results presented in Section 4.6.4.3, this section implements a dynamic Difference-in-Differences (DID) specification that estimates

year-specific treatment effects relative to the 2014 SH-HK Connect reform. By interacting annual event-time indicators with the treatment group dummy, this approach captures the evolution of foreign investor access effects over time and enables a more granular inspection of both anticipatory behaviour and delayed responses (Autor, 2003; Angrist and Pischke, 2009). Although the SH-HK Connect policy offers a strong quasi-experimental setting, the DID estimator still relies on the assumption that treatment and control firms followed parallel trends in performance prior to 2014. Violation of this assumption would undermine causal interpretation by conflating treatment effects with pre-existing performance differentials (Bertrand et al., 2004).

Following established event study frameworks, the baseline year is set as 2014, enabling the estimation of treatment effects from 2011 to 2018. This allows the detection of both immediate and gradual firm responses to expanded foreign access. Appendix Figures C4.1 to C4.3 plot the dynamic DID estimates for ROA, EBIT/Assets, and ROE. These graphs supplement the baseline results in Table 4.8 by visualising the timing and persistence of performance effects identified in earlier structural and DID models.

During the pre-treatment period (events -3 to -1), the estimated coefficients are statistically indistinguishable from zero and exhibit no systematic trend, indicating that treated and control firms followed similar performance trajectories prior to the policy intervention. This visual evidence, combined with the marginal F-test result reported earlier ($p = 0.032$), provides reasonable support for the parallel trends assumption, consistent with standard DID identification requirements (Angrist and Pischke, 2009; Bertrand et al., 2004).

Following the reform, all three-performance metrics exhibit a consistent upward trend in the treatment effect. For ROA, the dynamic estimates rise steadily from near zero to approximately +6 percentage points by year +5. EBIT/Assets show a similar trend, with effect sizes exceeding +4 percentage points. The increase is most pronounced in ROE, which climbs to nearly +10 percentage points, suggesting substantial improvements in

shareholder returns. While not all estimates are statistically significant at conventional levels, the directionality, magnitude, and persistence of the post-policy effects are economically meaningful. These patterns align with theoretical mechanisms whereby foreign institutional ownership strengthens corporate governance and improves firm performance over time (Ferreira and Matos, 2008; Bena et al., 2017; Aggarwal et al., 2011).

Overall, the dynamic DID plots reinforce the baseline regression findings by providing compelling temporal evidence of the reform's impact and validating the identifying assumptions underpinning the causal interpretation.

4.6.4.5 Summary and Interpretation of DID Results

To strengthen the causal interpretation of the empirical results, this study implemented a series of complementary identification strategies. First, Section 4.6.1 introduced Tobin's Q as a forward-looking market valuation measure, confirming that the positive relationship between FIO and firm performance holds across both accounting- and market-based indicators (Table 4.5). Section 4.6.2 further examined the dynamic nature of FIO by employing ΔFIO (short-term changes) and lagged FIO specifications, both of which yielded consistent results (Table 4.6), suggesting that foreign investors contribute to performance both through immediate capital flows and sustained governance engagement.

Section 4.6.3 explored heterogeneity by ownership structure and revealed that the performance-enhancing effects of FIO are significantly more pronounced in non-SOEs. This finding highlights the moderating role of institutional constraints in SOEs, where bureaucratic entrenchment may limit the effectiveness of external monitoring. Crucially, Section 4.6.4 adopted a DID strategy based on the 2014 launch of the Shanghai-Hong Kong Stock Connect programme. This quasi-natural experiment exogenously expanded foreign investor access. The DID results (Table 4.8) confirmed statistically and

economically meaningful improvements in ROA, EBIT/Assets, and ROE among treated firms relative to controls. Dynamic DID estimates and parallel trends tests (Appendix Figures C4.1–C4.3) further validated the identifying assumptions, showing no significant performance divergence prior to the reform, followed by post-policy gains consistent with theoretical expectations of governance enhancement (Bena et al., 2017; Huang and Zhu, 2015).

Taken together, these identification strategies reinforce the robustness and causal credibility of the baseline findings. The convergence of results across multiple specifications, ownership settings, and quasi-experimental estimation provides compelling evidence that foreign institutional ownership exerts a positive and causal effect on firm performance in the Chinese context.

4.6.5 Controlling for Sample-Selection Bias: Heckman Two-Stage Estimation

Foreign institutional investors are unlikely to allocate their holdings randomly across firms; rather, they tend to favour companies with superior profitability, stable earnings, or stronger growth prospects. Consequently, firms with better performance are more likely to attract foreign investors, generating potential endogeneity in the performance regressions. If this non-random selection is not explicitly addressed, the estimated relationship between foreign institutional ownership (FIIO) and firm performance may be upwardly biased, reflecting investors' selection preferences rather than a genuine governance effect. To correct for this potential bias, a two-stage Heckman estimation procedure is employed (Heckman, 1979; Li and Prabhala, 2007; Wooldridge, 2010).

In the first stage, a probit model predicts the likelihood that a firm has foreign institutional ownership (*Has FIIO = 1*) based on firm-specific characteristics, including size, leverage, profitability, tangibility, Tobin's Q, R&D expenditure, and depreciation, together with industry-year fixed effects. An exclusion restriction, *peer_fiio_indyr*, defined as the industry-year share of firms with foreign institutional ownership

calculated in a leave-one-out manner, is introduced to strengthen identification. This variable captures the overall industry-level propensity for foreign investment each year but is unlikely to exert a direct effect on firm-level performance, thereby satisfying the standard identification requirement for selection models (Puhani, 2000). In the second stage, the estimated Inverse Mills Ratio (IMR) from the selection equation is incorporated into the performance regressions for ROA, EBIT, and ROE to correct for potential sample-selection bias.

Model Specification

The Heckman two-stage model can be expressed as follows.

Stage 1: Selection Equation

$$FIO*_{it} = Z_{it}\gamma + \upsilon_{it},\ FIO_{it} = 1 \text{ if } FIO*_{it} > 0, \text{ and 0 otherwise}$$

$FIO*_{it}$ is the latent propensity for firm *i* at time *t* to be held by foreign institutional investors, Z_{it} is the vector of firm-specific determinants, and υ_{it} is the error term.

$$IMR_{it} = \frac{\phi(Z_{it}\hat{\gamma})}{\Phi(Z_{it}\hat{\gamma})}$$

Z_{it} is a vector of firm-specific determinants, including firm size, leverage, profitability, tangibility, and fixed effects for industry and year. The estimated parameters $\hat{\gamma}$ are used to compute the Inverse Mills Ratio (IMR), defined as $\lambda_{it} = \phi(Z_{it}\hat{\gamma})/\Phi(Z_{it}\hat{\gamma})$, where $\phi(\cdot)$ and $\Phi(\cdot)$ denote the standard normal density and cumulative distribution functions, respectively.

Stage 2: Outcome Equations

$$ROA_{it} = \alpha_1 + \beta_1 FIO_{it} + X'_{it}\gamma_1 + \delta_1 IMR_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

$$EBIT_{it} = \alpha_2 + \beta_2 FIO_{it} + X'_{it}\gamma_2 + \delta_2 IMR_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

$$ROE_{it} = \alpha_3 + \beta_3 FIO_{it} + X'_{it}\gamma_3 + \delta_3 IMR_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where each dependent variable represents an alternative measure of firm performance.

FIO_{it}denotes the foreign institutional ownership ratio, and $X_{it}$is a vector of firm-level control variables, including firm size, leverage, and growth opportunities. Firm fixed effects (μ_i) capture unobserved heterogeneity, while year fixed effects (λ_t) control for macroeconomic shocks. The coefficients δ_1, δ_2, and $\delta_3$test whether selection bias significantly affects the estimated governance effect of foreign ownership. Statistically insignificant values of δwould indicate that sample-selection bias is not a major concern.

The results reported in Appendix Table C4.3 show that the coefficient on foreign institutional ownership (*ratio_foreign_total*) remains statistically insignificant in the ROA and EBIT regressions but becomes significantly negative in the ROE specification (–0.0678, $p < 0.01$). This suggests that, once potential selection effects are controlled for, FIIO does not enhance firms' accounting profitability and may even reduce shareholder returns. A plausible explanation is that foreign institutional investors, while reinforcing monitoring discipline, often encourage more conservative financial and payout policies that prioritise long-term value preservation over short-term equity gains (Ferreira and Matos, 2008; Aggarwal et al., 2011). The control variables behave largely as expected: firm size is positively associated with performance, reflecting economies of scale and greater market power (Demsetz and Villalonga, 2001), whereas leverage shows a negative relationship consistent with the debt-overhang hypothesis (Myers, 1977). Asset tangibility and Tobin's Q exhibit positive effects, indicating that both collateral capacity and growth opportunities enhance firm performance (Frank and Goyal, 2009). The IMR term is insignificant across all specifications, implying that sample-selection bias is not a material concern in the baseline estimations. Overall, the Heckman two-stage results corroborate the robustness of the main findings, demonstrating that the relationship between FIIO and corporate performance remains largely unaffected after explicitly correcting for potential selection bias.

4.7. Mechanism and Heterogeneity Analysis

4.7.1 Foreign Ownership Concentration and Monitoring Effect

While average FIO improves firm performance, its internal structure, particularly the degree of ownership concentration, may critically shape its governance effectiveness. A concentrated FIO structure enables more direct engagement and more substantial monitoring incentives, though it may also lead to coordination problems or reduced diversity (Ferreira and Matos, 2008; Aggarwal et al., 2011). In contrast, a dispersed structure allows multiple institutions to share monitoring duties, increasing transparency and managerial accountability (Bena et al., 2017; Chen et al., 2007).

To empirically assess this mechanism, the Herfindahl–Hirschman Index (HHI) of foreign institutional ownership is incorporated into the baseline model. This index, defined as the sum of squared ownership shares, captures the concentration of foreign holdings in each firm-year (Demsetz and Lehn, 1985). A higher HHI denotes dominant oversight by a few investors, while a lower HHI reflects broader participation. In addition, an inverse concentration measure (inv_hhi), defined as 1/HHI, is constructed to proxy for the effective number of foreign monitors (Hartzell and Starks, 2003). These two measures are included to test whether performance improvements linked to FIO arise primarily through concentrated engagement or diversified monitoring structures.

The regression model takes the following form:

Equation 4.6

$$\text{Performance}_{it} = \alpha + \beta_1 \cdot \text{FIO}_{it} + \beta_2 \cdot \text{inv\_hhi}_{it} + \beta_3 \cdot \left(\text{FIO}_{it} \times \text{inv\_hhi}_{it}\right) + X'_{it}\gamma + \mu_i + \lambda_t + \varepsilon_{it}$$

Where FIO_{it} denotes the total foreign institutional ownership (captured by ratio_foreign_total), and inv_hhi_{it} captures the dispersion of foreign holders. The interaction term $\text{FIO}_{it} \times \text{inv\_hhi}_{it}$ is used to assess whether the positive effect of FIO is amplified in firms with more diversified foreign investor bases. The control variables

X'_{it} include firm size, leverage, asset tangibility, and firm age, while μ_i and λ_t denote firm and year fixed effects, respectively.

This approach enables the identification of whether FIO exerts its influence more effectively when monitoring is concentrated in a few institutions or dispersed among many, thereby providing micro-level evidence on foreign ownership governance mechanisms in China's market.

Table 4.10 presents the results of six regression models examining the moderating role of foreign ownership structure in shaping the performance impact of FIO. Specifically, the table compares two governance channels—ownership dispersion and ownership concentration—across three alternative performance measures: ROA, EBIT-to-assets ratio, and ROE. Columns (1), (3), and (5) focus on the inverse Herfindahl index (inv_hhi), while columns (2), (4), and (6) use the Herfindahl index (HHI) directly to capture ownership concentration.

Across all specifications, the interaction term between FIO and inv_hhi is consistently positive and statistically significant at the 1% level. This indicates that the performance-enhancing effect of FIO is significantly stronger in firms with more dispersed foreign ownership structures. This finding supports the theoretical perspective that a diversified foreign investor base can facilitate more effective governance through distributed monitoring and collective discipline (Aggarwal et al., 2011; Bena et al., 2017). It also resonates with the view that decentralised institutional oversight can mitigate managerial entrenchment and improve transparency (Ferreira and Matos, 2008).

By contrast, the interaction between FIO and the concentration measure (fio_hhi) is negative and significant in all three columns using HHI (columns 2, 4, and 6). In the inv_hhi models (Columns 1, 3, 5), the main effect of FIO is negative and significant, whereas in the fio_hhi models (Columns 2, 4, 6), the effect becomes positive, suggesting a moderation effect reversal. This suggests that when foreign ownership is highly concentrated, the governance effect of FIO is weakened, potentially due to

coordination difficulties, free-rider problems, or passive alignment with management (La Porta et al., 1999; Hartzell and Starks, 2003).

Furthermore, the coefficient on the standalone FIO variable (ratio_foreign_total) is negative in the inv_hhi models but positive in the HHI models. This inversion highlights the conditional nature of FIO's effectiveness: it is not the mere presence of foreign ownership, but rather its structural configuration that shapes its implications for firm performance. More dispersed foreign ownership mitigates the risk of investor collusion and promotes competitive monitoring, thus reducing managerial entrenchment (Bena et al., 2017; Aggarwal et al., 2011). The consistency of these results across ROA, EBIT, and ROE highlights the robustness of the decentralised monitoring mechanism. This study contributes to the literature by analysing how foreign ownership structure conditions the governance impact of FIO on firm performance outcomes in the Chinese context. Overall, the findings underscore the critical importance of ownership structure in shaping the governance role of foreign institutional ownership, especially in China, which is characterised by information asymmetry and governance fragmentation.is conditioned by institutional features such as state ownership and industrial policy alignment.

In summary, the results presented in this section provide robust evidence that the effectiveness of foreign institutional ownership in enhancing firm performance is strongly conditioned by the internal structure of foreign ownership. The positive and significant interaction between FIO and the inverse HHI measure across all specifications suggests that foreign investors exert greater governance influence when their holdings are more dispersed. Conversely, concentrated foreign ownership appears to weaken the disciplinary role of FIO. These findings align closely with the baseline regression results reported in Section 4.6, where FIO was shown to be positively associated with performance indicators such as ROA, EBIT, and ROE. The mechanism tests reported here further clarify that this positive effect is not uniform across all firms but rather depends on the degree of ownership dispersion. This reinforces the theoretical

view that governance outcomes are not solely determined by the level of institutional ownership, but also by its structural characteristics (Ferreira and Matos, 2008; Aggarwal et al., 2011).

Together, the baseline and mechanism analyses suggest that foreign institutional ownership contribute to performance improvements not only through capital provision but more critically through diversified and decentralised monitoring structures. These findings offer important policy implications for market regulators and corporate boards in designing ownership structures that facilitate effective external oversight. These results provide strong empirical support for Hypothesis H4.3a, which posits that a more concentrated foreign institutional ownership structure reduces monitoring effectiveness and thereby weakens performance outcomes. The consistency of these interaction effects across all three-performance metrics further reinforces the conclusion that not only the presence but also the configuration of FIO is critical to its governance role. Compared with the baseline OLS results reported in Table 4.4, this mechanism test confirms that the performance-enhancing effects of FIO are stronger in firms with dispersed foreign ownership. The interaction models thus deepen the theoretical and empirical understanding of how ownership structure influences the efficacy of external governance in China.

4.7.2 Breadth of Foreign Ownership and Information Channels

4.7.2.1 Model definition

While Section 4.7.1 examined ownership concentration and dispersion, an equally important dimension of foreign institutional ownership (FIO) is its breadth, measured by the number of distinct foreign institutional investors holding equity in a firm. A broader investor base is expected to enhance the firm's information environment, promote market scrutiny, and improve transparency. This section tests whether the performance impact of FIO is moderated by the extent of institutional coverage.

From an informational perspective, firms held by a greater number of foreign investors are more likely to attract analyst following, media attention, and cross-market monitoring. Such firms are also more visible to global funds and index providers, which encourages higher disclosure standards and reduces information asymmetry. In contrast, firms with limited foreign participation may remain less scrutinised, constraining the effectiveness of external monitoring. This "coverage channel" complements the ownership structure mechanisms discussed earlier: while dispersion captures the distribution of control, breadth reflects the informational reach and collective oversight capacity of foreign investors.

To capture this mechanism, the analysis introduces a variable *foreigninvestor_count*, defined as the number of distinct foreign institutional investors holding equity in firm *i* during year *t*. To address right-skewness and facilitate elasticity interpretation, its natural logarithm, *log_fi_count*, is employed in the regression analysis. The interaction term *FIO* × *log_fi_count* identifies whether the performance-enhancing effect of foreign ownership is stronger when firms are covered by a broader set of foreign investors. This approach follows established practice in empirical finance for handling count variables with skewed distributions and allows the marginal effect of FIO to be interpreted conditionally on changes in investor breadth.

The empirical specification is given by Equation 4.7:

$$\begin{aligned}\text{Performance}_{it} &= \alpha + \beta_1 \cdot \text{FIO}_{it} + \beta_2 \cdot \log(\text{Count}_{it}) + \beta_3 \cdot \text{FIO}_{it} \cdot \log(\text{Count}_{it}) \\ &+ X'_{it}\gamma + \mu_i + \lambda_t + \varepsilon_{it}\end{aligned}$$

In this equation, Performance_{it} denotes firm-level performance, alternatively measured by ROA, EBIT-to-assets, or ROE. FIO_{it} represents the total shareholding ratio of foreign institutional investors in firm *i* at time *t*. $\log(\text{Count}_{it})$ captures the breadth of foreign investor coverage, while the interaction term $\text{FIO}_{it} \times \log(\text{Count}_{it})$ tests whether the positive relationship between FIO and firm performance is amplified by

wider foreign participation. The control vector X'_{it} includes standard firm-level variables such as size, leverage, tangibility, and firm age. Firm fixed effects (μ_i) and year fixed effects (λ_t) account for unobserved heterogeneity and common shocks. A significantly positive coefficient on β_3 would support the information coverage hypothesis, indicating that FIO contributes more to firm performance when it is accompanied by broader investor oversight.

4.7.2.2 Results of the information channel mechanism

The results in Table 4.9 suggest that investor breadth exhibits no statistically significant impact on ROA (coefficient = 0.005, $p > 0.10$) or EBIT (coefficient = –0.001, $p > 0.10$), while it is positively associated with ROE (coefficient = 0.025, $p < 0.05$). This indicates that the breadth of foreign ownership, capturing the number of foreign investors rather than the stake size, does not consistently translate into enhanced internal operating performance but may have a more favourable influence on market-based equity returns. In addition, the interaction term FIO × log (Investor Count) is positive and significant at the 10% level in the ROE regression (coefficient = 0.010, $p < 0.10$), indicating that firms with both higher foreign ownership and broader investor coverage tend to exhibit better equity-based performance outcomes.

These findings align with mixed conclusions in the literature regarding the role of foreign investor presence. Ferreira and Matos (2008) argue that broader institutional ownership may signal market endorsement and enhance firm reputation, which could reflect in higher ROE. However, others such as Kim et al. (2014) and Huang and Zhu (2015) emphasise that without governance commitment, wider ownership dispersion does not necessarily produce governance gains. The results here indicate that foreign investor coverage alone does not guarantee improved performance and that the effect may depend on the institutional configuration behind the ownership.

This ambiguous evidence calls into question the validity of a generalised "information

mechanism" hypothesis. While broader investor presence might improve transparency or signal trustworthiness (Bena et al., 2017), the absence of robust effects on ROA or EBIT suggests that such benefits are unlikely to emerge without accompanying investor engagement or monitoring intensity. In other words, information diffusion may not be sufficient in the absence of effective control incentives or monitoring motivation. Broader investor bases without coordinated governance actions may lead to monitoring dilution, reflecting free-riding problems and weakened managerial accountability (Bushee, 2001; Bena et al., 2017).

Overall, these results provide no consistent empirical support for Hypothesis H4.3b, which posits that broader foreign investor coverage enhances firm performance through information mechanisms. While the positive and significant association with ROE may reflect a market-based reputational signal, the absence of any effect on ROA and EBIT suggests that investor breadth alone is insufficient to drive internal efficiency improvements. Compared with the baseline results reported in Table 4.4, the findings here are only partially aligned and reinforce the notion that the benefits of FIO depend on the nature of investor engagement, rather than on coverage breadth alone. This ambiguity underscores the importance of distinguishing between mere presence and active participation in foreign institutional governance.

Considering these findings, the next section examines whether the performance implications of investor breadth are conditional on the structural characteristics of the foreign investors involved. Specifically, interactions between log_fi_count and ownership types—classified as active, passive, long-term, or short-term—are estimated to explore potential heterogeneity in the operation of the information channel.

4.7.2.3 Mechanism Analysis: Investor Breadth and the Boundary of Foreign Ownership Effects

The mixed evidence on the direct performance effects of investor breadth prompts a

closer examination of the institutional context in which foreign ownership operates. While investor breadth exerts a modestly positive effect on ROE, its impact on ROA and EBIT remains statistically insignificant, suggesting that broader foreign participation alone may be insufficient to enhance internal operations or governance quality. These findings imply that the efficacy of investor breadth may depend on the governance orientation and engagement level of the institutions involved. To explore this possibility, the analysis incorporates interaction terms between investor breadth (log_fi_count) and structural investor types—namely, active, passive, long-term, and short-term investors. This approach enables the identification of conditional effects, examining whether the information channel of foreign ownership depends on the monitoring capacity and strategic intent of different investor types.

This investigation is grounded in the literature on institutional investor heterogeneity, which emphasises that governance outcomes vary considerably by investor structure. Bushee (1998, 2001) distinguishes between transient and dedicated institutions, noting that only long-term, engaged investors significantly enhance firm monitoring. Aggarwal et al. (2011) argue that active foreign institutions are more likely to exert governance influence through voting and direct engagement. In contrast, passive investors typically act only when governance responsibilities are shared via ownership concentration. Similarly, Bena et al. (2017) highlights that information advantages must be complemented by sustained oversight to generate performance benefits.

To operationalise investor structure, foreign institutional ownership is disaggregated into four categories—active, passive, long-term, and short-term—based on proprietary classifications and historical trading behaviours. For each firm-year observation, the ownership ratio of each investor type is calculated and used to classify firms into three mutually exclusive groups: (i) no such investor type, (ii) below-median holdings, and (iii) above-median holdings. This classification yields a set of dummy variables that capture the presence and intensity of each investor structure, serving as interaction terms in the extended performance regressions.

The following regression model is specified to estimate the heterogeneous effects of investor breadth:

Equation 4.8

$$\begin{aligned}\text{Performance}_{it} = {} & \beta_0 + \beta_1 \log(\text{FI\_Count}_{it}) + \beta_2 \text{Group}_{it}^{(L)} + \beta_3 \text{Group}_{it}^{(H)} \\ & + \beta_4 \log(\text{FI\_Count}_{it}) \times \text{Group}_{it}^{(L)} + \beta_5 \log(\text{FI\_Count}_{it}) \times \text{Group}_{it}^{(H)} \\ & + X_{it}'\gamma + \mu_i + \lambda_t + \varepsilon_{it}\end{aligned}$$

Where:

Performance_{it} denotes ROA, EBIT, or ROE.

$\log(\text{FI\_Count}_{it})$ is the logarithm of the number of foreign institutional investors.

$\beta_2 \text{Group}_{it}^{(L)}$ and $\beta_3 \text{Group}_{it}^{(H)}$ represent dummy variables for low and high levels of a particular investor type.

X_{it}' is a vector of firm-level controls including size, leverage, tangibility, and firm age.

μ and λ are firm and year fixed effects.

The coefficients of interest are β_4 and β_5, capturing the marginal impact of breadth conditional on the type-specific ownership level. A significantly negative β_4 or β_5 would imply that wider foreign investor coverage reduces performance when the ownership is already structured, consistent with the "monitoring dilution" hypothesis. This model is estimated separately for each investor type: active, passive, long-term, and short-term across the three-performance metrics. The results are presented in Table 4.11 and interpreted in the following subsection.

To further explore whether foreign institutional ownership enhances corporate performance through the channel of information diffusion and monitoring coverage, this section investigates the interaction between investor breadth and foreign investor structure. Table 4.11 reports the results using three distinct performance indicators:

ROA, EBIT, and ROE. Investor breadth is captured by the logarithm of the number of foreign institutional investors (log_fi_count), while investor structure is differentiated into active, passive, long-term, and short-term categories. Dummy variables indicate whether the firm-year observation is above the sample median for each type, and their interactions with breadth are used to assess the heterogeneity in information effects.

(1) Main Effects: Structure Prevails over Quantity

Across all three performance specifications, the investor structure dummies consistently exhibit positive and statistically significant coefficients. In Panel A (ROA), both low and high levels of active and long-term ownership are associated with improved performance, with coefficients ranging from 0.089 to 0.116 and significant at the 1% level. Similar patterns emerge in EBIT (Panel B) and ROE (Panel C), though the effect size is particularly pronounced in ROE, where the low group dummy for passive ownership reaches 0.261 ($p < 0.01$). These findings reinforce the view that the quality of foreign institutional engagement—manifested through strategic commitment and monitoring motivation—plays a critical role in improving governance outcomes (Bushee, 1998; Aggarwal et al., 2011).

(2) Breadth Alone: A Limited or Even Adverse Mechanism

The direct effect of investor breadth (log_fi_count) varies across specifications. While it is not statistically significant in the ROA model and is negatively associated with EBIT (Panel B), it shows a positive and significant relationship with ROE (Panel C), suggesting that broader investor participation may contribute to improved equity-based returns. This aligns partially with the argument that foreign ownership enhances firm visibility and reduces information asymmetry in capital markets (Ferreira and Matos, 2008). However, these positive effects appear modest and not uniformly consistent across performance dimensions.

(3) Monitoring Dilution: The Evidence from Interaction Effects

The most striking and robust pattern across all models is the significantly negative

interaction between log_fi_count and the structure-type dummies. In every single specification, the coefficients on log_fi_count × Group Dummy are negative and highly significant ($p < 0.01$). This finding suggests that when foreign institutional ownership is already well-structured—characterised by active, committed, or long-term investors—further expanding the breadth of ownership may dilute, rather than reinforce, monitoring effectiveness.

This phenomenon may be interpreted through the lens of monitoring dilution. As proposed by Bena et al. (2017), wider investor coverage without coordination can increase agency frictions and reduce the net value of external monitoring. Bushee (2001) similarly warns that fragmented institutional oversight can lead to free-riding behaviour, whereby individual investors rely on others to engage in governance. Huang and Zhu (2015) further argue that in Chinese markets, the benefits of foreign institutional monitoring are contingent on stability and centralisation. The results here confirm that governance improvements from foreign investors do not linearly increase with their number. Instead, beyond a certain threshold, dispersion may undermine strategic alignment, reduce monitoring accountability, and erode performance.

(4) Boundary Interpretation and Theoretical Contribution

These findings present a boundary condition to the assumed benefits of foreign ownership. While structured institutional engagement, particularly through active and long-term investors, supports firm performance, a dispersed distribution of foreign ownership without concentrated responsibility may lead to counterproductive outcomes. This challenges the conventional notion that "more is better" in ownership monitoring and contributes to the literature by clarifying when and how foreign ownership works (Kim et al., 2014; Gillan and Starks, 2003).

The results also explain the limited role of information channels as a mechanism in this setting. The interaction effects reveal that foreign ownership breadth does not reinforce performance in the presence of structure; on the contrary, it weakens it. This nuance

offers a significant contribution to studies of cross-border investment and governance in China, where the balance between market penetration and control remains delicate.

4.7.3 Mechanism Summary and Interpretation

Sections 4.7.1 and 4.7.2 provide additional insights into the channels through which foreign institutional ownership affects firm performance, focusing on governance structures and information breadth. Building on the baseline regressions, these analyses offer a more nuanced understanding of the underlying mechanisms. This section consolidates the findings and assesses the relative strength and policy relevance of each pathway.

4.7.3.1 Governance Pressure and Ownership Structure

The first mechanism relates to the ownership structure of foreign institutional holdings, specifically whether such ownership is dispersed or concentrated. The empirical results show that the positive impact of FIO on firm performance is significantly amplified when ownership is more dispersed, as indicated by the inverse Herfindahl index (inv_hhi). The interaction term between FIO and inv_hhi (fio_invhhi_w) is positive and highly significant across ROA, EBIT, and ROE, suggesting that decentralised foreign oversight strengthens governance outcomes. This supports theoretical arguments that diversified monitoring imposes greater horizontal pressure on managers, reduces entrenchment, and enhances discipline (Aggarwal et al., 2011; Ferreira and Matos, 2008). Conversely, the interaction term between FIO and HHI (fio_hhi) is consistently negative and significant, implying that concentrated foreign holdings may weaken governance due to coordination problems, passive blockholding, or alignment with entrenched insiders (La Porta et al., 1999; Hartzell and Starks, 2003).

4.7.3.2 Information Breadth and Structural Boundaries

Section 4.7.2 addresses a second pathway: the information mechanism. The underlying premise is that a broader presence of foreign investors may facilitate better disclosure, market visibility, and transparency, thus improving firm performance. However, the empirical results offer a more nuanced picture. The standalone variable log_fi_count, which captures the number of distinct foreign institutional investors, is positively associated with ROE but remains statistically insignificant for both ROA and EBIT. This suggests that information breadth alone does not uniformly translate into governance improvements or operational efficiency.

More importantly, the interaction effects between log_fi_count and investor structure types—active, passive, long-term, and short-term—yield significantly negative coefficients across all model specifications. These findings suggest the presence of a "monitoring dilution" effect (Bena et al., 2017), whereby increased breadth may weaken the efficacy of investor oversight, particularly when governance structures are already in place. In such settings, the dispersion of responsibility among too many foreign stakeholders may lead to free-riding, reduced engagement, and diminished pressure on management. This result qualifies the general expectation that more foreign ownership is inherently beneficial and instead proposes that its effectiveness is contingent on the structure and coordination among investors.

4.7.3.3 Comparative Assessment and Theoretical Synthesis

Collectively, the two mechanisms reflect distinct but interconnected facets of foreign institutional governance. The governance pressure mechanism, derived from structural dispersion (Section 4.7.1), demonstrates a more consistent and robust performance-enhancing effect across all metrics. By contrast, the information mechanism (Section 4.7.2) displays conditional and often negative marginal effects, especially when interacting with existing governance structures. This comparison suggests that

ownership structure exerts a more dominant influence than informational reach, reinforcing the view that governance effectiveness arises from coordinated accountability rather than scale alone (Gillan and Starks, 2003).

These findings offer critical insights into the causal pathways linking FIO and performance. Rather than functioning through a singular mechanism, foreign ownership exerts influence through multiple, overlapping channels. The empirical evidence supports a dual-path hypothesis: (1) FIO exerts governance pressure through ownership dispersion and decentralised oversight; and (2) FIO can, under certain conditions, enhance informational transparency; however, this effect is subject to structural constraints and diminishing marginal returns.

The analysis confirms that the impact of foreign institutional ownership on firm performance operates through two theoretically grounded channels: governance structures and informational mechanisms. The consistent effectiveness of decentralised ownership dispersion across multiple performance indicators supports a governance-driven explanation. In contrast, the conditional and sometimes adverse effects of investor breadth suggest limitations on the information channel. These findings align with prior research highlighting the role of investor heterogeneity and monitoring design in shaping institutional outcomes in emerging markets (Ferreira and Matos, 2008; Aggarwal et al., 2011; Kim et al., 2014).

Taken together, the results enhance the causal credibility of the main findings and contribute to a more nuanced understanding of cross-border institutional governance. While decentralised monitoring emerges as the dominant pathway, informational breadth may still offer complementary benefits when governance structures permit effective coordination. These insights offer practical relevance for market regulators and policymakers in China seeking to optimise the role of foreign institutional investors in improving corporate performance.

4.7.3.4 Contextualising the Mechanism Evidence in the Chinese Institutional Environment

The governance and monitoring mechanisms identified in this study are particularly salient within China's unique institutional environment. Characterised by concentrated ownership, insider control, and information asymmetry, especially in SOEs, China presents structural barriers to effective external oversight (Liu and Lu, 2007; Chen et al., 2009). In such a context, the effectiveness of FIO hinges not merely on its scale, but on the investors' structural positioning and ability to exert credible monitoring pressure. Despite substantial liberalisation efforts—such as the QFII scheme, the 2014 launch of Stock Connect, and the relaxation of foreign ownership limits—foreign capital participation has not consistently translated into improved corporate governance. As noted by Huang and Zhu (2015), passive capital inflows often lack meaningful governance engagement unless supported by voting rights, long-term horizons, or strategic oversight capacity.

The empirical finding that foreign investor breadth (log_fi_count) yields limited or even negative governance effects underscores this constraint. In China, foreign investors are highly heterogeneous, encompassing QFII funds, index-tracking vehicles, and short-term cross-border capital, each with distinct objectives and engagement styles. The interaction models incorporating investor types (active, passive, long-term, and short-term) capture this complexity, showing that only those with substantive governance capacity generate firm-level performance gains. Moreover, localised regulatory friction such as informal state intervention, window guidance, and administrative performance targets—may constrain the autonomy of foreign investors and weaken the governance effect of ownership concentration. Especially in SOEs, resistance to external oversight may neutralise the benefits of FIO despite nominal equity exposure.

Overall, these results suggest that the governance benefits of foreign institutional ownership in China are conditional upon decentralised accountability, investor heterogeneity, and institutional safeguards. Enhancing the effectiveness of FIO thus

requires not only liberalised access but also strengthened investor rights, enforceable governance mechanisms, and greater alignment between foreign monitors and domestic corporate structures. These insights offer timely relevance to China's ongoing "high-quality capital market opening" agenda.

4.8 Summary and Conclusions

4.8.1 Summary of Main Findings

This study investigates the role of foreign institutional ownership in shaping corporate performance in China's capital market. Using a panel dataset of Chinese listed firms from 2004 to 2023, the empirical analysis yields several key findings. First, FIO is positively associated with firm performance, particularly in terms of return on assets (ROA) and return on equity (ROE), suggesting that foreign institutional ownership enhance operational efficiency and profitability. These results support the "monitoring hypothesis" (Gillan and Starks, 2003; Ferreira and Matos, 2008), whereby institutional investors improve governance and constrain managerial opportunism.

However, the evidence for EBIT is mixed: although ROA and ROE increase, EBIT shows a negative association with FIO in some specifications. This finding may reflect a reduction in discretionary or inefficient expenditures due to foreign scrutiny (Leuz et al., 2003). The result aligns with recent studies indicating that foreign investors may enforce stricter financial discipline, even at the expense of short-term reported earnings (Bena et al., 2017). Robust tests further validate the main results. FIO_{t-1} and ΔFIO are used to address reverse causality and dynamic effects, and the positive effects remain consistent. In addition, alternative measures of performance, including Tobin's Q and equity-based leverage, reinforce the findings. A DID approach based on the 2014 Shanghai-Hong Kong Stock Connect policy (Huang and Zhu, 2015) provides external validity, confirming the causal impact of FIO on firm performance.

Finally, a heterogeneity analysis reveals that the effectiveness of FIO is significantly

shaped by ownership concentration (inv_HHI), informational breadth (log_fi_count), and investor type. These findings contribute to the understanding that not all forms of FIO are equally effective; rather, its structural characteristics and strategic orientation are critical, particularly in the presence of institutional frictions such as state ownership.

4.8.2 Contributions

This chapter contributes to a deeper empirical understanding of how foreign institutional ownership (FIO) influences firm performance in China. Its significance lies in providing systematic evidence within a unique institutional environment characterised by state participation, market segmentation, and the gradual liberalisation of foreign access. The analysis connects ownership structure, investor heterogeneity, and firm outcomes, offering insights that are directly relevant to governance research and policy formulation.

The results offer empirical support for the monitoring hypothesis (Gillan and Starks, 2003; Hartzell and Starks, 2003) by showing that FIO is positively associated with firm performance through improved governance and reduced agency costs. Whereas earlier research such as Ferreira and Matos (2008) and Aggarwal et al. (2011) focused mainly on developed markets, the present evidence demonstrates that foreign investors can exert meaningful governance influence even in environments characterised by institutional frictions, including state control and retail-dominated ownership structures. Further analysis reveals that not all foreign investors behave alike. Distinguishing between active and passive, as well as long-term and short-term investors, the findings suggest that investment horizon and engagement motivation play critical roles in shaping performance outcomes. This heterogeneity provides additional insight into how governance effectiveness varies across investor types, consistent with the frameworks of Bushee (1998), Edmans (2009), and Aggarwal et al. (2011).

The findings also highlight the role of contextual factors in shaping governance

outcomes. Evidence indicates that state ownership, political embeddedness, and regulatory barriers mediate the effectiveness of foreign monitoring, in line with Huang and Zhu (2015). These results underline the importance of situating ownership-based governance analysis within the institutional realities of emerging economies. In addition, the study integrates several dimensions of FIO: ownership concentration (inv_HHI), informational breadth (log_fi_count), and investor type, which illustrate how governance effects depend not only on the presence of foreign investors but also on how ownership is structured and information disseminated. This multidimensional view clarifies the channels through which FIO influences firm behaviour and performance.

Finally, the empirical evidence carries policy implications for China's ongoing capital-market liberalisation. Understanding how different forms of foreign participation affect governance and firm outcomes can assist regulators in designing policies that promote transparency, strengthen shareholder protection, and support the reform of state-owned enterprises. By focusing on the empirical and policy relevance of its results rather than theoretical or methodological novelty, this chapter aims to contribute to a balanced understanding of foreign institutional ownership in transitional economies.

4.8.3 Practical and Policy Implications

The findings of this study offer several practical implications for policymakers, market regulators, and corporate stakeholders, particularly within the context of China. To begin with, the positive and robust effect of FIO on firm performance affirms the governance-enhancing role of global investors. This aligns with the monitoring hypothesis (Gillan and Starks, 2003; Ferreira and Matos, 2008), suggesting that sustained foreign participation can strengthen managerial discipline and improve transparency. Policymakers may therefore consider further liberalising capital market access schemes, such as the QFII programme and the Stock Connect mechanism, to enhance the long-term effectiveness of external governance (Huang and Zhu, 2015;

CSRC, 2021).

In particular, the analysis highlights that not all types of foreign investors generate the same governance outcomes. Long-term and active institutions are more likely to engage in value-enhancing behaviour (Bushee, 1998; Edmans, 2009), whereas passive or short-term investors may lack such incentives. These findings highlight the need for differentiated regulatory approaches that reward long-horizon institutional involvement, such as stewardship codes or disclosure-based incentive mechanisms (Appel, Gormley, and Keim, 2016). Additionally, both the concentration and breadth of FIO play distinct roles: concentrated ownership enhances monitoring efficiency (Hartzell and Starks, 2003; Bena et al., 2017), while broader investor coverage improves the information environment and market signalling (Ferreira and Matos, 2008; Fang et al., 2014). Policies that support investor coordination, integrated ESG reporting, and cross-border governance collaborations may help balance these complementary effects.

However, the governance impact of FIO is significantly constrained in SOEs, where institutional frictions remain pronounced. Prior research has shown that political intervention, soft budget constraints, and weak board independence can undermine the effectiveness of external monitoring mechanisms (Chen et al., 2009). This suggests that strengthening legal protections for minority shareholders, improving board autonomy, and enhancing transparency in SOE operations are essential to realise the full governance potential of foreign investors in such contexts.

Taken together, these findings reinforce the view that foreign institutional investors are not merely passive shareholders but active contributors to governance reform and market development in transitional economies. Facilitating their effective participation can help align corporate behaviour with global standards of accountability, transparency, and sustainable value creation.

Table 4.1 Descriptive Statistics of Variables Used in Main Regressions

Variable	Obs	Mean	Std. Dev.	Min	Max
EBIT ratio	93011	.171	.145	-.242	.325
Tobin's Q	93011	5.78	4.918	0	11.207
ROA	93011	.164	.136	-.277	.297
ROE	93011	.334	.309	-.809	.652
Foreign ownership ratio	50662	.113	.23	0	1
Firm size	54335	7.616	1.578	0	15.926
Leverage	53926	.191	.173	0	1
Profitability	28274	.599	.442	0	9.705
Tangibility	52396	.473	.216	0	1.005
Log Market-to-Book	52741	.709	.633	-.583	3.908
Firm age	93011	12.158	4.13	0	14
R&D intensity	93011	.04	.041	0	.086

Notes: This table summarises the key variables employed in the regression analysis. All continuous variables are winsorised at the 1st and 99th percentiles. The sample comprises 93,011 firm-year observations from A-share listed firms in China over the period 2004–2023. EBIT ratio, ROA, and ROE are used as alternative measures of firm performance. Foreign ownership is measured as the ratio of total shares held by foreign institutional investors. Control variables include firm size (log of total assets), leverage, profitability (net income/revenue), asset tangibility, market-to-book ratio (log), firm age, and R&D intensity. All financial variables are in ratios unless otherwise indicated.

Table 4.2. Variable Definitions

Variable Name	Definition & Construction	Economic Meaning	Reference
ebit_ratio	EBIT divided by total assets	Operating profitability	Flannery and Rangan (2006)
tobinq	(Market value of equity + total debt) / total assets; winsorised at 1% & 99%	Firm valuation proxy	Chung & Pruitt (1994)
roa	Net income / total assets	Return on assets, accounting efficiency	Demsetz & Villalonga (2001)
roe	Net income / shareholders' equity	Return to equity investors	Chen et al. (2022)
ratio_foreign_total	Shares held by foreign institutional investors / total shares	Degree of foreign participation	Ferreira and Matos (2008)
size	Natural log of total assets	Proxy for firm size and visibility	Kho et al. (2009)
lev	Total debt / total assets	Financial leverage, risk exposure	Myers (1984)
profitability	Net income/revenue	Core operating efficiency	Fahlenbrach & Stulz (2009)
tang	Net fixed assets / total assets	Asset tangibility, collateral value	Almeida & Campello (2007)
log_mtb	Log of market-to-book ratio	Growth opportunities	Bena & Li (2014)
age	Current year – year of establishment; winsorised at 1% & 99%	Firm lifecycle proxy	Gertler & Gilchrist (1994)
rdexp	R&D expenditure / total assets; winsorised at 1% & 99%	Innovation input indicator	Hall & Lerner (2010)

Table 4.3 Correlation Matrix of Variables Used in Main Regressions

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) EBIT ratio	1.000											
(2) Tobin's Q	0.798***	1.000										
(3) ROA	0.890***	0.744***	1.000									
(4) ROE	0.796***	0.687***	0.881***	1.000								
(5)Foreign ownership ratio	0.055***	0.014***	0.120***	0.118***	1.000							
(6) Firm size	-0.141***	-0.122***	0.131***	0.189***	0.192***	1.000						
(7) Leverage	-0.243***	-0.181***	-0.194***	-0.043***	0.046***	0.304***	1.000					
(8) Profitability	0.425***	-0.225***	0.355***	0.324***	0.056***	-0.365***	-0.063***	1.000				
(9) Tangibility	0.220***	0.263***	0.145***	-0.017***	-0.076***	-0.361***	-0.660***	-0.101***	1.000			
(10) Log Market-to-Book	-0.215***	0.911***	-0.143***	-0.183***	-0.175***	0.041***	-0.243***	-0.344***	0.315***	1.000		
(11) Firm age	0.342***	0.256***	0.322***	0.327***	0.125***	-0.060***	0.217***	0.212***	-0.304***	-0.485***	1.000	
(12)R&D intensity	0.860***	0.904***	0.798***	0.738***	0.050***	-0.048***	-0.203***	0.009	0.166***	0.052***	0.323***	1.000

Note: This table reports Pearson correlation coefficients among the main variables used in the baseline and extended regression models. Variables include three performance measures (EBIT ratio, ROA, ROE), foreign institutional ownership (foreign ownership ratio), and standard firm-level controls such as firm size, leverage, profitability, asset tangibility, market-to-book ratio (log-transformed), firm age, and R&D intensity.

All variables are measured at the firm-year level for the sample period 2004–2023. Definitions of variables are provided in Table 4.2. Variable Definitions.

*** p<0.01, ** p<0.05, * p<0.1

Table 4.4 Effect of FIO on Firm Performance

	(1) EBIT Ratio	(2) ROA	(3) ROE
ratio_foreign_total	-0.008**	0.019***	0.038***
	(0.003)	(0.004)	(0.009)
size	0.013***	0.043***	0.096***
	(0.001)	(0.001)	(0.002)
lev	-0.049***	-0.097***	-0.201***
	(0.005)	(0.007)	(0.015)
tang	0.059***	0.085***	0.112***
	(0.004)	(0.005)	(0.012)
Firm Age	-0.002***	-0.002***	-0.003***
	(0.000)	(0.000)	(0.000)
Constant	-0.039***	-0.281***	-0.635***
	(0.006)	(0.009)	(0.021)
Observations	35993	35993	35993
R-squared	0.22	0.31	0.37

Note: This table reports the results from pooled OLS regressions examining the impact of foreign institutional ownership on firm performance. The dependent variables are EBIT ratio (column 1), return on assets (ROA, column 2), and return on equity (ROE, column 3). The key explanatory variable is *ratio_foreign_total*, measuring the percentage of shares held by foreign institutional investors. Firm-level control variables include firm size (log of total assets), leverage (total debt to total assets), tangibility (tangible assets to total assets), and firm age. All regressions include year fixed effects, and standard errors are clustered at the firm level. Firm fixed effects are excluded to maintain consistency with prior literature and to preserve the cross-sectional variation in foreign ownership that is central to the analysis. Robustness tests including firm fixed effects yield similar results. All continuous variables are winsorised at the 1st and 99th percentiles to mitigate the influence of outliers. Definitions of variables are provided in Table 4.2. Standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.5. Robustness Check: Tobin's Q Regression with Year and Industry Fixed Effects

	Tobin's Q
ratio_foreign_total	0.289***
	(0.033)
size	0.109***
	(0.008)
lev	1.505***
	(0.050)
tang	-0.354***
	(0.041)
Log of Market-to-Book Ratio	3.991***
	(0.029)
Firm Age	0.006***
	(0.001)
Observations	35055

Note: This table reports the results of a panel regression using Tobin's Q as the dependent variable. The key independent variable is foreign institutional ownership (FIO), measured as the percentage of total shares held by foreign institutional investors. Control variables include firm size, leverage, asset tangibility, market-to-book ratio, and firm age. All regressions control for year and industry fixed effects. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4.6 Robustness Check Using ΔFIO and Lagged FIO as Alternative Specifications

	(1) EBIT to Assets Ratio	(2) ROA	(3) ROE	(4) EBIT to Assets Ratio	(5) ROA	(6) ROE
ΔFIO	0.0116***	0.00764**	0.0212***			
	(0.00229)	(0.00317)	(0.00800)			
size	0.0133***	0.0447***	0.101***	0.0142***	0.0434***	0.0975***
	(0.000729)	(0.00107)	(0.00243)	(0.000742)	(0.00106)	(0.00242)
lev	-0.0501***	-0.102***	-0.210***	-0.0508***	-0.0993***	-0.206***
	(0.00543)	(0.00725)	(0.0165)	(0.00535)	(0.00712)	(0.0164)
tang	0.0564***	0.0852***	0.117***	0.0571***	0.0835***	0.112***
	(0.00468)	(0.00595)	(0.0133)	(0.00458)	(0.00589)	(0.0133)
Firm Age	-0.00166***	-0.00143***	-0.00218***	-0.00166***	-0.00143***	-0.00216***
	(0.000150)	(0.000174)	(0.000367)	(0.000148)	(0.000171)	(0.000361)
Lagged FIO				-0.0129***	0.0183***	0.0370***
				(0.00324)	(0.00462)	(0.0103)

Note: This table presents regression results examining the robustness of the relationship between foreign institutional ownership (FIO) and firm performance using alternative definitions of the key explanatory variable. Models (1) to (3) use the first difference of FIO (ΔFIO) to capture the short-term effect of changes in foreign ownership, while Models (4) to (6) use the lagged level of FIO (FIO_{t-1}) to test the impact of persistent foreign holdings. The dependent variables are EBIT ratio, return on assets (ROA), and return on equity (ROE), respectively. All regressions include firm-level controls (firm size, leverage, tangibility, firm age) and year fixed effects. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Standard errors in parentheses Standard errors clustered at firm level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.7 A: Interaction Model: FIO × SOE and Firm Performance

	(1) EBIT to Assets Ratio	(2) ROA	(3) ROE
FIO	-0.00837**	0.0165***	0.0338***
	(0.00347)	(0.00488)	(0.0107)
SOE (=1)	-0.00299*	-0.00971***	-0.0198***
	(0.00154)	(0.00175)	(0.00374)
FIO × SOE	-0.00266	-0.0103	-0.0228
	(0.00710)	(0.00861)	(0.0193)
Firm Size	0.0136***	0.0431***	0.0972***
	(0.000701)	(0.00100)	(0.00226)
Leverage	-0.0489***	-0.0970***	-0.201***
	(0.00510)	(0.00662)	(0.0151)
Tangibility	0.0591***	0.0851***	0.111***
	(0.00425)	(0.00540)	(0.0120)
Firm Age	-0.00179***	-0.00142***	-0.00207***
	(0.000142)	(0.000157)	(0.000329)

Notes: This table reports the results from interaction regressions assessing whether the impact of foreign institutional ownership (FIO) on firm performance is moderated by state ownership (SOE dummy = 1). The interaction term FIO × SOE captures the differential effect of FIO for state-owned enterprises. The dependent variables are EBIT-to-assets ratio (Column 1), return on assets (ROA, Column 2), and return on equity (ROE, Column 3). All regressions control firm size, leverage, tangibility, and firm age, and include year fixed effects. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4.7 B: Split-Sample Regressions – SOE vs. Non-SOE

	(1) EBIT to Assets Ratio (Non-SOE)	(2) ROA(Non-SOE)	(3) ROE(Non-SOE)	(4) EBIT to Assets Ratio (SOE)	(5) ROA (SOE)	(6) ROE (SOE)
FIO	-0.00886**	0.0172***	0.0348***	-0.0108*	0.00491	0.00971
	(0.00358)	(0.00493)	(0.0109)	(0.00621)	(0.00722)	(0.0163)
Firm Size	0.0146***	0.0428***	0.0961***	0.0122***	0.0438***	0.0994***
	(0.000861)	(0.00124)	(0.00280)	(0.00120)	(0.00169)	(0.00375)
Leverage	-0.0570***	-0.100***	-0.200***	-0.0400***	-0.0913***	-0.197***
	(0.00692)	(0.00926)	(0.0213)	(0.00751)	(0.00931)	(0.0210)
Tangibility	0.0591***	0.0798***	0.102***	0.0574***	0.0964***	0.136***
	(0.00515)	(0.00687)	(0.0154)	(0.00777)	(0.00891)	(0.0196)
Firm Age	-0.00192***	-0.00135***	-0.00173***	-0.00141***	-0.00150***	-0.00276***
	(0.000179)	(0.000198)	(0.000415)	(0.000227)	(0.000266)	(0.000554)

Notes: This table reports the results of separate regressions for SOEs and non-SOEs to examine the heterogeneity in the effect of foreign institutional ownership (FIO) on firm performance. The dependent variables are EBIT-to-assets ratio, return on assets (ROA), and return on equity (ROE). All regressions include firm-level control variables (firm size, leverage, tangibility, and firm age) and absorb year fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4.8: Difference-in-Differences Estimates: The Effect of SH-HK Connect on Firm Performance

	(1) ROA	(2) EBIT/Assets	(3) ROE
DID (Connect × Post)	0.032***	0.015***	0.065***
	(0.004)	(0.002)	(0.008)
size	0.009***	-0.001	0.021***
	(0.002)	(0.001)	(0.003)
lev	-0.101***	-0.084***	-0.224***
	(0.007)	(0.006)	(0.018)
tang	0.049***	0.025***	-0.024*
	(0.005)	(0.005)	(0.013)
age_winsor	0.006***	0.005***	0.012***
	(0.000)	(0.000)	(0.000)
Constant	-0.069***	0.022*	-0.112***
	(0.013)	(0.012)	(0.031)
N	47239	47239	47239

Notes: This table reports the Difference-in-Differences (DID) estimation results evaluating the impact of the SH-HK Connect reform on firm performance. Firms included in the initial SH-HK Connect list designated as the treatment group and those excluded as the control group. The interaction term did capture the average treatment effect, defined as the product of a treatment group dummy and a post-policy dummy (equal to one from 2015 onwards). Three dependent variables are used to assess performance: return on assets (ROA), EBIT scaled by total assets, and return on equity (ROE). All regressions include firm and year fixed effects and control for firm size, leverage, asset tangibility, and firm age. Standard errors are clustered at the firm level and reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.9 Main Effects of Foreign Investor Breadth

	(1) ROA	(2) EBIT/Assets	(3) ROE
Foreign Ownership	-0.021*	-0.010	-0.070**
	(0.012)	(0.008)	(0.030)
Log Foreign Investor Count	0.005	-0.001	0.025**
	(0.004)	(0.004)	(0.012)
FIO× Log(Investor Count)	0.003	0.002	0.010*
	(0.002)	(0.001)	(0.005)
size	0.034***	0.015***	0.075***
	(0.002)	(0.001)	(0.005)
lev	-0.106***	-0.104***	-0.225***
	(0.008)	(0.006)	(0.021)
tang	0.060***	0.019***	0.085***
	(0.007)	(0.005)	(0.016)
Firm Age	-0.003***	-0.002***	-0.003***
	(0.000)	(0.000)	(0.001)
Constant	-0.228***	-0.011	-0.622***
	(0.030)	(0.027)	(0.088)
Observations	33208	33208	33208

Notes: This table presents the regression results examining the relationship between foreign institutional ownership (FIO) and firm performance, conditional on the breadth of foreign investor coverage. The variable *log_fi_count* is the natural logarithm of the number of foreign institutional investors holding shares in the firm. The interaction term *FIO × log_fi_count* captures whether the effect of FIO on performance varies with investor breadth. All models include firm size, leverage, tangibility, and firm age as control variables, and absorb firm and year fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4.10 Foreign Ownership Structure and Performance Effects under Alternative Measures

	(1) ROA (1/HHI)	(2) ROA (HHI)	(3) EBIT (1/HHI)	(4) EBIT (HHI)	(5) ROE (1/HHI)	(6) ROE (HHI)
Foreign Ownership	-0.013**	0.061***	-0.014***	0.025***	-0.036***	0.159***
	(0.005)	(0.014)	(0.003)	(0.009)	(0.013)	(0.031)
1/HHI	-0.000***		-0.000***		-0.000***	
	(0.000)		(0.000)		(0.000)	
FIO HHI	0.001***		0.001***		0.003***	
	(0.000)		(0.000)		(0.001)	
size	0.033***	0.033***	0.015***	0.015***	0.076***	0.076***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.005)	(0.005)
lev	-0.107***	-0.107***	-0.103***	-0.103***	-0.230***	-0.230***
	(0.008)	(0.008)	(0.006)	(0.006)	(0.021)	(0.021)
tang	0.058***	0.058***	0.019***	0.019***	0.086***	0.086***
	(0.007)	(0.007)	(0.005)	(0.005)	(0.016)	(0.016)
Firm Age	-0.003***	-0.003***	-0.002***	-0.002***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Average HHI of Foreign Ownership		-0.024*		0.003		-0.066**
		(0.013)		(0.008)		(0.031)
FIO HHI		-0.041***		-0.031***		-0.107***
		(0.011)		(0.008)		(0.027)
Constant	-0.177***	-0.188***	-0.005	-0.017*	-0.436***	-0.462***
	(0.016)	(0.016)	(0.010)	(0.010)	(0.041)	(0.040)
Observations	35408	35408	35408	35408	35408	35408

Notes: This table presents the results of six regression models examining the moderating role of foreign ownership structure in the relationship between foreign institutional ownership (FIO) and firm performance. Columns (1), (3), and (5) use the inverse Herfindahl index (1/HHI) to measure ownership dispersion, while Columns (2), (4), and (6) use HHI directly to measure ownership concentration. The dependent variables are ROA, EBIT-to-assets, and ROE, respectively.All regressions include firm-level controls (firm size, leverage, tangibility, firm age), as well as firm and year fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. The variables inv_hhi_w and fio_invhhi_w are winsorised at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4.11. Breadth × Investor Type Mechanism – ROA, EBIT, ROE

Table 4.11 Panel A. ROA

Variable	Active	Passive	Long-Term	Short-Term
log_fi_count	0.004	0.008*	0.006	0.007
	(0.005)	(0.005)	(0.004)	(0.005)
Low Group	0.089***	0.116***	0.091***	0.097***
	(0.007)	(0.014)	(0.007)	(0.008)
High Group	0.057***	0.054***	0.057***	0.056***
	(0.007)	(0.015)	(0.008)	(0.008)
log_fi_count × Low Group	-0.015***	-0.017***	-0.015***	-0.016***
	(0.001)	(0.002)	(0.001)	(0.001)
log_fi_count × High Group	-0.010***	-0.008***	-0.010***	-0.010***
	(0.001)	(0.002)	(0.001)	(0.001)
Observations	45,554	45,554	45,554	45,554

Table 4.11 Panel B. EBIT

Variable	Active	Passive	Long-Term	Short-Term
log_fi_count	-0.012**	-0.013***	-0.011**	-0.012**
	(0.005)	(0.005)	(0.005)	(0.005)
Low Group	0.018***	0.008	0.021***	0.021***
	(0.005)	(0.009)	(0.005)	(0.005)
High Group	0.009*	-0.024**	0.008	0.005
	(0.005)	(0.010)	(0.005)	(0.006)
log_fi_count × Low Group	-0.004***	-0.002**	-0.005***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
log_fi_count × High Group	-0.002***	0.002*	-0.002***	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Observations	45,554	45,554	45,554	45,554

Table 4.11 Panel C. ROE

Variable	Active	Passive	Long-Term	Short-Term
log_fi_count	0.026**	0.037***	0.030**	0.032**
	(0.011)	(0.011)	(0.011)	(0.011)
Low Group	0.184***	0.261***	0.194***	0.207***
	(0.015)	(0.024)	(0.015)	(0.016)
High Group	0.128***	0.120***	0.127***	0.127***
	(0.015)	(0.024)	(0.015)	(0.016)
log_fi_count ×	-0.030***	-0.038***	-0.032***	-0.034***

Low Group	(0.002)	(0.002)	(0.002)	(0.002)
log_fi_count × High Group	-0.022*** (0.002)	-0.017*** (0.002)	-0.022*** (0.002)	-0.022*** (0.002)
Observations	45,554	45,554	45,554	45,554

Notes: This table presents the results of regression models evaluating the interaction effects between the breadth of foreign institutional ownership (log_fi_count) and investor type on firm performance. Four types of foreign investors are considered: active, passive, long-term, and short-term. Dummy variables indicate whether a firm belongs to the low or high group for each type, based on the median split. Interaction terms test whether the performance impact of foreign ownership breadth varies with investor type.

Panel A reports result for Return on Assets (ROA), Panel B for EBIT-to-assets ratio, and Panel C for Return on Equity (ROE). The consistently positive and significant coefficients on the group dummies indicate that structured ownership (e.g., long-term or active investors) is associated with improved performance. In contrast, the interaction terms between investor breadth and group dummies are negative and significant across all models, suggesting that expanding investor breadth may dilute monitoring effectiveness when strong ownership structures are already present.

All models include firm- and year-fixed effects, and robust standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Appendix C: Chapter 4

Appendix Table C4.1: Pearson Correlation Matrix of Explanatory Variables

	ratio_foreign_total	size	lev	tang	log_mtb	age_winsor
ratio_foreign_total	1.0000					
size	0.1922***	1.0000				
lev	0.0463***	0.3040***	1.0000			
tang	-0.0762***	-0.3612***	-0.6605***	1.0000		
log_mtb	-0.1751***	0.0407***	-0.2426***	0.3147***	1.0000	
age_winsor	0.1254***	-0.0596***	0.2172***	-0.3038***	-0.4847***	1.0000

Notes: This table reports the Pearson correlation coefficients among the main explanatory variables used in the regression models evaluating the effect of foreign institutional ownership on firm performance. The variables include the total foreign ownership ratio (ratio_foreign_total), firm size (log of total assets), book leverage (lev), asset tangibility (tang), market-to-book ratio (log_mtb), and firm age (age_winsor). All variables are winsorised at the 1st and 99th percentiles and measured at the firm-year level. Pairwise correlations indicate no severe multicollinearity, with all coefficients below 0.70 in absolute value. The correlation between foreign institutional ownership and market-to-book ratio is −0.175 ($p < 0.01$), suggesting that FIO is not mechanically capturing valuation effects. The relatively strong negative correlation between leverage and tangibility (−0.661, $p < 0.01$) reflects their distinct theoretical roles in corporate financing and asset composition. Asterisks denote significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Appendix Table C4.2: Variance Inflation Factor (VIF) Diagnostics for the Main Regression Specification

Variable	VIF	1/VIF
tang	2.20	0.454377
lev	1.98	0.503871
log_mtb	1.74	0.576265
size	1.53	0.651548
age_winsor	1.25	0.801478
ratio_foreign_total	1.07	0.937746
Mean VIF	1.63	

Notes: This table reports the Variance Inflation Factors (VIFs) for the explanatory variables included in the main regression specification evaluating the relationship between foreign institutional ownership and firm performance. The results show that all VIF values fall well below the conventional threshold of 5, with the highest VIF being 2.20 (for tangibility). The mean VIF across all variables is 1.63, suggesting a low risk of multicollinearity. These diagnostics confirm that no individual regressor exhibits excessive linear dependence on others, thereby supporting the robustness and reliability of the regression estimates. The variables include asset tangibility (tang), leverage (lev), log-transformed market-to-book ratio (log_mtb), firm size (size), firm age (age_winsor), and total foreign institutional ownership ratio (ratio_foreign_total).

Appendix Table C4.3: Heckman Two-Stage Estimation: FIIO and Firm Performance (ROA, EBIT, and ROE)

	(1)	(2)	(3)
	Stage 2: ROA	Stage 2: EBIT	Stage 2: ROE
ratio_foreign_total	-0.0076	-0.0073	-0.0678***
	(0.0078)	(0.0095)	(0.0254)
Size (log assets)	0.0246*	0.0304**	0.0645
	(0.0127)	(0.0144)	(0.0477)
Leverage	-0.0852***	0.0276	-0.0957
	(0.0276)	(0.1212)	(0.0947)
Asset tangibility	0.0604***	0.1020	0.2327***
	(0.0172)	(0.0631)	(0.0754)
Tobin's Q	0.0036**	-0.0018	0.0049
	(0.0016)	(0.0047)	(0.0049)
R&D expenditure	-0.0163	-0.9715***	0.7310
	(0.1870)	(0.3371)	(0.4700)
Depreciation (scaled)	1.2303	2.6008	1.2257
	(2.2441)	(3.2991)	(5.9569)
Inverse Mills Ratio (IMR)	-0.0002	-0.0173	-0.0275
	(0.0335)	(0.0690)	(0.1086)
Constant	-0.1862	-0.2289	-0.5502
	(0.1246)	(0.1408)	(0.4537)
Observations	3868	3918	3867
Within R^2 (Stage 2)	0.5237	0.5661	0.3494

Note: This table reports the second-stage regression results from the Heckman two-stage estimation used to control for potential sample-selection bias in the relationship between foreign institutional ownership (FIIO) and firm performance. In the first stage (not reported), a probit model predicts the likelihood that a firm has foreign institutional ownership (Has FIIO = 1) based on firm characteristics and industry-year dummies. The estimated Inverse Mills Ratio (IMR) from this selection equation is then included in the second-stage performance regressions. All specifications incorporate firm and year fixed effects, and standard errors are clustered at the firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Figures C4.1 Dynamic DID Estimates of SH-HK Connect on ROA (2011–2019)

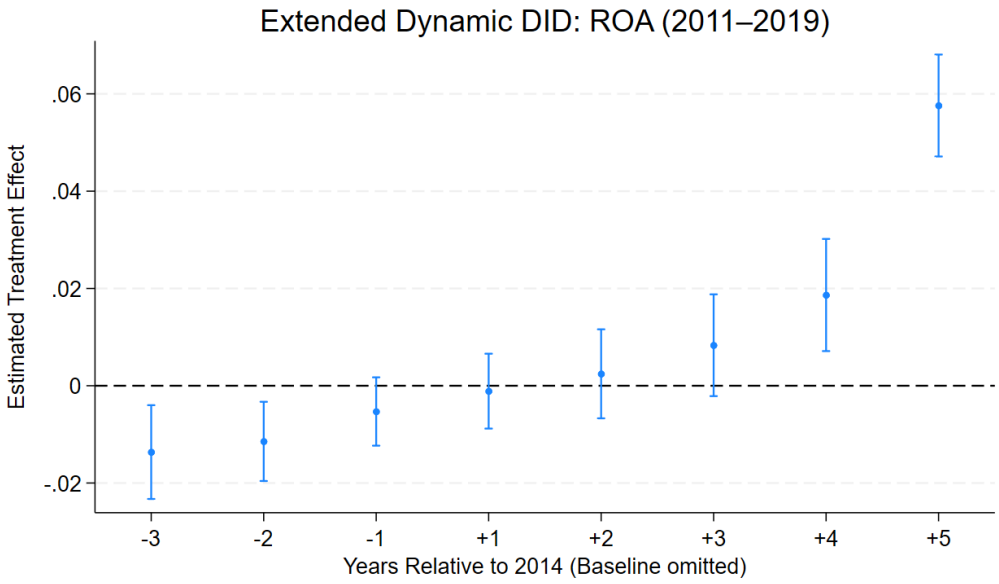


Figure C4.2. Dynamic DID Estimates of SH-HK Connect on EBIT/Assets (2011–2019)

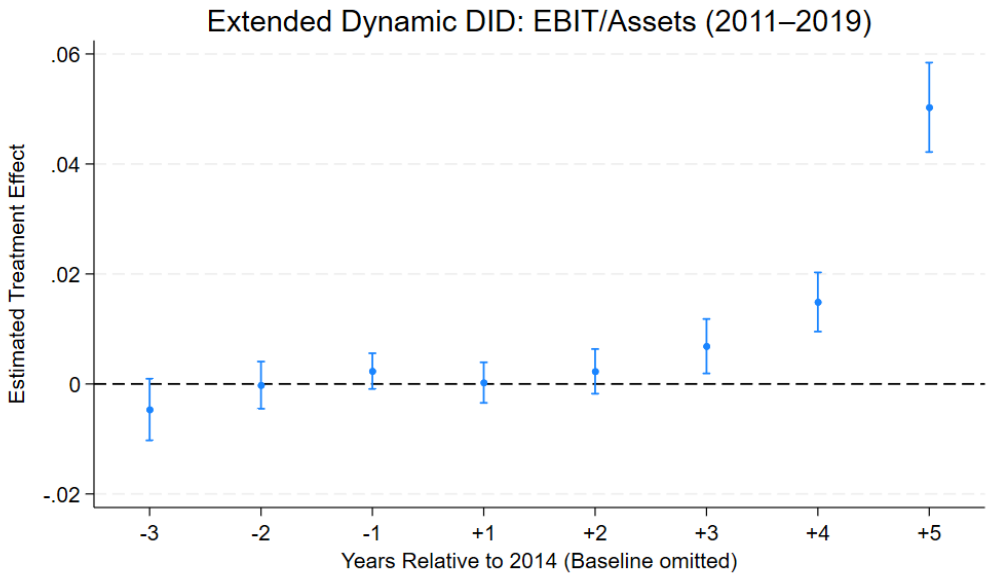
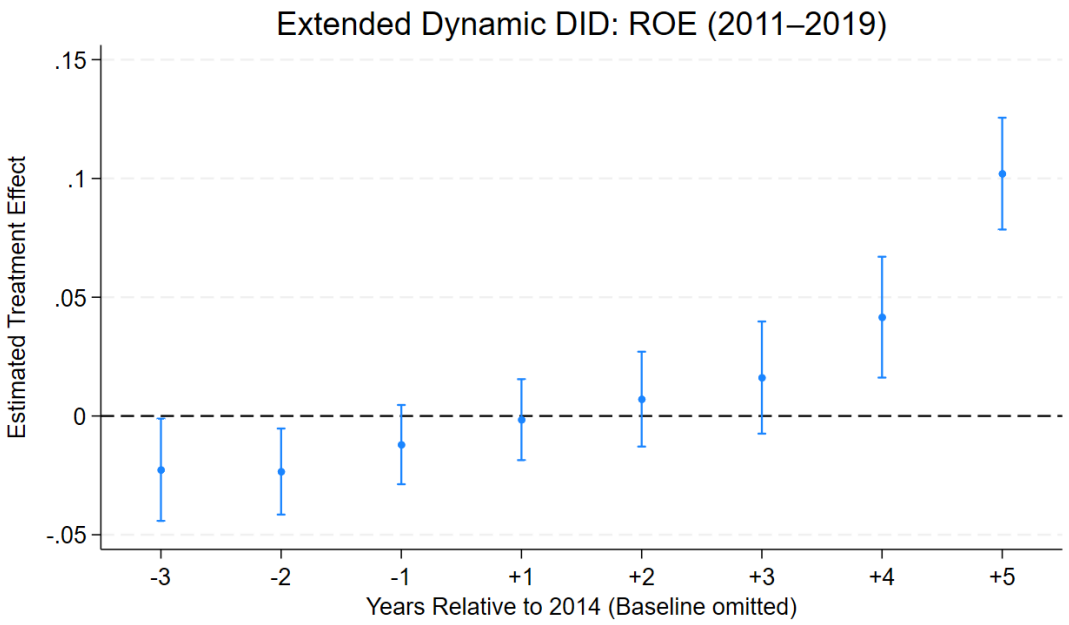


Figure C4.3. Dynamic DID Estimates of SH-HK Connect on ROE (2011–2019)



Notes: These figures present extended dynamic Difference-in-Differences (DID) estimates of the impact of the 2014 SH-HK Connect reform on firm performance, using three alternative outcome variables: ROA (Figure C4.1), EBIT/Assets (Figure C4.2), and ROE (Figure C4.3). Each plot displays year-specific treatment effects relative to the baseline year 2014 (omitted), with 95% confidence intervals. In all three panels, pre-treatment coefficients (years −3 to −1) are statistically indistinguishable from zero, supporting the parallel trends assumption. Post-policy estimates show a consistent upward trend, indicating that treated firms experienced significant performance improvements over time. The effect is most pronounced for ROE, which reaches nearly +10 percentage points by year +5. These results reinforce the main DID findings and provide additional evidence of the reform's causal impact on firm outcomes through enhanced foreign investor access and monitoring.

CHAPTER 5
SUMMARY and CONCLUSION

5.1 Summary of Main Findings

This thesis examines the impact of foreign institutional ownership (FIO) on corporate governance, managerial behaviour, and firm performance in Chinese listed companies. Drawing on three interconnected empirical chapters, the study reveals a consistent trajectory in which strengthened governance through external monitoring mechanisms influences corporate decision-making and ultimately enhances performance outcomes. Central to this integrative analysis is the proposition that foreign investors act as external monitors, mitigating agency conflicts, aligning managerial interests with those of shareholders, and thereby shaping corporate policies and improving firm value (Ferreira and Matos, 2008; Gillan and Starks, 2003).

Chapter 2 ("Foreign Institutional Ownership and the Speed of Capital Structure Adjustment") demonstrates that FIO significantly accelerates firms' adjustments towards optimal capital structures. Firms with higher levels of foreign institutional ownership exhibit notably faster convergence towards target leverage levels, underscoring enhanced financial discipline and reduced managerial inertia. The chapter further highlights substantial heterogeneity in governance effectiveness, which is more pronounced in non-SOEs. In contrast, SOEs exhibit less responsiveness due to inherent institutional frictions, including political objectives and soft budget constraints, which delineate clear institutional boundaries to foreign governance mechanisms (Bena et al., 2017). Leveraging the policy shock arising from the liberalisation of the Qualified Foreign Institutional Investor (QFII) scheme, Chapter 2 robustly confirms the causal link between foreign institutional capital inflows and improved capital structure governance, thereby reinforcing the governance implications of foreign participation in China's evolving institutional environment.

Building upon this governance foundation, Chapter 3 ("Foreign Institutional Ownership

and R&D Investment in China") examines the nuanced impact of foreign institutional investment on corporate innovation activities. Contrary to expectations of uniform positive effects, the study finds that while FIO is negatively associated with overall R&D intensity, it suggests a generally conservative stance towards high-risk, innovative expenditure. It significantly accelerates firms' convergence towards industry-average innovation levels. This nuanced result highlights the dual governance roles of foreign investors, both restraining excessive managerial risk-taking and simultaneously driving disciplined convergence toward optimal innovation benchmarks. This effect is particularly pronounced in strategic sectors supported by the national industrial policy, "Made in China 2025." However, it is notably weaker within state-owned enterprises due to institutional constraints, such as political interference and limited board independence. These findings highlight the crucial interplay between institutional ownership and domestic policy environments, indicating that targeted governmental initiatives can enhance the effectiveness of foreign governance mechanisms.

Chapter 4 ("Foreign Institutional Ownership and Corporate Performance") completes the analytical progression by evaluating whether FIO-driven governance improvements ultimately translate into tangible performance enhancements. Empirical findings robustly confirm that firms with greater foreign institutional ownership achieve significantly better performance, particularly in accounting-based metrics such as return on assets (ROA), return on equity (ROE) and higher market valuations (Tobin's Q). These findings substantiate the theoretical predictions of the monitoring hypothesis (Gillan and Starks, 2003; Ferreira and Matos, 2008). However, the EBIT results are mixed, possibly reflecting tighter expenditure controls imposed by foreign investors at the expense of short-term profits (Leuz et al., 2003). Further validations through alternative performance measures, including Tobin's Q and robustness checks employing a difference-in-differences analysis around the Shanghai-Hong Kong Stock Connect policy, reinforce the causal relationship between FIO and performance improvements (Huang and Zhu, 2015). The study also reveals substantial heterogeneity

in governance effectiveness, driven by investor-specific characteristics such as ownership concentration, informational breadth, and investor types (active versus passive, long-term versus short-term). These dimensions significantly moderate the extent to which foreign investors effectively reduce agency costs and enhance operational efficiency, further clarifying institutional and structural boundaries within which foreign institutional governance operates (Bushee, 1998; Edmans, 2009).

Taken together, the empirical analyses presented across these three chapters collectively affirm a clear governance–behaviour–performance framework. Foreign institutional ownership emerges as an influential external governance mechanism that initially enhances corporate oversight, subsequently informs strategic decision-making—particularly about financial discipline and innovation—and ultimately contributes to improved firm-level performance. Crucially, the analyses highlight the conditional and context-dependent nature of foreign investor governance, underscoring both its substantial potential and inherent limitations within China's distinctively transitional institutional context. Ultimately, this integrative synthesis demonstrates how foreign institutional capital serves as an effective conduit for introducing global governance practices, mitigating managerial agency issues, and guiding firms toward enhanced strategic alignment and sustained corporate value creation.

5.2 Theoretical and Empirical Contributions

This thesis contributes to the literature across three central domains: capital structure adjustment, innovation governance, and the ownership–performance relationship. Together, these analyses provide new empirical evidence and context-specific insights into how foreign institutional ownership (FIO) shapes corporate behaviour in a transitional economy such as China.

In relation to capital structure theory (Chapter 2), this research enriches the dynamic trade-off framework by incorporating foreign institutional ownership as an external

governance determinant of leverage adjustment speed (Flannery and Rangan, 2006; Lemmon et al., 2008). Prior literature has typically examined leverage adjustment as a function of internal firm characteristics or macroeconomic factors, often neglecting the influence of external institutional investors. By identifying FIO as an important governance variable, this thesis clarifies the mechanisms through which external monitoring affects capital structure dynamics. The analysis extends the traditional trade-off theory to a setting where institutional frictions, such as state ownership and policy intervention, play a central role. In this respect, the study provides a context-specific perspective on how external governance can operate within an emerging institutional environment (Bena et al., 2017).

With respect to innovation governance (Chapter 3), the thesis bridges the resource-based and agency perspectives to deepen understanding of the role of foreign investors in corporate innovation (Hall and Lerner, 2010; Aghion et al., 2013). While existing studies often emphasise internal resources or developed-market contexts, this research integrates behavioural incentives and monitoring roles of institutional investors into China's transitional market framework. The results show that, although FIO tends to be conservative with respect to overall R&D intensity, it accelerates firms' convergence toward industry-average innovation levels, particularly in industries supported by national policy initiatives such as Made in China 2025. Methodologically, the use of Cox proportional hazards models and Kaplan–Meier survival estimates provide a dynamic assessment of innovation adjustment, offering an alternative perspective to static regression approaches (Lewellen and Lewellen, 2021).

The third empirical chapter (Chapter 4) focuses on firm performance and governance. In this chapter, corporate governance is operationalised through the structure and composition of foreign ownership, proxied by ownership concentration (inv_HHI) and informational breadth (log_fi_count). These variables capture the monitoring strength and information reach of foreign institutional investors, thereby reflecting external governance intensity. The findings reveal that governance effectiveness depends

critically on investor heterogeneity: active and long-term foreign investors exert stronger governance influence, while passive and short-term investors show weaker effects (Bushee, 1998; Edmans, 2009; Aggarwal et al., 2011). This differentiated evidence refines the ownership–performance literature by linking governance outcomes to investor characteristics and institutional conditions, consistent with the perspectives of agency and resource-dependence theories (Shleifer and Vishny, 1997).

Taken together, these theoretical and empirical contributions provide a more nuanced understanding of how foreign institutional ownership operates in emerging markets. By systematically addressing institutional contingencies, investor heterogeneity, and methodological diversity, this thesis advances current knowledge on external governance mechanisms, highlighting the conditional and context-dependent nature of foreign investors' influence in transitional economies.

5.3 Practical and Policy Implications

The empirical findings presented in this thesis offer important practical implications for policymakers, corporate managers, and institutional investors, highlighting the relevance of foreign institutional ownership as a crucial lever for governance enhancement and performance improvement in transitional economies, especially in China.

For regulators and policymakers, the robust evidence on FIO's governance impact strongly supports further liberalisation of China's capital market and the implementation of enhanced regulatory frameworks. Given the demonstrated governance improvements stemming from reforms such as the Qualified Foreign Institutional Investor (QFII) programme and the Shanghai-Hong Kong Stock Connect scheme, policymakers should continue to expand market openness. Specifically, it is recommended that future reforms not only facilitate increased foreign participation but also enhance transparency and investor protection mechanisms. Clearer disclosure

standards, robust minority investor protection frameworks, and streamlined regulatory procedures can significantly amplify the positive governance effects of foreign institutional capital. Additionally, given the conditional effectiveness of FIO within state-owned enterprises, policymakers should actively address institutional frictions by promoting greater board independence and reducing political interference in corporate governance, thus unlocking the monitoring potential of foreign investors (Bena et al., 2017). Furthermore, the findings related to strategic industrial policies, such as "Made in China 2025," suggest that aligning capital market liberalisation strategies with targeted industrial policies can effectively mobilise foreign institutional capital towards critical innovation sectors, thereby optimising the synergy between market discipline and policy objectives.

For corporate managers, particularly within listed companies, the empirical results highlight tangible benefits from active engagement with foreign institutional ownership. To fully capitalise on these benefits, firms should proactively enhance information disclosure, investor communication, and corporate transparency. Establishing clear, transparent, and consistent reporting standards will not only attract high-quality, long-term oriented foreign institutional ownership but also facilitate improved governance quality and strategic alignment. Given the differentiated impact of foreign ownership contingent upon institutional settings, managers in non-SOEs and strategically significant industries are especially encouraged to cultivate sustained relationships with foreign investors by adopting global best practices in governance and financial management. Furthermore, enhancing board independence and adopting governance structures that effectively integrate foreign investors into strategic decision-making processes can significantly amplify firm performance outcomes, innovation capabilities, and capital structure efficiency (Gillan and Starks, 2003; Ferreira and Matos, 2008).

For institutional investors, the nuanced findings regarding investor heterogeneity provide critical guidance for optimising investment strategies in China. Notably, although active, long-term investors tend to exert more substantial governance

influence, even passive or short-term foreign investors can effectively contribute to governance improvements under specific conditions. Hence, institutional investors should carefully consider firm-specific factors, such as ownership structure, state ownership status, and policy alignment, when formulating their investment strategies. Long-term active investors should prioritise firms with transparent governance and precise policy alignment to maximise governance influence and value creation. Conversely, passive or short-term investors may consider targeted participation in sectors or firms undergoing policy-driven structural reforms, where governance contributions can still yield significant strategic benefits despite shorter holding periods (Bushee, 1998; Edmans, 2009). Additionally, institutional investors should pay close attention to ownership concentration and informational breadth, proactively adjusting their investment portfolios to strike a balance between effective monitoring and information efficiency, thereby effectively leveraging their governance roles to enhance corporate value.

Overall, these practical implications highlight that the beneficial impacts of foreign institutional ownership in transitional economies, such as China, are contingent upon carefully designed policy environments, proactive corporate governance practices, and strategic investment approaches. Therefore, regulators, corporate managers, and institutional investors alike must collaborate to facilitate the conditions under which foreign institutional capital can serve as a robust mechanism for enhancing corporate governance, promoting innovation, and sustaining value creation.

5.4 Limitations and Suggestions for Future Research

While this thesis provides comprehensive empirical insights into how foreign institutional ownership influences governance, corporate decision-making, and firm performance among Chinese listed firms, several limitations warrant explicit acknowledgement, suggesting promising avenues for future research.

A key limitation concerns data availability. Detailed observational data on specific mechanisms of foreign investor engagement—such as proxy voting records, explicit stewardship practices, and investment mandates—remain unavailable, thereby constraining deeper empirical analyses of investor behaviour (McCahery, Sautner and Starks, 2016). Investor classification (active versus passive, and long-term versus short-term) primarily relies on holding duration and inferred patterns of behaviour, consistent with established practices (Bushee, 1998; Appel, Gormley and Keim, 2016). Future research could further enrich understanding by leveraging firm-investor micro-interaction data, including voting behaviour records, direct communication evidence, or engagement letters, thereby enabling more accurate classification and nuanced analysis.

Causal identification remains another critical challenge. Despite employing robust econometric techniques, including lagged variables, first differences, and difference-in-differences (DID) strategies to address regulatory shock-residual endogeneity, issues persist. Unobserved confounding factors or anticipatory firm responses to policy announcements may still introduce bias into empirical estimates (Roberts and Whited, 2013). Future research could enhance causal inference by utilising stronger econometric methods, such as rigorous instrumental variable (IV) approaches or regression discontinuity designs (RDD) (Angrist and Pischke, 2009). Moreover, employing advanced analytical methods, including machine learning algorithms, to uncover latent investor characteristics or systematic biases could significantly improve the precision of causal identification (Mullainathan and Spiess, 2017).

The integration of behavioural finance perspectives also offers a promising avenue for future research. Incorporating behavioural analyses could enrich existing governance theories by examining how psychological biases, investor sentiment, and heuristic-driven decision-making among institutional investors influence corporate governance outcomes and managerial behaviour (Shleifer and Vishny, 1997; Barberis and Thaler, 2003; Baker and Wurgler, 2007). Such an approach would deepen understanding of

governance effectiveness, particularly in contexts characterised by pronounced information asymmetry and investor uncertainty.

Several additional contemporary research avenues arise from broader global investment trends. The growing importance of environmental, social, and governance (ESG) factors among institutional investors calls for future investigations into how foreign institutional ownership (FIO) impacts corporate sustainability and stakeholder value creation beyond traditional financial metrics (Dyck et al., 2019). Furthermore, leveraging real-time investor engagement data, such as AI-driven analyses of corporate disclosures or sentiment analysis from digital platforms, could substantially enhance the dynamic precision of governance research (Hassan et al., 2019; Tetlock, 2007). Future comparative research focusing on distinct categories of foreign institutional investors, such as QFII funds, mutual funds, sovereign wealth funds, and ESG-oriented funds could provide further insights into the heterogeneous governance impacts across investor types (Ferreira and Matos, 2008; Appel, Gormley and Keim, 2016).

In addition, future studies could examine the underlying mechanisms through which FIO exerts its effects. Specifically, it would be valuable to explore whether the observed relationships are more pronounced among firms facing tighter financial constraints, possessing stronger internal governance, or operating under greater information asymmetry. Interaction terms involving financial constraint indices (e.g., SA index), governance quality scores, or analyst coverage could be employed to identify these channels. Further research could also assess whether the presence of foreign institutional investors alleviates firms' financial constraints by improving access to external financing. Although such analyses lie beyond the scope of the present dataset, they represent promising directions for future empirical exploration.

Another promising extension would be to compare the governance influence of foreign institutional investors with that of domestic institutional investors. Such a comparison could provide valuable insights into the relative effectiveness of external versus internal governance mechanisms and reveal how institutional origin shapes monitoring

incentives and market discipline. Given the focus of the current research design on isolating foreign investor effects, this comparative analysis is left for future work but represents an important direction for extending the current findings. Another fruitful line of inquiry could investigate whether the speed of capital structure adjustment differs depending on a firm's position relative to its target leverage. Future research could test whether firms adjust more rapidly when over-leveraged than when under-leveraged, which would align with risk-aversion and pecking-order theories. This could be achieved by estimating separate partial-adjustment models for firms above and below their target leverage levels.

By clearly recognising these limitations and outlining concrete pathways for future inquiry, this thesis demonstrates methodological rigour and theoretical maturity, laying a robust foundation for continued scholarly exploration into the governance roles, strategic implications, and behavioural dimensions of foreign institutional ownership.

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