



Essays on Financial Constraints, Debt Maturity Mismatch, and Corporate
Strategy in China: An Empirical Study

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ABSTRACT

The rise of Chinese companies in the global economy has drawn significant attention, given China's status as one of the fastest-growing economies. This thesis delves into the complexities of Chinese corporate finance and strategic management, focusing on listed firms. It examines three critical issues: the impact of political connections on financing constraints, debt maturity mismatch, and strategic responses to margin trading deregulation. Each chapter provides a detailed analysis of these topics, adding empirical insights to the literature on corporate finance in China. The thesis aims to enhance our understanding of how Chinese listed firms manage their financing and strategic decisions in a rapidly evolving economic environment.

The first chapter of this thesis serves as an introductory overview, providing a glimpse into the contents and structure of the entire document. The second chapter focuses on the financial constraints and political connections of private listed firms in China. Using a hand-collected dataset on the political connections of Chinese private listed firms, this chapter examines the relationship between political connections and financing constraints. The findings reveal that private listed firms with political connections experience fewer financing constraints compared to those without such connections. The study further investigates the mechanisms through which political connections alleviate financing constraints, including access to bank loans and lower debt costs. The chapter also highlights the regional variations in the impact of political connections on financial constraints.

Moving on to the third chapter, the focus shifts towards investigating the determinants of debt maturity mismatch within Chinese listed firms. The research aims to identify the factors that influence firms' decisions to engage in maturity mismatches, which involve using short-term debt for long-term investment purposes. The findings indicate that firms facing significant financing constraints and information asymmetry tend to engage in more debt maturity mismatches. Conversely, firms with elevated bankruptcy

risk and stronger corporate governance mechanisms are inclined to reduce such mismatches. Furthermore, this chapter examines the consequences of such mismatches. The findings indicate that increasing the mismatch can result in debt expense savings, particularly for non-state-owned enterprises. However, maturity mismatches are found to contribute to elevated stock crash risk, emphasizing the potential risks associated with maturity mismatch.

The fourth chapter explores the impact of the 2010 deregulation of margin trading on the strategic decisions of Chinese listed firms. This regulatory change, which permitted certain stocks to be traded on margin, provides a unique context for examining firms' strategic responses. Using data from 2007 to 2020, this chapter employs propensity score matching (PSM) and difference-in-differences (DID) methodologies to analyze the relationship between the deregulation and firms' strategic aggressiveness. The findings reveal a significant positive correlation between margin trading deregulation and increased strategic aggressiveness among firms. Additionally, the analysis considers the moderating effects of market competition, managerial shareholding, institutional shareholding, and management risk preference, offering a nuanced understanding of the factors influencing firms' strategic decisions in response to margin trading deregulation. Furthermore, the study examines the consequences of increased strategic aggressiveness, revealing that firms with higher levels of strategic aggressiveness are more likely to generate more patents and engage in debt maturity mismatches.

In summary, the overarching theme is to provide a thorough understanding of how external factors and events influence financial behavior and corporate strategic management. The empirical insights offered in each chapter contribute to this theme. Moreover, these findings hold practical implications for practitioners, policymakers, and researchers seeking to understand the intricacies of financial management and strategic decision-making in the Chinese market.

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1 INTRODUCTION

1.1 Overarching Theme

The rise of Chinese companies in the dynamic context of globalization and economic development has captured considerable attention, as China stands among the world's fastest-growing economies. This thesis explores the intricate dynamics of Chinese corporate finance and strategic management by examining Chinese listed firms, focusing on three key issues: the impact of political connections on financing constraints, debt maturity mismatch, and strategic responses to margin trading deregulation in 2010.

The overarching theme of this thesis is to provide a comprehensive understanding of how both external factors and events influence financial behavior and corporate strategic management. This holistic approach considers the interconnectedness between external environments and internal strategic responses, offering insights into the complexities of corporate management in the dynamic and evolving business landscape of China.

The first research topic delves into the impact of political connections on the financial constraints of private listed firms. Upon closer examination of the financing constraints faced by private listed firms in China, a noteworthy observation emerges: many private listed enterprises exhibit a pronounced dependence on short-term debt, especially for funding long-term investments. Interestingly, SOEs, which experience fewer financing constraints relative to private firms, also exhibit this phenomenon.

To assess the peculiarity of this trend, comprehensive data on the use of short-term debt across 21 different countries were meticulously gathered. The consequential revelation is that Chinese listed firms exhibit the highest proportion of short-term debt utilization among these countries. Furthermore, there is a growing trend of companies using short-term debt to fund long-term investments in China, as evidenced by an increasing number of firms engaging in such mismatches year after year (Figure 3.1).

Consequently, building on the first research topic, this thesis aims to uncover the factors influencing the use of short-term debt for long-term investments. The empirical investigation reveals that financial constraints are one of the most significant determinants for firms engaging in debt maturity mismatches. This finding underscores the intricate connection between debt maturity mismatch and the first research topic, particularly concerning financing constraints.

Upon deeper investigation into the first two research topics, it becomes increasingly apparent that the impact of external factors, such as political connections and external financing constraints, on firms is multifaceted, extending well beyond the singular decision to engage in financing. Therefore, this thesis endeavors to transition the research perspective from a singular focus on financing as a business function to a more comprehensive examination of the entire business landscape in China. By expanding the scope beyond the confines of financial activities, the aim is to provide a more comprehensive understanding of how various facets of the business intricately interconnect and collectively contribute to the overarching dynamics of the organization.

Recognizing the profound impact of the external environment on firms, this dissertation ventures into a third research topic: the impact of the deregulation of margin trading in 2010 on the overall strategy of enterprises. Empirical findings from this research demonstrate that the deregulation of margin trading leads to a significant increase in the aggressiveness of corporate strategy. Notably, increasing strategic aggressiveness raises the likelihood of a company engaging in debt maturity mismatches, as discussed in the second research topic.

Combining the results of the three studies, these research themes are interrelated. They indicate that political connections affect financial constraints, which are a decisive factor in debt maturity mismatches. Furthermore, increasing strategic aggressiveness after margin trading deregulation raises the likelihood of debt maturity mismatches. The

key variables among these topics influence each other, offering empirical insights into the financial behaviors and strategic management of Chinese listed firms.

In conclusion, the first topic enriches the broader literature on how external factors, such as political connections, influence financial behavior. The second topic offers an analysis of how these external or internal factors influence financial behavior regarding debt maturity mismatch. The third topic adds to the understanding of how external events shape corporate strategic management. As introduced before, these research topics intricately weave together a shared focus on financial dynamics, strategic decision-making, and external influences on the Chinese business environment. Therefore, these three chapters contribute to the overarching theme of understanding financial behaviors and strategic management within Chinese listed firms. These insights provide actionable recommendations for firms and policymakers alike, enhancing the comprehension of the mechanisms that underlie corporate behavior in response to diverse economic shifts in China.

1.2 Motivation

The first research topic, titled “*Financial Constraints and Political Connections: Empirical Insights from Private Listed Firms in China*,” is grounded in the significant economic contributions of China’s private enterprises, as well as the notable financial obstacles they encounter. “*The 2021 Social Responsibility Report of Chinese Private Enterprises*,” published by the China Federation of Industry and Commerce underscores the substantial role of these firms, citing their remarkable input towards foreign trade, tax revenue, and employment.

For example, private enterprises were responsible for 19 trillion yuan in import and export volume, representing 48.6% of the nation’s total and contributing to over half of the trade growth. Tax contributions from these entities accounted for a substantial 59.6% of corporate tax revenue. Additionally, private enterprises proved to be formidable employers, with the surveyed firms providing jobs for over 100 million individuals, the vast majority of whom experienced stable or improving employment conditions. Furthermore, their commitment to innovation was evidenced by the fact that 82% of sizeable private industrial enterprises sought patents, and a significant portion held effective invention patents. Intriguingly, within the top 10 recipients of invention patents, seven were private enterprises.

However, “*The 2019 Research and Analysis Report on China’s Top 500 Private Enterprises*,” published by the China Federation of Industry and Commerce, provides insightful data on the financing challenges faced by these firms. Table 1.1 from that report highlights that 31.8% of these enterprises encounter difficulties in securing financing through the bond market. Additionally, it reveals that 23.6% of these companies experience challenges in obtaining funds from the stock market. These statistics underscore the significant hurdles that a substantial portion of China’s top private enterprises face in accessing traditional capital markets.

Table 1. 1: Difficulties in financing for China's Top 500 private firms in 2019

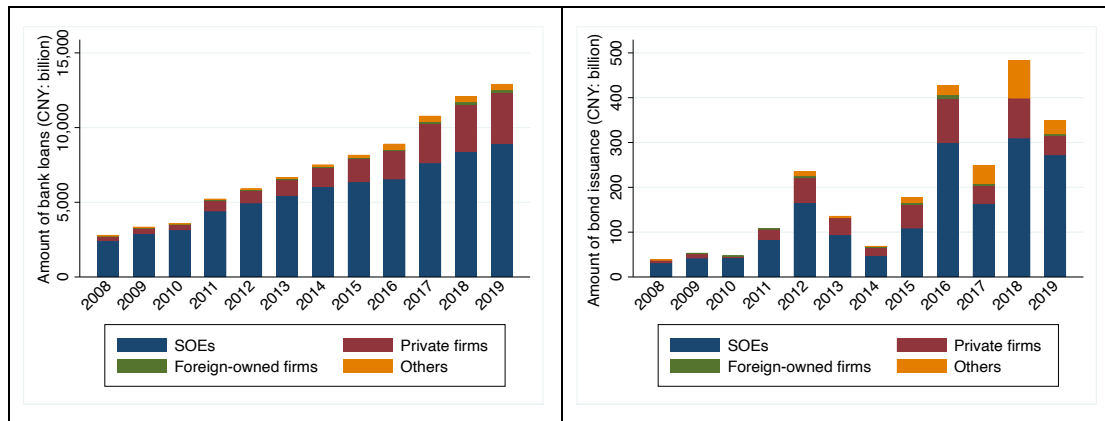
Difficulties in financing in the capital market	Number of enterprises	Percentage of the top 500 Chinese private enterprise
Financing in the bond market is difficult.	159	31.80%
(1) The financing threshold is high.	104	20.80%
(2) There are few types of corporate bonds.	21	4.20%
(3) Small scale of corporate bond issuance.	30	6.00%
Market acceptance of private enterprise bonds is reduced.	133	26.60%
The willingness of investors to invest in private enterprises is low.	120	24.00%
Financing in the stock market is difficult.	118	23.60%
(1) High threshold for initial public offering.	49	9.80%
(2) Long audit time for IPO.	21	4.20%
(3) The refinancing of listed enterprises takes a long time to be audited.	35	7.00%
(4) others	18	3.60%
Limited by the industry, the capital market investment willingness is low.	83	16.60%
Others	71	14.20%

Source: "2019 China's Top 500 Private Enterprises Research and Analysis Report"
<http://www.acfic.org.cn/>

The financial ecosystem's bias against private firms is further illustrated in Figure 1.1, which delineates the discrepancy in bank loans and bond issuance among different ownership types of listed firms. SOEs receive a disproportionately larger share of bank loans and bond issuances, accounting for more than 70% of the total in both categories from 2008 to 2019. This disparity is evident when compared to the relatively minuscule share allotted to private and foreign-owned firms. This distribution disparity could be linked to the dominance of state ownership in the banking sector, leading to preferential lending to SOEs and entities with political connections, as suggested by Cull *et al.* (2015). The bias is not confined to bank loans but extends to bond issuance, where

SOEs enjoy favorable conditions, further exacerbating the financial inequalities. Moreover, previous research corroborates the assertion that private listed enterprises face more severe financing constraints than their state-owned counterparts (Chan *et al.*, 2012; Allen *et al.*, 2019; Pan and Tian, 2020).

Figure 1. 1: The amount of Bank Loans and Bond Issuance by Ownership Type of Listed Firms in China



Source: China Stock Market & Accounting Research (CSMAR) database

Therefore, this backdrop sets the stage for this dissertation to delve into the constraints faced by the private listed sector. This chapter focuses exclusively on listed private enterprises. This focus is advantageous from a data collection perspective due to the availability and reliability of financial and operational data. Listed companies are required by regulatory bodies to disclose detailed financial statements, corporate governance reports, and other pertinent information regularly. This transparency ensures a higher quality and consistency of data, enabling more accurate and comprehensive analysis.

Additionally, this emphasis on private listed firms is substantiated by several factors. Firstly, as introduced earlier, private firms make substantial contributions to GDP, employment, and tax revenue in China. Their dynamic nature and role as major contributors to economic development and innovation make them critical to the health and growth of the national economy. Understanding and alleviating their financing

constraints can thus have a significant and direct impact on economic vitality and resilience.

Secondly, studying the specific constraints of private listed enterprises allows for the development of more targeted and effective policy measures. Private firms are often at the forefront of innovation and entrepreneurship. Financial constraints can severely limit their ability to invest in new technologies, research and development, and expansion activities. Given that the financial barriers faced by these firms are often different in nature and severity from those encountered by SOEs, a focused study can help in crafting policies that directly address the unique needs and challenges of the private sector.

Thirdly, examining the financing constraints of private listed firms sheds light on the broader market dynamics and structural biases within the financial system. This focus can reveal how market mechanisms, regulatory environments, and institutional practices can disproportionately disadvantage private enterprises, leading to a more comprehensive understanding of the market's operational dynamics.

Existing evidence suggests that politically connected firms in China often receive preferential treatment in various aspects, such as accessing bank financing, obtaining debt at lower costs, and issuing bonds more successfully, compared to non-politically connected firms (Xin and Pearce, 1996; Luo and Zhen, 2008; Berkman *et al.*, 2010; Chan *et al.*, 2012; Liu *et al.*, 2013; Nee and Oppen, 2012; Zhao and Lu, 2016; Ge *et al.*, 2017; Schweizer *et al.*, 2019; Schweizer *et al.*, 2020). As mentioned before, private listed enterprises in China contend with pronounced financing constraints in stark contrast to state-owned entities that benefit from inherent political connections. This disparity suggests that private listed firms might be more inclined to seek political ties as a strategic response to their fiscal challenges.

However, there is currently a lack of research specifically on the political connections

and financing constraints of private listed companies in China. Existing studies often employ cross-sectional data, which restricts the broader applicability of their findings (Zhao and Lu, 2016; Ge *et al.*, 2017). Furthermore, these studies typically focus on specific dimensions of financial challenges, such as the influence of political connections on securing bank loans or bond market access, rather than providing a holistic examination of the financial constraints faced by enterprises (Duan *et al.*, 2012; Schweizer *et al.*, 2019).

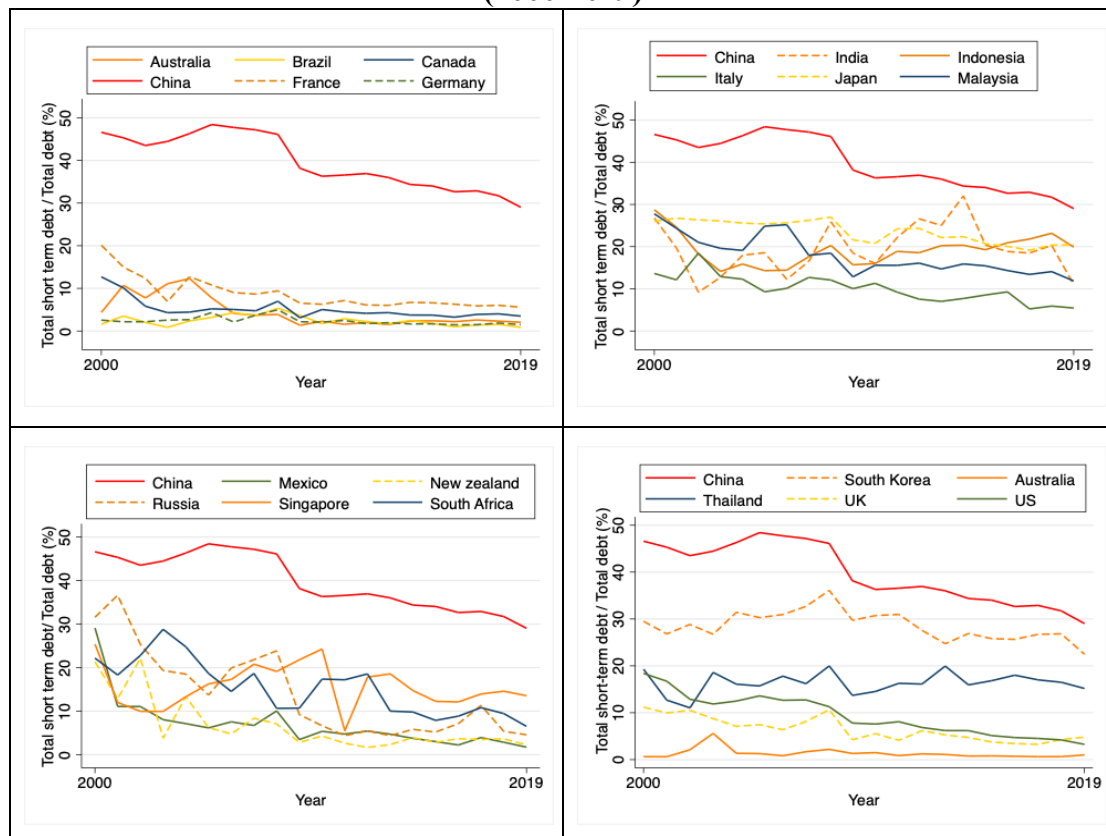
Even when similar studies exist, they leave room for in-depth research on sample range selection and the measurement of political connections. For example, Deng *et al.* (2019) focused exclusively on industrial public firms, providing a narrower view that does not capture the full spectrum of political connections across different sectors. However, the financial data of most unlisted companies often lack strict supervision, and the size and operating environment of listed companies and unlisted companies are completely different, leading to potential inconsistencies and limitations in their conclusions.

Consequently, a literature gap persists regarding the financial constraints faced by private listed firms, necessitating focused investigation. Given the dearth of in-depth research in this domain, the analysis here is not only timely but necessary, exploring how political networks can be leveraged by private listed firms to achieve financial parity with their state-owned counterparts.

The motivation behind the second research topic, titled “***Determinants of Debt Maturity Mismatch: Empirical Insights from Chinese Listed Firms***,” is to gain a comprehensive understanding of the debt structure of Chinese firms, with a specific focus on the phenomenon of debt maturity mismatch. Upon closer examination of the financing constraints faced by private firms in China in the first research topic, a noteworthy observation emerges—many private listed enterprises exhibit a pronounced dependence on short-term debt, especially for funding long-term investments. Interestingly, SOEs, which experience fewer financing constraints relative to private

firms, also exhibit this phenomenon. To assess the normativity of this phenomenon, comprehensive data on the use of short-term debt across 21 different countries were meticulously gathered. Figure 1.2 shows that Chinese listed firms exhibit the highest proportion of short-term debt utilization among these countries. This phenomenon became the initial research motivation for the second topic.

Figure 1. 2: Short-Term Debt Ratio of Public Companies within 21 Nations (2000-2019)



Source: S&P Capital IQ database

Excessive use of short-term debt necessitates that this chapter consider the problem of debt maturity matching. According to the classic debt maturity matching theory, it is logical for companies to align the duration of their assets with their financing sources, using long-term financing for long-term assets and short-term financing for short-term assets. This strategic alignment not only promotes financial stability but also ensures efficient capital allocation, minimizing the risk of maturity mismatches and optimizing liquidity management (Morris, 1976; Diamond, 1991; Flannery, 1986).

In reality, the issue of debt maturity mismatches has garnered increasing attention in the context of Chinese listed companies. Data from the China Stock Market & Accounting Research (CSMAR) database reveals a noticeable trend, with a growing number of companies exhibiting such mismatches. Specifically, a substantial portion of companies, ranging from 30% to 50%, utilized short-term debt to finance long-term investments in China from 2000 to 2019 (see Figure 3.1). This trend highlights the prevalent practice among listed companies in China of using short-term debt to finance long-term investment projects.

Utilizing short-term debt to finance long-term investment opportunities can be problematic due to the mismatch in the maturity of liabilities and the realization of investment returns. This practice, known as maturity mismatch, can pose several issues. First, companies must frequently refinance the debt if they are using short-term loans for long-term investments, which can be risky if interest rates rise, or credit conditions tighten. Second, short-term debt is subject to fluctuations in interest rates. When rates increase, the cost of refinancing could escalate, impacting the firm's interest expenses and overall profitability. Third, relying on short-term debt could strain a company's liquidity if the long-term investments do not yield anticipated cash flows in time to meet the short-term obligations.

Despite these potential problems, firms in China still choose to use short-term debt for long-term investments for several practical reasons. First, long-term financing is difficult to obtain in China. Second, short-term debt offers more flexibility, allowing companies to adjust their leverage more quickly in response to changes in their investment needs or opportunities. Third, firms might find it easier or quicker to access short-term credit, especially if they lack the collateral or credit history required for longer-term financing.

Therefore, the observed maturity mismatches present a crucial area of concern, as they carry significant implications for the financial stability and strategic decision-making

of these companies. The prevalence of maturity mismatches raises questions about the underlying reasons driving Chinese companies to adopt this financing behavior. Understanding these underlying factors became the motivation for this chapter and is crucial for several reasons.

Firstly, it sheds light on the decision-making processes of Chinese companies and provides insights into their financial management practices. Secondly, by uncovering the reasons behind this financing behavior, policymakers and practitioners can develop effective strategies to address potential risks and optimize capital structure decisions. Despite its prevalence, there is a dearth of comprehensive studies that delve into this specific phenomenon.

Moreover, as the Chinese business landscape continues to evolve, with economic and financial markets experiencing significant changes, it becomes increasingly crucial to analyze and interpret the factors influencing financing choices. If mismatches develop excessively, they can cause economic instability. Therefore, this research holds important practical significance. Ultimately, the motivation of Chapter 3 is to advance our understanding of the drivers behind maturity mismatches in Chinese listed companies, and to highlight their potential consequences. By bridging the research gap in this area and offering fresh empirical insights, this study can contribute to the broader literature on corporate finance and financial management in China.

The motivation behind the third research topic, titled ***“Corporate Strategy Decision after the Deregulation of Margin Trading: Empirical Insights from the Chinese Listed Firms,”*** stems from the significant importance of understanding how Chinese companies make strategic choices in response to a changing external business environment, particularly the changing financial environment. Chapter 2 and Chapter 3 have underscored the profound influence of external factors such as political connections and external financial constraints on firms’ financing decisions. However, it is evident that the external environment’s impact on firms extends well beyond the

singular decision to engage in financing. Recognizing the complexity of these interactions, this chapter aims to delve deeper into the broader repercussions of changes in the external financing environment on corporate strategy.

In China, the deregulation of margin trading in the year of 2010 marked a pivotal moment with profound implications for the stock market. This deregulation stands out as a significant event that has the potential to reshape the financial landscape, presenting new opportunities and risks for market participants. Initially, the margin trading program allowed trading for only 90 selected stocks. By 2020, data from the CSMAR database shows that around 43% of China's listed companies, totaling approximately 1,800 firms, were permitted to participate in margin trading, signifying a notable increase from earlier years (refer to Figure 4.1 for specific details).

In the field of corporate strategy, a fundamental and enduring question revolves around how firms can attain and sustain a competitive advantage (Meyer and Rowan, 1977; Teece *et al.*, 1997; Bentley *et al.*, 2013). This question becomes even more pertinent in China, where companies must continually differentiate themselves from competitors and adapt to evolving market conditions. The external business environment is renowned for its dynamic and complex nature, presenting a multitude of opportunities and challenges that can profoundly impact a firm's competitive positioning and long-term success (Trigeorgis and Reuer, 2017).

Understanding how companies in China strategically respond to margin trading deregulation becomes a critical research area. This regulatory change represents a significant shift in the financial market landscape, providing companies with new opportunities for market participation and growth. However, it also introduces potential risks and challenges that companies need to navigate effectively. The ability to strategically respond to these changes can determine a firm's ability to leverage market opportunities and mitigate risks, ultimately influencing its long-term success. This study is therefore of great importance for the development of Chinese listed firms and

became the initial research motivation for this chapter.

Moreover, there is a noticeable gap in the existing research concerning this specific area. While previous studies have explored the impact of various major external shocks on corporate strategy decisions, such as changes in industry regulations, economic crises, and technological advancements (Hutchinson, 1996; Khanna and Palepu, 1999; Bao *et al.*, 2011; Yuan *et al.*, 2020; Siltaloppi *et al.*, 2021), a comprehensive analysis of the deregulation of margin trading and its implications for corporate strategy is lacking.

Ultimately, the motivation behind Chapter 4 stems from a critical gap in existing research regarding the implications of the deregulation of margin trading for corporate strategy. By delving into this uncharted territory, this chapter aims to offer valuable insights that can contribute to a more comprehensive understanding of the dynamic interplay between regulatory changes and corporate behavior. Understanding these implications is crucial for policymakers, practitioners, and scholars, as it can help them make better decisions in the evolving landscape of Chinese strategic management.

1.3 Research Questions

Building upon this motivation, this thesis aims to illuminate the critical issues of financial constraints, debt maturity mismatch, and strategic decision-making that are of utmost importance for the development and growth of Chinese listed firms.

Research Question 1: Within the context of China's private listed firms, to what extent can political connections alleviate the financing constraints faced by these firms?

Despite existing evidence of preferential treatment for politically connected firms, the literature often focuses on all ownership types of listed companies, lacking the comprehensive studies needed to unravel the unique financial challenges faced by

private listed enterprises. Additionally, these studies typically concentrate on specific aspects of financial challenges—such as the influence of political connections on securing bank loans or accessing the bond market—rather than providing a holistic examination of the financial constraints faced by these enterprises. This gap in the literature underscores the need for further exploration into the impact of political connections on financing constraints specifically for Chinese private listed firms.

It is crucial to recognize the significant role played by private listed firms in driving China's rapid economic growth, making it essential to address and understand their unique financing challenges and explore avenues for alleviating these constraints. If political connections do play a role, it is imperative to determine the extent to which they are effective in mitigating financing constraints for private enterprises. Therefore, the first core research question driving this thesis is whether political connections can effectively alleviate the financing constraints faced by private listed firms in China.

Research Question 2: What are the key determinants that contribute to debt maturity mismatches among Chinese listed firms?

Debt maturity mismatches, characterized by the disparity between a company's debt obligations and the expected cash flows from its assets, have become an increasingly prevalent phenomenon among Chinese listed companies. The practice of utilizing short-term debt to finance long-term investments has raised concerns regarding the concentration of short-term liabilities within a company's capital structure. Such mismatches can pose significant financial challenges and jeopardize a firm's long-term viability. However, comprehensive studies investigating the determinants of debt maturity mismatches in the Chinese market are scarce. Therefore, the second central research question driving this thesis is to understand the determinants of debt maturity mismatches in the Chinese context.

Research Question 3: How do Chinese listed firms adjust their strategic direction in

response to the deregulation of margin trading in 2010?

The significance of strategic orientation for organizational success has long been acknowledged, with scholars such as Andrews (1980) and Porter (1980) emphasizing its importance. Additionally, the role of the external business environment as a key determinant of firms' strategic decisions has been increasingly recognized.

Several studies have examined the influence of various external factors or shocks on corporate strategy, encompassing environmental policies (Hutchinson, 1996), national economic policy changes (Khanna and Palepu, 1999), economic crisis in 2008 (Bao *et al.*, 2011), and the COVID-19 pandemic (Hitt *et al.*, 2021). Notably, by 2020, the number of companies granted permission to participate in margin trading had substantially increased, and the total transaction amount exceeded RMB 15,000 billion (refer to Figure 4.1 for details). However, the unexplored impact of the deregulation of margin trading in 2010 on corporate strategy in the Chinese stock market has sparked the need for further investigation. Therefore, the last core research question propelling this thesis is to unravel the impact of margin trading deregulation on the strategic decision-making of Chinese listed companies. Specifically, this research aims to investigate whether Chinese firms adopt a more aggressive or conservative strategy in response to the deregulation of margin trading.

1.4 Thesis Structure

Chapters 2 to 4 of this thesis provide a comprehensive analysis of empirical findings based on three research questions. Each chapter follows a structured approach, beginning with an introduction to the research topic and background. This section offers an overview of the specific research question being addressed and highlights its significance within the broader field of study. The introduction also outlines the research objectives, setting the stage for the subsequent analysis.

Following the introduction, the hypotheses are presented based on the reviewed literature. These hypotheses serve as guiding principles for the empirical analysis and are formulated to test the relationship between key variables of interest. The hypotheses reflect the research questions and provide a clear direction for the analysis.

Next, the data and analysis techniques employed in the study are described. This includes a discussion of the data sources, data collection methods, and any necessary data preprocessing steps. The analysis techniques used to test the hypotheses are also explained in detail, ensuring transparency and replicability. In addition to the standard research paradigm, these chapters include additional analyses directly related to the research questions. These supplementary analyses provide further insights and deepen the understanding of the phenomenon under investigation.

Finally, Chapter 5 provides a concise summary of the findings, intended contributions, acknowledges limitations, and proposes future research directions. Together, these chapters form a comprehensive and rigorous exploration of the research questions.

**2 FINANCIAL CONSTRAINTS AND POLITICAL CONNECTIONS:
EMPIRICAL INSIGHTS FROM PRIVATE LISTED FIRMS IN
CHINA**

2.1 Introduction

Financial constraints, as defined by Fazzari *et al.* (1987), occur when a firm faces excessively high external financing costs due to inefficiencies in the financial market. This situation can hinder a company's ability to obtain the necessary funds for its operations and investment projects, potentially limiting its growth prospects and performance. Savignac (2008) further elaborates on three key indications of financial constraints that firms experience: the absence of a funding source, sluggishness in establishing financing, and high interest rates on financing. Companies experiencing these constraints often need to adopt conservative financial policies, rely more on internal funds, or seek alternative sources of financing.

The concept of corporate political connections is grounded in resource dependency theory, as proposed by Pfeffer and Salancik (2003). According to this theory, firms inherently rely on external organizations and structures to navigate and adapt to their environment, especially in the face of volatile shocks (Hillman, 2005). In this context, political connections have been recognized as a widespread phenomenon globally and are acknowledged as facilitators for business operations (Faccio, 2006; Chan *et al.*, 2012; Li *et al.*, 2008; Houston *et al.*, 2014; He *et al.*, 2014; Chkir *et al.*, 2020). Political connections are considered a valuable form of political capital that can create value for an individual company by mitigating the risks associated with excessive governmental control, regulatory inflexibility, high tax burdens, and malfunctioning markets. Entrepreneurs often recognize the strategic importance of political coverage and actively pursue the establishment of formal or informal political networks to gain access to critical resources and enhance their competitive advantage (Chkir *et al.*, 2020).

Moreover, Faccio (2006) highlights that political connections exert a more significant impact on businesses operating in regions with weak institutional frameworks and inefficient financial systems. For example, in Russia, the country's entrepreneurs have faced the prospect of legislation that could potentially have adverse effects on their

business prospects (Friedman *et al.*, 2000). In response to such challenges, there has been a notable trend towards greater political engagement among entrepreneurs in Russia (Li *et al.*, 2006). Entrepreneurs in Russia recognize the limitations of existing institutional frameworks and the potential risks they pose to their businesses. In this context, they actively seek alternative means to protect their interests and promote private enterprise. One such approach involves seeking representation in the lower house of Russia's legislature. By securing seats in the legislature, entrepreneurs aim to have a direct impact on policy outcomes and shape the direction of the country's political landscape (Li *et al.*, 2006).

The active pursuit of political representation by entrepreneurs highlights the strategic significance of political connections in regions with weak institutional frameworks. Similarly, in China, bureaucratic organizations control key resources such as capital, land, and taxes, and the legal system allows for special government intervention at any time (La Porta *et al.*, 1998; La Porta *et al.*, 2000; Walder, 2003; Allen *et al.*, 2005; Li *et al.*, 2006; Chan *et al.*, 2012; He *et al.*, 2014; Allen *et al.*, 2019). Consequently, political connections can exert a more substantial impact on businesses operating in China.

Therefore, China's unique institutional landscape has led to a particular focus on the role of political connections in corporate finance. Existing evidence supports the notion that politically connected firms in China often receive preferential treatment in various aspects, such as accessing bank financing, obtaining debt at lower costs, and issuing bonds more successfully, compared to non-politically connected firms (Xin and Pearce, 1996; Luo and Zhen, 2008; Berkman *et al.*, 2010; Chan *et al.*, 2012; Liu *et al.*, 2013; Nee and Oppen, 2012; Zhao and Lu, 2016; Ge *et al.*, 2017; Schweizer *et al.*, 2019; Schweizer *et al.*, 2020).

Previous literature has indeed explored financing constraints across the scope of Chinese companies, encompassing both state-owned and private listed enterprises (Xin and Pearce, 1996; Chan *et al.*, 2012; Zhao and Lu, 2016; Sun and Jiang, 2015; Deng *et*

al., 2019). However, these analyses often lack the comprehensive studies needed to unravel the challenges unique to private listed enterprises.

Therefore, a tailored analysis is needed for several reasons. Firstly, private listed companies often operate under different regulatory, economic, and political dynamics than their state-owned listed counterparts in China, leading to distinct financial challenges that can be overshadowed in a broader analysis. Secondly, as emphasized in the motivation (Section 1.2), the significance of private enterprises to the nation's economic fabric, coupled with their disproportionate financing constraints, underscores the need for a dedicated study.

It is important to recognize that while existing studies, such as those by Zhao and Lu (2016) and Ge *et al.* (2017), sample private firms, they employ cross-sectional data that restrict the broader applicability of their findings. Moreover, Chan *et al.* (2012) categorized Chinese listed firms into state-owned and non-state-owned enterprises to investigate the influence of political connections on financing constraints. However, their approach was limited to using a single dummy variable to measure political connections, failing to capture the nuanced effects of varying levels of political influence. This highlights a significant opportunity for refining the measurement of political connections.

Furthermore, these studies typically focus on specific dimensions of financial challenges—such as the influence of political connections on securing bank loans or bond market access—rather than providing a holistic examination of the financial constraints faced by enterprises. For example, research by Duan *et al.* (2012) explores the relationship between political connections and bank debt among Chinese listed private firms, while Schweizer *et al.* (2019) study the relationship between political connections and bond issuance. Yet, these studies fail to encompass the entire range of financial constraints these companies encounter. Consequently, a literature gap persists,

particularly regarding the distinct range of financial constraints that private listed firms face, necessitating a focused investigation which this chapter seeks to provide.

Even when similar studies exist, they leave room for in-depth research on sample range selection and the measurement of political connections. For example, Deng *et al.* (2019) focused exclusively on industrial public firms, providing a narrower view that does not capture the full spectrum of political connections across different sectors. In contrast, Sun and Jiang (2015) cover all private companies, including listed and unlisted companies. However, the financial data of most unlisted companies often lack strict supervision, and the size and operating environment of listed companies and unlisted companies are completely different, leading to potential inconsistencies and limitations in their conclusions.

To address this research gap, this chapter aims to provide a comprehensive and detailed analysis of the financing constraints unique to private listed enterprises in China. By delving deeper into the systemic financial barriers that hinder the growth and sustainability of China's private listed sector, this chapter enhances the dialogue on potential solutions and policy adjustments necessary to support their economic health and expansion.

To achieve this objective, a sample of Chinese-listed private firms is utilized, and hand-collected data on political connections are analyzed for the period spanning 2008 to 2019. The results reveal a noteworthy pattern: private listed firms with political connections experience fewer financing constraints compared to those without such connections. Moreover, the negative relationship between political connections and financial constraints is found to be more pronounced for firms with higher levels of political connections.

To explain these findings, the chapter explores two potential mechanisms through empirical tests. Bank loans are the main source of financing for listed companies in China. Firstly, prior research documents that the Chinese banking system is largely

dominated by state-owned banks, which tend to prefer providing loans to politically connected firms (Allen *et al.*, 2005; Li *et al.*, 2008; Duchin and Soyura, 2012; Allen *et al.*, 2019). Consequently, the presence of political connections can facilitate private listed firms in accessing more bank loans, thereby easing their financing constraints. Secondly, it is observed that government-controlled banks also offer lower interest rates to politically connected firms (Sapienza, 2004). As a result, private companies with political connections benefit from lower debt costs, which in turn contribute to reducing their financing constraints.

Moreover, the study delves into the regional aspect of financial markets and finds that the impact of political connections on financial constraints is more pronounced for private enterprises operating in regions with less developed financial markets. These firms face significant challenges in accessing financial resources due to limited competition and a less robust financial infrastructure. In such contexts, political connections can act as a valuable resource for overcoming these challenges and mitigating financing constraints. In conclusion, the findings from this chapter shed light on the significant role of political connections in influencing the financial constraints of private listed firms in China. The contributions of this chapter are discussed in detail in Section 2.6.

The remainder of this chapter is organized as follows: Section 2.2 introduces the Chinese institutional background. Section 2.3 reviews the relevant prior research and develops the hypotheses. Section 2.4 presents the sample data, measurement method, and research design. Section 2.5 analyzes the results. Section 2.6 concludes the study.

2.2 The Chinese Institutional Background

This section provides comprehensive and in-depth information on the history of private business and the political system in China, with a particular emphasis on the institutional environments that have shaped the development of private firms since the initiation of far-reaching economic reforms in 1978. It introduces a wide range of factors that have facilitated or hindered the growth of the private sector, including government policies and regulations, access to capital, and the legal framework for business operations. Additionally, this section highlights the growing involvement of private entrepreneurs in China's political system, focusing on the People's Congress (PC) and the Chinese People's Political Consultative Conference (CPPCC). Through their participation in these organizations, private entrepreneurs have gained greater political influence and networking opportunities, enabling them to navigate complex regulatory systems and obtain critical resources and protections for their businesses. Overall, this section provides detailed information on the institutional and political factors shaping China's private business landscape.

2.2.1 The Background of Private Enterprises in China

During the Third Plenum of the Eleventh Central Committee of the Communist Party of China in 1978, the Chinese government endorsed the return of individual household enterprises, restoring the legitimacy of private enterprise. Since its revitalization, the private sector has experienced a growth rate far exceeding that of the public sector. However, the revival of the private sector was not without hurdles. Initially, private businesses were limited to hiring a maximum of eight employees, a restriction that persisted for ten years until the National People's Congress allowed the establishment of private enterprises with more employees. Despite legislation allowing private businesses to operate, the political atmosphere was unfavorable towards them for ideological reasons during the first 15 years of the reform period. Private entrepreneurs faced hostility and social stigma from officials and the general population, who viewed them as dubious, ignoble, or even despicable. For example, private businesses faced

various political movements that challenged their legitimacy, such as movements targeting private businesses under the pretexts of “rectifying the market” and “attacking speculation.” Private entrepreneurs were carefully regulated and prevented from entering the political establishment until the early 1990s (Xin and Pearce, 1996; Li *et al.*, 2006).

In the 1980s and 1990s, while the government acknowledged the need to create fair market conditions for firms of all ownership structures to compete on equal footing, private businesses in China continued to face arbitrary harassment from government officials, undermining their operations and threatening their viability (Pearson, 1997). Moreover, private firms continued to face discrimination in areas such as access to bank loans and other key resources, giving them a distinct disadvantage over SOEs (Brandt & Li, 2003). To compound these challenges, commercial and property laws in China remained weak or unenforceable (Li *et al.*, 2006). These issues indicate that the Chinese government has yet to fully embrace a truly open and fair market system, which could lead to a more level playing field for private businesses to thrive.

A major turning point came in the early 1990s when the role of ideology in shaping China’s private sector development diminished. At the Fourteenth Party Congress held in 1992, the government took steps to elevate the status of the private sector by abandoning discrimination based on ownership and recognizing its crucial contribution to China’s social and economic progress (Sabin, 1994). After that, many restrictions on private enterprises were loosened. For example, some private companies adopted the “wearing a red hat” tactic, a fairly expeditious method in the early 1990s. They registered the business as “collective enterprises,” allowing them to enjoy priority treatment (Che and Qian, 1998; Pearson, 2000). This approach provided more favorable tax advantages and easier access to capital and other resources under the pretense of “collective ownership,” in addition to making them politically acceptable (Nee, 1992; Naughton, 1994).

As political and ideological constraints further loosened in the 1990s, many private entrepreneurs began seeking new strategies to gain greater legitimacy and power. Specifically, an increasing number of private entrepreneurs chose to actively participate in politics, with many becoming members of the powerful political bodies of the PC and CPPCC. For example, on March 14, 1993, 23 private entrepreneurs were elected to the 8th National Committee of the Chinese People's Political Consultative Conference for the first time. Among them, Liu Yonghao, Chairman of the New Hope Group, made a speech titled "There is hope for private enterprises," becoming the first private entrepreneur to speak in the Great Hall of the People after the reform and opening up. This event symbolized the further declining ideological concerns that had hindered private sector growth throughout the 1980s. This shift in policy was a significant turning point for the private sector in China, marking a move toward greater recognition and support for private businesses by the government. Consequently, seeking a "red hat" became an important avenue for private entrepreneurs to gain political connections, access resources, and achieve greater legitimacy in the eyes of the government and society as a whole. The participation of private entrepreneurs in politics highlights the interdependence between the private sector and the government, as private businesses seek to leverage their economic power to gain political influence while policymakers recognize the importance of private enterprise in driving economic growth.

2.2.2 The Concept of Political System in China

The previous section discusses how private companies seek political connections. Several studies have suggested that China's private entrepreneurs are less inclined to adopt radical methods, such as carrying out drastic revolutions, to achieve their demands (Pearson, 2000; Goodman, 2008). Instead, they tend to favor a more systematic and methodical approach when attempting to influence the government (Tsai, 2011). According to a report by the All-China Federation of Industry and Commerce, based on a 1993-2008 large-scale survey of China's private sector, 28.8% of private

entrepreneurs aspire to become members of either the People's Congress (PC) or the Chinese People's Political Consultative Conference (CPPCC). It is worth noting that private entrepreneurs' aspiration to join these political bodies is not surprising, given the potential benefits of increased political connections and the challenges faced by private enterprises. Li *et al.* (2008) describe these institutions as akin to China's upper and lower houses. Therefore, the PC and CPPCC are the two most influential political bodies in China, serving as the country's legislative and advisory arms.

In China, the PC functions as the country's legislative body, holding the highest authority as defined by the Chinese constitution. At every level of the government hierarchy, including the central, provincial, municipal, county, and township levels, there is a PC in place. Local PCs have the power to select chief officials at their own administrative level, develop and approve local laws and policies, and impeach government officials if necessary. Either local or central administrations have a strategic motivation to support enterprises that pay taxes, disburse income, promote economic development, and encourage social prosperity (Gordon and Li, 2009; Gordon and Li, 2012).

The National People's Congress (NPC) is the PC at the central level and is considered the highest organ of state power in the People's Republic of China. One of its crucial roles is to monitor the operation of government bodies, including both central and local administrative bodies. Through its monitoring functions, the NPC ensures that the government operates in accordance with the constitution, laws, and regulations of the country. This includes overseeing the implementation of policies and evaluating the performance of government officials and departments to ensure they are fulfilling their duties effectively. Additionally, the NPC has the authority to appoint important officials, including members of the State Council, the Supreme People's Court, and the Supreme People's Procuratorate, among others.

Another critical function of the NPC is the revision of the constitution. As the supreme law of the land, the constitution provides the framework for China's political, social,

and economic systems. The NPC has the authority to amend the constitution, reflecting changes in the country's political and social landscape over time. Furthermore, the NPC plays a key role in evaluating and confirming the government budget and economic strategy. This involves reviewing and approving the national budget and making decisions on fiscal policies that shape the country's economic development. The NPC also assesses the government's economic performance and provides guidance on policies to promote sustainable growth and address social and economic challenges. Overall, the NPC's broad range of responsibilities highlights its significant role in China's governance system. Its monitoring, appointment, constitutional revision, and economic evaluation functions allow it to exercise democratic supervision over the government and ensure that policies align with the needs and interests of the Chinese people.

Theoretically, the establishment of PCs at all levels involves elections, but in reality, party and government officials control the process of candidate nomination. Therefore, it is not uncommon for major party and government officials to be deputies of the PC at both local and central levels. Although private entrepreneurs can participate in politics through the PC platform, the nomination process is often influenced by government officials, which does not always reflect the interests of the private sector.

In addition to the PC, the Chinese People's Political Consultative Conference (CPPCC) stands as a distinctive component of China's political system. Its establishment in 1949, following the founding of the People's Republic of China, marked a significant milestone in China's political development. Its main purpose was to unite and mobilize people from various political parties, organizations, and social groups to participate in the building of a new socialist society. The CPPCC's role has evolved over time, and it now serves as a channel for political consultation and democratic supervision.

The CPPCC's function of political consultation involves soliciting opinions and suggestions from various social groups on major policies and decisions of the party and

government. This process occurs both before decisions are made and during their implementation, enabling the CPPCC to provide feedback and make proposals to improve policy outcomes. The CPPCC's democratic supervision function involves overseeing the enforcement of China's constitution, laws, and regulations, as well as the performance of government departments and their employees. The CPPCC can hold them accountable for their actions and improve the quality of governance by making proposals and criticisms at regular meetings with party and government officials.

Compared to the PC, the CPPCC is more independent from the party and government, with a smaller party representation and more diverse membership. While the party and government maintain control over the nomination process, allowing all social and economic organizations to nominate their candidates increases the potential for representation from various sectors of society. CPPCC members come from a range of backgrounds, including the social, cultural, and business elite, and have higher education levels on average than PC members. The CPPCC's special mechanism for selecting members provides private entrepreneurs with a platform to participate in politics and potentially gain greater legitimacy and access to resources. Overall, the CPPCC serves as an important channel for political consultation and democratic supervision, facilitating communication and cooperation between the party, government, and various sectors of society.

2.3 Literature Review and Hypothesis Development

2.3.1 Review and Analysis of the Theory of Political Connections and Financial Constraints

Previous research on the impact of political connections on companies has produced mixed and sometimes contradictory findings. On one hand, numerous studies have found evidence that politically connected firms tend to enjoy more favorable treatments, particularly in emerging economies where institutional frameworks are weak (Fisman, 2001; Khwaja and Mian, 2005; Dinç, 2005; Faccio, 2006; Faccio *et al.*, 2006; Fan *et al.*, 2007; Claessens *et al.*, 2008; Bliss and Gul, 2012; Boubakri *et al.*, 2012a; Boubakri *et al.*, 2012b; Chan *et al.*, 2012; Liu *et al.*, 2013; Chen *et al.*, 2014; Houston *et al.*, 2014; Kim and Zhang, 2016; Ferris *et al.*, 2016; Bertrand *et al.*, 2018; Schweizer *et al.*, 2020). These benefits often include easier access to financing, preferential treatment in obtaining contracts, and regulatory advantages. However, these benefits are often informal and implicit, and firms seek to avoid accusations of unethical behavior by keeping their political ties understated (Chkir *et al.*, 2020).

On the other hand, some scholars argue that political connections can have detrimental effects on firms, such as a loss of business autonomy, decreased levels of innovation and creativity, and a lack of transparency in business practices (Shleifer and Vishny, 1994; Bertrand *et al.*, 2007; Brockman *et al.*, 2013; Boubakri *et al.*, 2013; Bliss and Gul, 2012; Bertrand *et al.*, 2018). These negative aspects can stem from the undue influence of political entities on corporate decision-making processes, leading to inefficiencies and corruption.

Despite these concerns, it was the seminal work of Faccio (2006) that provided a robust foundation for the concept and measurement of corporate political connections, detecting politically connected firms across 47 nations. Faccio's research laid the groundwork for subsequent investigations into the implications of political connections for firms in different nations, highlighting the potential for both benefits and drawbacks.

Shleifer and Vishny (1994) developed a model exploring the relationship between politicians and firms, focusing on how politicians exploit their positions to extract resources from firms for their own political benefit. They argue that this behaviour can have detrimental effects on the firms involved. The model posits that politicians have the authority to regulate and control various aspects of firms' operations. This authority can manifest in the form of granting licenses, permits, or subsidies, as well as passing legislation that directly affects firms' activities. These powers provide politicians with opportunities to extract resources from firms. Shleifer and Vishny suggest that politicians, driven by self-interest, seek to maximize their own political gains. They demand bribes, campaign contributions, or other forms of compensation from firms in exchange for favourable treatment or protection from adverse regulations.

Similarly, Bertrand *et al.* (2007) found that politically connected firms in France, during election years, prioritized increasing plant and job creation to assist incumbent politicians in getting re-elected. This strategy led to high costs and low efficiency, adversely impacting the firms' interests. Their findings emphasize the unintended impact of political connections on firms. Furthermore, political connections lead to a detrimental overreliance on political resources, causing neglect of the core business operations of a firm. For instance, Brockman *et al.* (2013) observed that firms with political connections performed poorly in the three years following M&A deals, despite initially successful outcomes. This can be attributed to their over-reliance on political resources at the expense of their business operations or due to their obligation to pay back political rents. Therefore, it is essential for firms using political connections for acquisitions to carefully consider the costs associated with returning political rents post-acquisition. In addition, Boubakri *et al.* (2013) suggested that politically connected firms suffer from severe agency problems as they are viewed as "cash cows," leading to resource crowding in business.

In addition to rent extraction and resource crowding, the detrimental effects of political connections can extend to the instability and inefficiency of management. For example,

Fan *et al.* (2007) and Boubakri *et al.* (2008) discovered that politically connected CEOs in newly privatized Chinese firms performed poorly compared to their non-politically connected counterparts and were more likely to appoint bureaucrats to their boards, regardless of their management skills. This can weaken the firm's governance and decision-making efficiency, ultimately affecting its overall performance. Moreover, Bliss and Gul (2012) found that higher interest rates charged to firms with political connections in Malaysia can be attributed to efficient contracting by lenders, who view such firms as higher risk by both the market and audit firms. Bertrand *et al.* (2018) suggest that government resources, such as subsidies or tax exemptions, provided to connected firms do not confer significant benefits. Specifically, their findings indicate that the profitability of connected firms is comparatively lower in cross-sectional analysis. Additionally, when a CEO with political connections assumes leadership, these firms tend to experience a decline in profitability. These findings suggest that political connections can adversely affect various dimensions of a firm's competitiveness, risk, and reputation.

The benefits of political connections for companies have been widely acknowledged in various literature. For instance, Berger and Udell (1995) argue that close interaction between the government and businesses can enhance the borrowing capacity of small-scale borrowers, which is crucial for small companies seeking access to capital. Similarly, Fisman (2001) observes that enterprises often exhibit a strong motivation to acquire political capital through the establishment of political affiliations. Such connections can confer a level of prestige and legitimacy on firms, enhancing their reputation and competitiveness in the marketplace. In a study conducted in Malaysia, Johnson and Mitton (2003) find that political relations can provide an implicit guarantee for the future performance of firms, enabling them to obtain better access to loans. Moreover, Sapienza (2004) finds that politically affiliated firms in Italy enjoy lower interest rates from government-owned banks, reflecting the strength of the party controlling the bank and resulting in preferential funding for party-affiliated enterprises.

According to Duchin and Sosyura (2012) and Goldman *et al.* (2013), companies that establish relationships with the government by appointing directors or engaging in lobbying activities are more likely to obtain financial resources. Such political connections can enhance investors' perception of a company's comprehensive advantages. These advantages can be particularly valuable during periods of economic recession (Ovtchinnikov and Pantaleoni, 2012). Other studies by Claessens *et al.* (2008) and Boubakri *et al.* (2012a, 2012b) also highlight the potential advantages of political connections for firms' financing, while underscoring concerns regarding preferential treatment and the fairness of resource allocation.

Furthermore, Dinç (2005) provides cross-country bank-level data showing that foreign government-owned banks increase their lending during election years to gain electoral support. These findings suggest that political connections can provide businesses with greater access to capital. In addition, Leuz and Oberholzer-Gee (2006) find that political connections allow firms to maintain a level of opacity in their financial reporting quality due to receiving less pressure from financial markets. This can have implications for the transparency and accuracy of financial reporting, which are crucial considerations for investors and regulators alike.

In addition to the benefits in financing, Agrawal and Knoeber (2001) suggest that businesses are motivated to add politicians to their boards of directors due to their knowledge of the political system and their connections with high-level government officials. This can be especially beneficial for companies when negotiating government contracts and seeking preferential treatment, which become more accessible when politicians are involved. Similarly, Berkman *et al.* (2010) find that enterprises with political connections are more resistant to regulatory intervention by the government, as they are more familiar with the government's code of conduct. Their findings indicate that investors recognize the informational advantages provided by political connections. Taken together, the preceding discussion highlights the diverse and far-reaching advantages of political connections for businesses, including improved access to

government contracts, regulatory resistance, and preferential funding.

In China's financing environment, political connections play a crucial role in corporate financing, significantly impacting market participants and financial markets, which are closely monitored and regulated by the central government (Allen *et al.*, 2005; Liu *et al.*, 2013; Allen *et al.*, 2019; Schweizer *et al.*, 2020). As mentioned in the introduction and Section 2.2.1, private firms in China often face a significant disadvantage relative to state-owned enterprises in accessing financial and other resources due to the institutional support enjoyed by the latter. These private firms are vulnerable to arbitrary demands and extortion by officials and other actors due to the absence of a reliable rule of law (Fan *et al.*, 2007; Houston *et al.*, 2014).

According to a 2019 report by the All-China Federation of Industry and Commerce, almost half of the top 500 private companies in China believe that banks are more willing to lend to state-owned enterprises than to private enterprises. This highlights the importance of political connections in securing financing for private firms. Entrepreneurs in the report assert that political connections provide private firms with an alternative avenue for accessing financial resources and other benefits that are otherwise inaccessible due to the prevalent bias against private firms in China. Consequently, Chinese private firms have increasingly turned to cultivating political connections through their managers or board members (Schweizer *et al.*, 2020).

Given the financing challenges faced by private companies in China, numerous empirical studies have investigated the role of political connections in this context (Xin and Pearce, 1996; Luo and Zhen, 2008; Berkman *et al.*, 2010; Chan *et al.*, 2012; Liu *et al.*, 2013; Nee and Oppen, 2012; Zhao and Lu, 2016; Ge *et al.*, 2017; Schweizer *et al.*, 2019; Schweizer *et al.*, 2020).

Initially, Xin and Pearce (1996) examined 32 Chinese firms with varying ownership structures and found that private enterprises preferred to hire individuals with

government relations. Personal relationships could act as a substitute for formal political support, which is critical for enterprises operating in an institutional setting with a deficient legal and regulatory structure. Luo and Zhen (2008) used investment-cash flow sensitivity to measure firms' financing status and found that political connections allowed Chinese companies to rely less on internal financing. This is because such connections increased the likelihood of obtaining external financing.

Similarly, Chan *et al.* (2012) divided Chinese listed firms into state-owned and non-state-owned enterprises and also used the sensitivity of the investment-cash flow model to investigate the political influence on financing constraints. However, they only used a dummy variable to measure political connections and did not account for the varying effect of different levels of political connections. It is important to note that both Luo and Zhen (2008) and Chan *et al.* (2012) used the sensitivity of investment-cash flow to measure financial constraints. However, according to Hadlock and Pierce (2010), the investment-cash flow method can be hampered by endogeneity issues.

Moreover, Berkman *et al.* (2010) conducted a study on Chinese firms and found that those with political connections are more resistant to government regulatory intervention, as they are well-versed in the government's code of conduct. This study suggests that investors recognize the benefits of political connections in gaining access to valuable information. Similarly, Nee and Oppen (2012) showed that politically connected firms can benefit from explicit favorable policy treatment and implicit government guarantees, corroborating the results of Berkman *et al.* (2010). Additionally, Liu *et al.* (2013) conducted a study on the role of political connections in initial public offerings (IPOs) in China and found that firms with politically connected managers have a higher likelihood of receiving approval for their IPO requests.

Furthermore, Zhao and Lu (2016) found that membership in the Chinese People's Political Consultative Conference (CPPCC) enhances firms' access to debt financing by investigating a sample of 1,870 firms in China. As described in Section 2.2.1,

membership in the CPPCC serves as an important signal of a firm's connection with the government, indicating the firm's contributions to the economy and its recognition by the government and society. Such membership can enhance the perceived value of the firm and increase its access to debt financing. In a similar context, Ge *et al.* (2017) demonstrate that if entrepreneurs belong to the PC or CPPCC, their firms' refinancing risk is significantly reduced. However, it is worth noting that the sample periods of Zhao and Lu (2016) and Ge *et al.* (2017) are relatively short, encompassing only one year. This limitation affects the generalizability of their findings and raises concerns about specific time effects.

A recent study by Schweizer *et al.* (2019) found that the impact of political connections on financing aligns closely with the level of political connections. At every level of the government hierarchy in China, including the central, provincial, municipal, county, and township levels, there is a People's Congress (PC) in place. PCs at higher levels typically wield more significant power over resource allocation. This suggests that the effect of political connections on financing is contingent upon the level of political connections.

Despite the existing body of literature on the impact of political connections on corporate finance, there remains a notable gap in comprehensively analyzing the broader implications of political connections on financial constraints in China. Most existing studies have focused on all listed firms in China, overlooking the ownership heterogeneity of these companies. However, private enterprises in China face more severe financing constraints compared to state-owned enterprises, as reported by the All-China Federation of Industry and Commerce in 2019. This report suggests that private firms are more motivated to establish political connections to alleviate their financial constraints.

Even though some studies, such as those by Zhao and Lu (2016) and Ge *et al.* (2017), use samples from private firms, the sample periods are relatively short, limiting the generalizability of their findings. Furthermore, there are limited in-depth studies

investigating the role of political connections in addressing financial constraints specifically for Chinese private listed firms.

In addition to addressing the under-researched private sector, the importance of private firms in contributing to China's rapid economic growth is a critical aspect that motivates this chapter. According to the China Private Economy Report issued by Evergrande Research Institution in 2019, private firms account for approximately 60% of the GDP, more than 80% of employment in urban areas, and approximately 56.9% of total tax revenue. Despite their significant contributions to the economy, private firms face more challenging financing conditions compared to SOEs (Chan *et al.*, 2012; Allen *et al.*, 2019; Pan and Tian, 2020). The significance of private firms makes this research more practical and meaningful. Therefore, this chapter seeks to fill this gap and offer some insights to private entrepreneurs and individuals invested in the development of private enterprises. Based on the research gap, this chapter proposes the following two hypotheses:

Hypothesis 1a: Chinese private listed firms with political connections will face fewer financing constraints compared to firms without political connections.

Hypothesis 1b: The negative relationship between political connections and financial constraints will be stronger for Chinese private listed firms with higher levels of political connections.

2.3.2 The Moderating Role of Financializing Development in Political Connections and Financial Constraints

Numerous studies have established that political connections significantly impact businesses in underdeveloped regions due to weak institutional frameworks and inefficient financial systems (Faccio, 2006; Firth *et al.*, 2006; Fan *et al.*, 2007; Chen *et al.*, 2011; He *et al.*, 2014). Faccio (2006) argues that political relationships are more pronounced in regions with higher corruption levels, where the lack of a stable legal and regulatory framework impedes impersonal business transactions (Zucker, 1986; Redding, 1990; La Porta *et al.*, 1998; La Porta *et al.*, 2000).

China's regions exhibit significant variations in economic growth and institutional systems. For instance, the eastern coastal regions are typically more developed than the central or western regions. Investment environments also vary significantly across different provinces and areas. Developed regions generally have more efficient local governments, lower levels of corruption, limited government intervention in business affairs, advanced financial intermediaries, more mobile labor markets, and better law enforcement and property rights protection (Fan *et al.*, 2010; Firth *et al.*, 2006; Chen *et al.*, 2011; He *et al.*, 2014). Consequently, businesses in less developed regions rely more heavily on political connections to overcome institutional limitations and disadvantages (Park and Luo, 2001; Li *et al.*, 2008; He *et al.*, 2014).

The development of financial markets in China still lags behind that of product markets. Despite increased competition, a few large state-controlled banks dominate the financial sector, resulting in excessive market concentration and limited competition. Moreover, credit allocation is still influenced by non-market factors. The less developed the financial sector, the higher the exposure to these influences (Fan *et al.*, 2007; Allen *et al.*, 2019; Wang *et al.*, 2021). Firth *et al.* (2009) found that state ownership significantly influences lending decisions to Chinese private enterprises, particularly in regions with less mature banking sectors.

Pan and Tian (2020) found that political connections are crucial for firms operating in unsupported industries or less developed provinces. Establishing political connections can effectively mitigate market discrimination and access financial resources controlled by the state, which disproportionately favors SOEs (Schweizer *et al.*, 2019). This study proposes that the impact of political connections on financial constraints is more significant for private enterprises in regions with less developed financial markets. Firms in less developed provinces face greater challenges in accessing financial resources due to limited competition, which can be mitigated by political connections. Therefore, examining how political connections help private firms overcome financial constraints in these regions will enhance understanding of their role in China's institutional environment. Accordingly, this Chapter proposes:

Hypothesis 2: Political connections play a greater role in financing constraints in regions with less developed financial markets.

2.4 Methodology

2.4.1 Data

This study utilizes financial data for firms obtained from the China Stock Market & Accounting Research (CSMAR) database, focusing specifically on private listed companies in China. Defining private listed firms is a crucial aspect of this study. While various studies often use the term “non-state-owned enterprises” to refer to private enterprises, this term is not interchangeable with “private listed firms” in this context. Non-state-owned listed firms encompass not only privately listed firms but also foreign-controlled listed enterprises and collectively owned listed enterprises¹, which represent only a small fraction of Chinese listed firms. Additionally, foreign-controlled enterprises face unique challenges in establishing political connections in China, making the methods employed in this study less applicable to them. Collectively owned enterprises also feature a unique ownership structure, where ownership and decision-making authority are distributed among members of a collective, contrasting with the typically concentrated ownership found in privately owned enterprises, which are often controlled by individuals, families, or private entities. Given these distinctive characteristics, many studies on private listed companies in China exclude foreign-controlled and collectively owned enterprises, a methodology adopted in this study.

To accurately identify private listed companies among the broader category of listed entities in China, establishing a clear definition of a private firm is essential. This definition fundamentally relies on the concept of the “actual controller,” defined as the natural person, legal entity, or organizational entity that exerts significant influence over the company’s decisions and operations.

¹ Collective ownership refers to a form of ownership in which property, assets, or resources are collectively owned and managed by a group of individuals, rather than by individuals or entities acting independently. This model is often contrasted with private ownership, where property and assets are owned and controlled by individuals or entities for their exclusive benefit.

The distinction between state-owned and private companies in existing literature often hinges on the concept of the actual controller (Zhou, 2017; Mirza *et al.*, 2019; Schweizer *et al.*, 2019; Lin & Milhaupt, 2021). Therefore, this study categorizes entities based on their controlling parties, such as the state, government agencies, individuals, or families, to determine whether a firm is state-owned or privately held.

According to Article 216 of the Company Law of the People's Republic of China, an actual controller can influence the company's management and operations through investment relationships or agreements, even without holding shareholder status. The criteria for establishing control in listed companies are further clarified by Article 84 of the Administrative Measures for the Acquisition of Listed Companies, issued by the China Securities Regulatory Commission (CSRC). A controller can be an individual or entity that holds more than 50 percent of a company's shares, possesses over 30 percent of voting rights, influences board composition, or significantly sways decisions at general meetings, among other conditions set by the CSRC.

Consequently, this chapter reviews ownership records, company filings, and other relevant legal documents that disclose the identity and the extent of control exerted by these potential actual controllers. The CSMAR Database also provides data on shares and shareowners. Only those listed firms where the actual controller's power rests with an individual or a family—thus excluding those controlled by state or government agencies—are included in the sample.

However, the CSMAR Database does not include information on the political connections of CEOs and Chairmen. To address this issue, a specific database of political connections was manually constructed by obtaining personal information on chairmen and CEOs of private listed firms from the CSMAR Database, annual reports, and several reputable stock information websites in China (see Table 2.1). This information includes their position, tenure, and individual name. Subsequently, the personal details were examined to determine whether the individual is a member of the

PC or CPPCC or has held a position in a government department or the military. All data on political connections were collected manually. Manual data collection not only enabled this study to obtain the missing information on political connections but also to create more nuanced categories for measuring the level of political connections. By dividing political connections into finer categories, this research captures variations in the strength of connections and their impact on corporate financing.

This study commenced sample collection from 2008, coinciding with the availability of the China Listed Private Enterprise Research Database in CSMAR. Additionally, the global financial crisis that began in 2008 significantly affected China's private economic development. Thus, the sample period is limited to 2008-2019 to ensure the analysis captures the economic event's impact on private firms in China.

To ensure reliability and validity, several principles were applied in processing the samples: (1) Excluding financial firms due to their unique capital structures and regulatory environments, which differ significantly from non-financial firms. (2) Excluding samples with missing data to ensure a complete and accurate dataset. (3) Excluding companies with a debt-to-total asset ratio exceeding 1, indicating an unusual and financially imprudent level of indebtedness. (4) Excluding companies with ST (Special Treatment) or PT (Particular Transfer) status, as assigned by Chinese stock exchanges to flag those facing financial difficulties or regulatory issues that could affect performance. (5) Winsorizing all data at the 1% and 99% levels.

Therefore, these rigorous procedures in sample selection and data processing reduce interference in the subsequent empirical analysis. After processing, an unbalanced panel of 10,115 observations from 2,062 firms remained, representing a wide range of industries and regions in China. This sample size is sufficient for statistically significant results and ensures the robustness of the analysis.

2.4.2 Key Variables Measurement

2.4.2.1 Measuring Political Connections

Private listed firms can establish political connections in various ways. In China, membership in the National People's Congress (NPC) and the Chinese People's Political Consultative Conference (CPPCC) are primary channels (Li *et al.*, 2008). These political bodies exist at various hierarchical levels, allowing members of the NPC and CPPCC to exercise political influence within their respective hierarchies.

Various studies define firms as politically connected if their chairman or CEO is or has been a member of the NPC or CPPCC, or if they have connections to government officials or military personnel (He *et al.*, 2014; Schweizer *et al.*, 2019; Schweizer *et al.*, 2020). This chapter follows the methodology of these studies, measuring firms' political connections based on the political roles of the CEO or chairman. The focus on the CEO and chairman is deliberate, based on the significant influence these positions hold within the corporate hierarchy and decision-making processes. Typically, the CEO and chairman have the highest visibility and influence within and outside the company. They act as main intermediaries between the corporate entity and external political networks, likely having political connections impacting the company's financial and operational performance. While other senior executives like the CSO or COO might have political affiliations, these connections may not be as pronounced or directly impact the company's overarching strategies and financial decisions as much as those of the CEO or chairman.

To ensure a comprehensive analysis of the degree of political connection among the sampled firms, it is crucial to consider the differences in political power at various levels of the Chinese administrative hierarchy. This study establishes an ordinal variable called the PC Level index, based on China's administrative hierarchies, which include five levels: Nation, Province, Municipality, County, and Town. However, most

sample data in this study show political connections at the national and provincial levels, with fewer at the municipal level. The number of samples at the county and township levels is very small, with only 79 private listed companies. Therefore, this study combines the county and township levels into one due to their small number and similar power. The PC Level index ranges from 0 to 4, where 4 represents political connections at the national level, 3 at the provincial level, 2 at the municipal level, 1 at the county or township level, and 0 represents no political connections.

Several studies on Chinese private listed firms have utilized administrative hierarchies to gauge the extent of political connections (Sun and Jiang, 2015; Deng *et al.*, 2019; Schweizer *et al.*, 2019). Specifically, Sun and Jiang (2015) found that the substantial power held by China's central and provincial governments plays a pivotal role in steering loan allocation. These government tiers significantly influence monetary and fiscal policies and oversee the appointment of regional bank branch management. Consequently, businesses with affiliations to central and provincial governments gain a marked advantage, securing favorable loans and inexpensive credit due to these political connections.

In contrast, governments below the provincial level, such as city, county, and district governments, lack official regulatory authority over major state-owned and commercial banks. While local officials wield substantial influence within their jurisdictions, their capacity to affect the broader financial and regulatory framework is comparatively restricted, particularly for large, publicly traded enterprises. These companies often operate on a national or even global scale, rendering local political ties insufficient to address their comprehensive needs. Consequently, Figure 2.2 indicates that privately listed firms are more inclined to establish connections at the national or provincial levels, where political influence aligns more closely with their expansive operational and strategic requirements. Therefore, political affiliations with these lower-level governments are likely to have a limited positive impact on the financial standing of associated private listed firms.

Moreover, the landscape of political and financial interactions in China has evolved due to intensified scrutiny and monitoring of misconduct across all levels of government. This rigorous oversight aims to curb corruption and ensure transparency, making it increasingly difficult to use informal channels to influence market functions, particularly in the financial sector. Consequently, the enhanced regulatory environment has significantly reduced the capacity to leverage political connections, especially those at lower levels of government, to sway financial decisions or outcomes. While political connections at higher levels, such as with central or provincial governments, still facilitate access to favorable loans and credit due to their significant influence on banking operations and policymaking, the effectiveness of connections at the city, county, or district levels has been substantially diminished (Sun and Jiang, 2015). Therefore, using China's administrative hierarchy to identify levels of political connections is based on the country's actual political and business environment.

Furthermore, this section aims to discuss the PC Level Index in greater detail, as explored in studies such as Sun and Jiang (2015) and Deng *et al.* (2019). The methodology for measuring the PC Level Index in Sun and Jiang (2015) shares a foundational similarity with this chapter in employing a hierarchical framework to assess political connections. However, the measurement standards employed by Sun and Jiang differ markedly from those utilized in this chapter. In their research, the level variable was established based on the administrative status of the firm's registration location. Their premise posits that companies incorporated in provinces, autonomous regions, and municipalities command a larger scale and bear significant economic importance, thereby possessing higher political connections. These entities are purportedly more inclined to receive government subsidies, meriting them as firms with substantial political backgrounds. Conversely, they categorize firms registered at the county level as having medium political connections, while those below the county level are deemed to have low political connections.

This approach, while innovative, presents certain methodological limitations. Primarily, it assumes uniformity of political connections based solely on the administrative classification of the firm's registration location. Such a categorization risks oversimplification, potentially conflating the geographical aspect of registration with the actual political influence or network that a company possesses. For example, two enterprises registered within the same provincial jurisdiction could have vastly different levels of political connections and influence, depending on their specific interactions and relationships with the government. In contrast, by focusing on the political identities of top executives, our method aims to capture the actual extent of political influence exerted on, or available to, the firm. This individual-centric approach allows for a more differentiated and accurate assessment of a company's political connections, avoiding the homogenization inherent in Sun and Jiang's registration location-based method.

Another study conducted by Deng *et al.* (2019) assigns a score to each member of a company's board and senior managers, aggregating all scores at the firm level each year to measure the level of political connection. Despite this shared methodological premise, there are notable differences in how these hierarchical levels are applied and interpreted within the context of this study.

Firstly, the level of political engagement is a critical factor in our methodological distinction. Deng *et al.* (2019) confined their analysis to the municipal level of the NPC and the CPPCC, neglecting the county and township levels. This limitation overlooks the potential influence and rights held by deputies or members of the NPC and CPPCC at these lower levels, which can be particularly relevant for private listed enterprises. In contrast, this chapter aims to capture a broader spectrum of political connections by considering these additional tiers, thus providing a more comprehensive view of the political landscape and its implications for private enterprises.

Secondly, the approach to quantifying political connections differs significantly. Deng

et al. (2019) assign values to the political affiliations of both board members and executives, summing these to gauge the company's political connectivity. This method, however, can lead to measurement inaccuracies. For instance, a company with numerous board members possessing minor political links might accumulate a higher political connection score compared to a company with fewer board members but more substantial political ties. The "Company Law" stipulates that a joint-stock company shall have a board of directors with members ranging from 5 to 19. Therefore, this situation is likely to occur. This discrepancy raises questions about the validity of equating the number of connections with the intensity or influence of those connections.

To mitigate potential measurement errors, this study strategically focuses on the roles of the chairman of the board and the CEO. Our methodology assumes that the political connections of these key individuals more accurately reflect the company's political capital and influence. This approach acknowledges that the quality of political connections, as embodied by these high-ranking officials, offers a more precise indicator of the company's political leverage than a mere quantitative tally of connections across the broader executive team.

2.4.2.2 Measuring Financing Constraints

To conduct studies related to financing constraints, researchers require a reliable method to measure the strength of these constraints. Numerous methods have been proposed in the literature, including investment-cash flow sensitivities (Fazzari *et al.*, 1988), the Kaplan and Zingales (KZ) financial constraint index (Kaplan and Zingales, 1997), the Whited and Wu (WW) financial constraint index (Whited and Wu, 2006), and the SA index (Hadlock and Pierce, 2010), as well as various sorting metrics based on firms' characteristics. However, the question of which method is the most appropriate for measuring financing constraints has been the subject of debate among scholars.

One approach previously considered a measure of financial constraints is the high sensitivity of investments to their cash flows. However, Hadlock and Pierce (2010) argue that the investment-cash flow ratio suffers from endogeneity issues, leading to measurement bias. Consequently, alternative measures have been proposed to capture the strength of financing constraints more accurately.

The KZ index, developed by Kaplan and Zingales (1997), is another widely used method. In their study, they ranked 49 firms on a scale of one to four financial constraints based on their characteristics and performed an ordered logit regression of this scale on measurable firm features. However, the KZ index's validity as a measure of financial constraints has been seriously questioned by Hadlock and Pierce (2010). They argue that the dependent and independent variables both contain the same information mechanically, raising doubts about the KZ index's accuracy in reflecting financial constraints. Moreover, using the KZ index coefficients on a broader sample of firms in different settings also raises concerns about its ability to accurately measure financing constraints (Erickson and Whited, 2000).

To address the issues associated with previous methods, Whited and Wu (2006) introduced an alternative index to measure financial constraints using GMM estimation. Unlike the KZ index, the WW index considers not only the financial characteristics of the firm but also the characteristics of the external industry in which the firm operates, enhancing its economic significance. Additionally, the WW index can mitigate the sample selection and measurement error problems associated with large datasets through structural estimation. Since the firms in our sample are publicly traded private firms, the data required to construct the WW index is readily available. Therefore, the WW index is well-suited for this study and will be used to measure financial constraints. According to Whited and Wu (2006), a higher WW index indicates more severe financial constraints.

Hadlock and Pierce (2010) introduced the SA index as an alternative method for

measuring financial constraints. Unlike the KZ and WW indexes, the SA index relies solely on two relatively exogenous firm characteristics: size and age. This simplicity allows for easy implementation and interpretation of results, as well as the potential to avoid sample selection and measurement error problems associated with large datasets. However, the SA index cannot capture the full extent of financing constraints faced by firms, as it ignores other relevant factors such as profitability and investment opportunities. Thus, while the SA index provides a useful alternative, it should be interpreted with caution, and its limitations should be considered when interpreting the results of studies that use it. Therefore, instead of using the SA index to measure financial constraints in the main regression, this study only applies it as an alternative method in robustness tests. Similar to the WW index, a higher SA index indicates more severe financial constraints. Overall, utilizing multiple measures of financial constraints provides a more comprehensive analysis.

2.4.2.3 Measuring Regional Development.

To examine the impact of political connections on financing constraints within varying financial development environments, it is crucial to have an accurate measurement of the financial environment where firms operate. Therefore, this study categorizes firms based on the location of their headquarters in one of China's 31 provinces. This study employs the financialization index developed by Wang *et al.* (2021) in their report titled "Marketization Index of Chinese Provinces: The NERI Report." The marketization index is a widely used measure, ranging from 1 to 10, and is composed of five dimensions: the relationship between government and market, the development of the non-state economy, the development of product markets, the development of production factor markets, the development of intermediary market organizations, and the legal environment. Each dimensional index includes multiple sub-indices, some of which are further broken down into secondary sub-indices.

The financialization index used in this study is a secondary index of the development of product markets. It serves as an essential tool to capture changes in the degree of economic and financial liberalization. A higher financialization index suggests a greater likelihood of the banking sector making lending decisions based on economic principles. The reliability of the index is ensured by its basis in statistical data from reputable organizations and surveys, rather than subjective ratings from a limited number of experts.

2.4.3 Model Construction

2.4.3.1 Baseline Model

To explore whether political connections can ease financial constraints for private listed enterprises, this study conducts panel regressions using the fixed effect estimation method. This approach controls for unobserved heterogeneity across firms and industries, which may affect the relationship between political connections and financial constraints.

The utility of fixed effects models lies in their ability to isolate the impact of variables that exhibit variation over time. In instances where a principal explanatory variable, like a CEO's political connections, does not change throughout the observed period, the fixed effects model inherently cannot estimate the variable's impact. This is due to the model's design, which controls for unobserved, time-invariant characteristics at the individual level, effectively neutralizing the effects of such constants.

Therefore, before implementing fixed effects, an examination of the data pertaining to the PC and PC Level Index indicated that there were numerous instances where these attributes did shift over the sample period, particularly concerning the PC Level Index. Consequently, this variability within the dataset validates the use of a fixed effects model to some extent.

Furthermore, the application of the Hausman test provided additional methodological insight. The test's premise is that significant discrepancies between the coefficients estimated by fixed and random effects models imply biases, potentially stemming from omitted variables or model misspecification, rendering the random effects model inconsistent. However, with a P-value of 0.0309 from the Hausman test, falling below the threshold of 0.05, the random effects model was deemed inappropriate, corroborating the fixed effects model as the more suitable approach for this dataset.

Then, this study constructs basic models following the approach of Almeida and Campello (2007) and Schweizer *et al.* (2020). These models provide a clear and transparent way to examine the relationship between political connections and financial constraints, helping to ensure that the findings are robust and reliable.

$$FC_{i,t} = \alpha + \beta * Political\ Connection_{i,t} + \gamma_n * N_{i,n,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

(Model 1)

$$FC_{i,t} = \alpha + \theta * Political\ Connection\ Level\ Index_{i,t} + \gamma_n * N_{i,n,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

(Model 2)

Model 1 investigates whether private firms with political connections experience fewer financial constraints compared to firms with weaker or no political connections. Model 2 examines whether financial constraints decrease as the level of political connections increases. Utilizing these two models, the study aims to provide a comprehensive understanding of the relationship between political connections and financial constraints. The dependent variable, $FC_{i,t}$, represents financial constraints and is measured using the WW Index (Whited and Wu, 2006). The key independent variables are political connections and the political connection level, which are hypothesized to have negative coefficients, indicating that firms with political connections are less likely to face financial constraints.

Following previous studies on financial constraints (Almeida and Campello, 2007; Campello *et al.*, 2010; Cull *et al.*, 2015), control variables $N_{i,n,t}$ include specific firm characteristics such as size, leverage, Tobin's q, age, profitability, cash, ROA, ROE, liquidity, and tangibility. Detailed measurements of each variable are provided in Table 2.1. Time and industry fixed effects are included to account for unobserved heterogeneity across time and industry.

Table 2. 1: Variable Definitions for the Study of Financial Constraints and Political Connections in Chinese Private Listed Firms

Variable name	Definitions	Original data source
Panel A: Firm characteristics		
WW Index	Following Whited and Wu (2006), a higher WW index indicates a higher level of financial constraints (see Appendix A).	CSMAR Database
Financialization Index (Fin)	A higher financialization index indicates a more developed financial market.	Index are obtained from "Marketization Index of Chinese Provinces: The NERI Report." by Wang <i>et al.</i> , (2021).
SIZE	Natural logarithm of total assets.	CSMAR Database
TOBIN Q	Market value of total asset/book value of total assets.	CSMAR Database
Age	Natural logarithm of the total number of years the company has been listed.	CSMAR Database
Leverage	Total liabilities/Total assets	CSMAR Database
Profit	Profit before interest and tax/Total assets	CSMAR Database
Cash	Operating net cash flow/Total assets	CSMAR Database
ROA	Net profit/Total asset	CSMAR Database
ROE	Net profit/Total equity	CSMAR Database
Liquidity	Current assets/Current liabilities	CSMAR Database
Tangibility	Net value of property, plant, and equipment (PPE) / Total assets	CSMAR Database
Distance	The natural logarithm of 1 plus the geodistance between private firms' headquarters and the provincial capital.	CSMAR Database
SA Index	Following by Hadlock and Pierce (2010), see Appendix A.	CSMAR Database
Debt cost	Interest /average interest-bearing liabilities $(Debt_{t-1} + Debt_t)/2$	CSMAR Database
Bank loan	The amount of bank loan/Total asset	CSMAR Database
State ownership	Number of state-owned shares / The total number of shares.	CSMAR Database

Government subsidies	Natural logarithm of the total amount of government subsidies.	CSMAR Database
Default	Equals 1 if the firms with political connection after bond default in 2014, and 0 otherwise.	CSMAR Database
Panel B: Political Connections		
Political Connections (PC)	A dummy variable that equals 1 if the chairman or CEO is (or was) a government official or a member of the PC or CPPCC, and 0 otherwise.	1. CSMAR Database 2. Firms' annual reports 3. http://www.cninfo.com.cn/ 4. https://www.eastmoney.com/ 5. http://www.stockstar.com
Political Connections Level (PC Level Index)	The PC Level index ranges from 0 to 4, based on the political connections of the chairman or CEO: 1. PC Level = 0: The chairman or CEO is not (or was not) a member of the PC or CPPCC and is not (or was not) an official at any level of government. 2. PC Level = 1: The chairman or CEO is (or was) a member of the PC or CPPCC or an official at the county or town government level. 3. PC Level = 2: The chairman or CEO is (or was) a member of the PC or CPPCC or an official at the municipal government level. 4. PC Level = 3: The chairman or CEO is (or was) a member of the PC or CPPCC or an official at the provincial government level. 5. PC Level = 4: The chairman or CEO is (or was) a member of the PC or CPPCC or an official at the national government level.	

2.4.3.2 The Moderating Effects Model: Levels of Financialization

China's administrative regions exhibit varying levels of financialization, with regional imbalances in economic growth contributing to this phenomenon. Based on this observation, the study hypothesizes that political connections can play a greater role in mitigating financing constraints in regions with less developed financial markets (Hypothesis 2). To test this hypothesis, the study employs interaction terms in the regression to investigate the moderating effect of regional financialization levels on the impact of political connections.

The use of interaction terms allows the study to explore how the impact of political connections varies across different levels of regional financialization. Specifically, the interaction terms $PC * Fin_{i,t}$ and $PC Level * Fin_{i,t}$ are constructed by multiplying the financialization index with the value of political connections and the political connection level, respectively. The panel regression, which includes these interaction terms as well as other control variables (Size, leverage, Tobin's q, Age, Profitability, Cash, ROA, ROE, Liquidity, and Tangibility), will be used to test the hypothesis. The measurement of each variable can be found in Table 2.1. The fixed effect estimation method will be employed to run the regressions.

$$FC_{i,t} = \alpha + \beta * PC_{i,t} + \rho * Fin_{i,t} + \phi * (PC_{i,t} * Fin_{i,t}) + \gamma_n * N_{i,n,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

(Model 3)

$$FC_{i,t} = \alpha + \theta * PC Level Index_{i,t} + \rho * Fin_{i,t} + \omega * (PC Level Index_{i,t} * Fin_{i,t}) + \gamma_n * N_{i,n,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

(Model 4)

As discussed earlier, Wang *et al.* (2021) suggest that a higher value of the financialization index indicates a more favourable business climate. Therefore, if a better financial environment reduces financing constraints, then the sign of (ρ) should

be negative. Furthermore, if political connections in less financially developed provinces are more effective in reducing financial constraints, the study expects the coefficients on the interaction terms (ϕ) and (ω) to be positive.

2.4.4 Endogenous Concern

Endogeneity is a significant concern in this research, as financial constraints and firms' political connections can be jointly affected by other unobserved variables, leading to biased estimates, and confounding causal relationships. To address these potential endogeneity issues, the study adopts several methodological approaches to strengthen the validity of the findings. Firstly, the study employs Heckman two-step analysis with instrumental variables to address the issue of selection bias and omitted variables. This approach involves using instrumental variables to account for endogeneity and correct for potential biases arising from the non-random selection of politically connected executives.

Secondly, the study utilizes lagged models to address the issue of causality. This approach involves using past values of the independent variables to run the regressions, allowing for better inference of causal relationships and accounting for potential reverse causality issues by considering the lagged effects of political connections on financial constraints. Finally, the study employs propensity score matching to address the issue of self-selection bias. This method involves matching firms with politically connected executives to similar firms without such connections, based on observable characteristics such as size, leverage, and profitability. By ensuring that the treated and control groups are balanced on observable characteristics, the study can mitigate the endogeneity problem caused by selection bias.

2.4.4.1 Heckman Two-Step Estimation Using Instrument Variable.

To address the issue of endogeneity caused by selection bias and omitted variables regarding politically connected executives, this study follows the methodologies of Heckman (1979), Boubakri *et al.* (2012b), Liu *et al.* (2013), and Schweizer *et al.* (2020) by conducting a Heckman two-step estimation using instrumental variables (IV). The approach involves selecting IVs that impact the firms' political capital but are not associated with financial constraints. The efficacy of the IV approach relies on the suitability of the chosen instrumental variable, and in empirical research, each IV has its advantages and disadvantages. Among the instruments employed in both the Chinese and global financial markets, geodistance, which denotes the spatial separation between a company's headquarters and the capital city of the province or country it operates in, is the most extensively used (Liu *et al.*, 2013; Houston *et al.*, 2014; Schweizer *et al.*, 2020). However, due to China's vast geographical area containing several economic centers, using the distance from the company's registered office to the capital Beijing does not properly reflect the relevance principle of IV (Schweizer *et al.*, 2020). Therefore, using the distance from the company to the provincial capital city is more in line with the Chinese situation and the IV principles.

Similar to previous research, the suitability of the geographic distance instrument in this study is supported by its ability to meet the relevance and exclusion criteria. The geographic location of a company is relevant as it can affect its access to politically connected managers. However, there is no apparent direct link between the distance from a company's headquarters to the provincial capital and its likelihood of securing financing. In China's institutional context, proximity to a provincial capital is insufficient for a private firm to access resources without political ties (Schweizer *et al.*, 2020). Therefore, this study employs the distance of the firm to the provincial capital city as the instrumental variable for political connections.

After selecting distance as the instrumental variable, the Heckman two-step model is

employed in this study. The first step involves using a probit model to calculate the probability of a firm having political connections, with the instrumental variable and control variables from the baseline model as independent variables and political connections (PC) as the dependent variable. For the dependent variable PC Level, which contains a fraction of observations with a positive probability of taking a value of zero, the Tobit model is used in the first step regression.

In the second step, the predicted individual probabilities (Inverse Mills ratio) are included as an additional explanatory variable in the baseline models to control for endogeneity problems caused by selection bias. By using this two-step method, the endogeneity of politically connected executives is addressed, resulting in more robust and reliable findings.

2.4.4.2 Lagged Models with Fixed Effects

To address another potential endogeneity problem caused by reverse causation, this study incorporates lagged models into the regression analysis. Specifically, the concern is that firms with fewer financing constraints may be more attractive to politically connected executives, leading to a reverse causation issue. Following Leszczensky and Wolbring (2022), a model with a one-period lag is constructed for regression analysis to mitigate this concern. This approach accounts for the time lag between the presence of politically connected executives and the level of financing constraints. By incorporating lagged variables, the study can mitigate potential bias from reverse causation and establish a more credible causal relationship between politically connected executives and financing constraints.

2.4.4.3 Propensity Score Matching (PSM)

Self-selection bias can be an endogenous issue in studies involving politically

connected executives, as firms with such executives can exhibit similar characteristics. The decision-making process—specifically, whether the CEO and chairman establish political connections—is inherently non-random. This choice may be influenced by various unobservable factors that can also impact changes in financing constraints. These unobservable factors might include personal ambitions, historical relationships, or undisclosed strategic goals that directly affect the firm’s access to resources and financial options. Consequently, both decisions and outcomes are interrelated, complicating the analysis due to these underlying connections. This interconnection necessitates methods that can effectively isolate the influence of political connections from these unobservable variables to ensure the robustness and accuracy of the findings.

Thus, this study recognizes that political connections (PC) are likely an endogenous trait among firms. The use of PSM can isolate the effect of these self-selected political relationships from other firm characteristics that might simultaneously influence the dependent variable (Schweizer *et al.*, 2019; Meng *et al.*, 2020). Specifically, the dummy variable for PC is treated as the treatment variable, while the control variables used in the basic model are employed to conduct 1:1 nearest neighbor matching. This method treats panel data as cross-sectional data. PSM is utilized to carefully construct a control group of firms without political connections that are otherwise similar to those with such connections. PSM aims to create a conditionally balanced sample so that any differences in outcomes are more likely to reflect the effect of political connections rather than other confounding factors.

2.4.5 Method for Robustness Testing

To enhance the validity and reliability of the findings obtained from the basic models, this study conducted several robustness tests. The aim was to identify potential biases or limitations in the initial analysis and assess the robustness of the results.

2.4.5.1 Alternative Measure of Financial Constraints

Firstly, this study focused on addressing potential measurement errors related to financial constraints, which could impact the robustness of the findings. One potential concern is that the measurement of financial constraints may not be accurately captured, leading to biased results. To address this issue, the study employed the SA index proposed by Hadlock and Pierce (2010) as an alternative measure of financial constraints. This alternative measure was included in the models, and the same analyses were performed to assess the robustness of the findings. By doing so, the study ensured that the results were not sensitive to the choice of financial constraint measure.

2.4.5.2 Controlling for the Impact of Provincial Development

To further enhance the robustness and generalizability of the findings, the analysis includes controls for province effects. This consideration is crucial given the uneven development and varying economic conditions across China's provinces. By including province effects as a control variable in the analysis, the study accounts for any potential confounding factors that vary across provinces and could affect the results.

2.4.5.3 Alternative Measure of Political Connections

Usually, state ownership in firms can serve as an alternative measure of political connections. However, Hess *et al.* (2010) argue that state ownership in public firms confers benefits only when it exceeds 35% in China, particularly for private listed firms. According to this criterion, firms with governmental ownership exceeding 50% are classified as state-owned enterprises (SOEs). Data analysis revealed that only eight listed private companies in the sample had state-owned shareholdings between 35% and 50%. The low incidence of state-owned shares in privately listed firms suggests it is an inadequate measure for assessing the political connections of these companies in this chapter, mainly due to the uncommon nature of such ownership. To confirm this

inference, the analysis incorporated the state ownership ratio as a variable, replacing the PC and PC Level index, to determine the potential impact of state ownership on the results. This robustness test provides additional support for the rationality and reliability of the measurement of political connections in this chapter.

Furthermore, government subsidies can also be considered a proxy for political connections or the extent of such connections. This is based on the notion that firms with stronger political ties have better access to government resources, including financial subsidies. These subsidies often reflect government support for firms that align with its economic or political objectives. In other words, government subsidies can be seen as another implicit political connection. Thus, this study further uses the amount of government subsidies received by private listed companies instead of PC/PC Level to conduct robustness testing.

2.4.5.4 Exogeneous Shock-Bond Defaults in 2014

As part of its comprehensive robustness testing, this chapter further investigates how significant exogenous shocks within the sample period—particularly the bond defaults of 2014—have influenced financing constraints in China. Recognizing these defaults as a pivotal incident with substantial implications for the financial landscape, the test probes whether political connections (PC) remained effective in alleviating financing pressures for companies' post-crisis.

For this purpose, a dummy variable, “Default,” has been introduced, denoting the period following the initial default event in October 2014. This variable is coded as 1 for all bond issuance years succeeding 2014, acknowledging that the default's effects likely persisted beyond the immediate year of occurrence.

In operationalizing the robustness test, “Default” and the interaction terms “PC*Default”

and “PC Level*Default” are integrated into the baseline regression model. These interaction terms serve to examine the compound effects of political connections and the bond default event. If the coefficients of “PC*Default” and “PC Level*Default” are significant, it would indicate that, despite the turbulence caused by the bond defaults, political connections still played a role in easing financial constraints.

2.4.5.5 Placebo Test.

Finally, this study includes a placebo test to enhance the rigor of the findings. This involves randomly selecting individuals as the treatment group to examine if the fictitious political connection firms still have a significant impact on the firm’s financial constraints. Specifically, the study randomly samples the key variable (PC) 500 times to create a placebo group that is not actually politically connected. The placebo test is a powerful tool for verifying the robustness of the findings and ensuring that the observed effects are not driven by spurious correlations or random chance. By comparing the results of the treatment group with those of the placebo group, the study can confirm whether the effects of political connections on financial constraints are indeed causal or merely coincidental.

Overall, these robustness tests are performed to ensure the validity and reliability of the findings obtained from the initial analysis. This study can strengthen the confidence in the results and provide more robust empirical evidence by addressing potential biases and limitations discussed above.

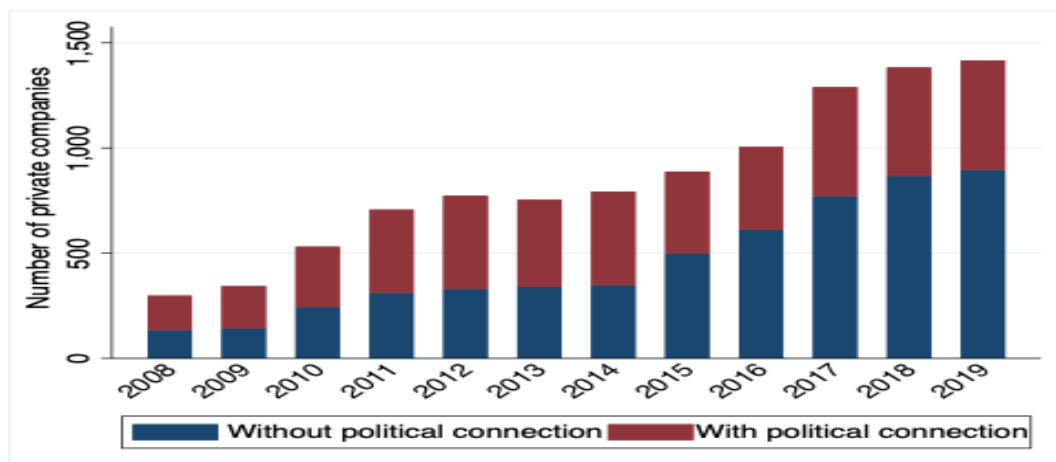
2.5 Results and Discussion

2.5.1 Descriptive Statistics

In this study, the political connections of private companies in China were manually collected and analyzed. The findings are presented in Figure 2.1, which shows the number of politically connected and non-politically connected companies per year. The results indicate that over one-third of the sample companies have established a relationship with the government, suggesting that political connections have become increasingly prevalent in China. Additionally, the number of politically connected companies has increased over time, regardless of the level of political connections, from 2008 to 2019.

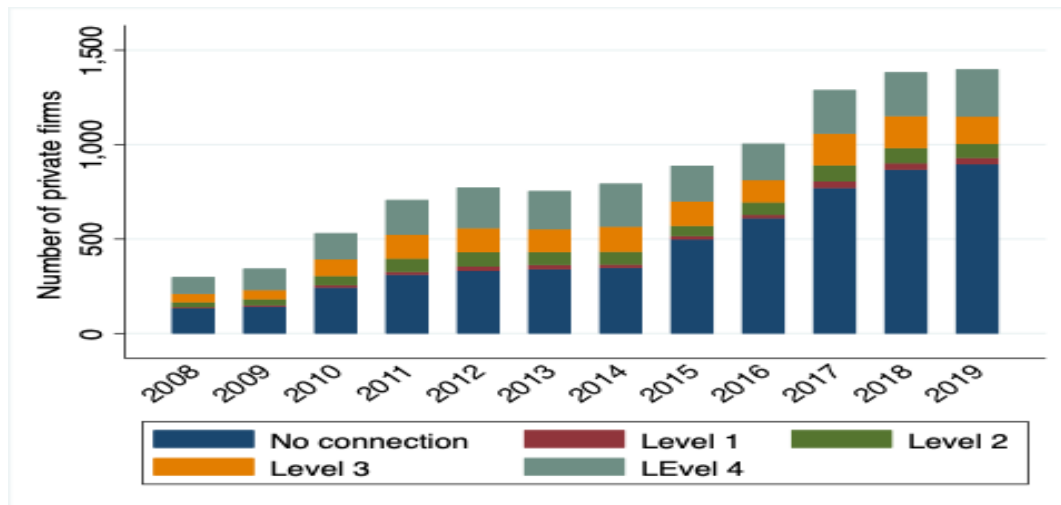
Furthermore, Figure 2.2 reveals that among the politically connected firms, those with high levels of political connection are more numerous than those with low levels. This suggests that private businesses aim not only to establish a simple political connection but also a connection with high-ranking officials. It is worth noting that the samples used in this study are listed companies on China's A-share mainboard. These companies are more likely to have high-level political connections due to their size and status.

Figure 2. 1: Number of Private Listed Firms with and without Political Connections in China



Note: Data are from manually collected samples. A firm is defined as a politically connected firm if its chairman or CEO is (or was) a government official or a member of the PC or CPPCC.

Figure 2. 2: Distribution of Private Listed Firms by Level of Political Connections in China



Note: PC Level refers to the level of political connections, with higher PC Levels indicating stronger political connections (detailed measurement of PC Level can be found in Table 2.1).

Table 2.2 presents the summary statistics for all variables in this study. The average value of the PC index is 0.457, indicating that the number of private enterprises with political connections is lower than those without such connections. Additionally, the mean value of the PC Level index is 1.467, suggesting that the overall level of political connections among Chinese private companies is relatively low, given that the highest political connection index is 4. However, it should be noted that this index includes many companies that are not politically connected, hence their political level index is taken to be 0.

The statistics show that the average profitability of private listed companies is only 0.123 and the ROA is 0.048, indicating poor profitability and a limited ability to finance themselves internally. The mean value of leverage is 0.370, suggesting that the availability of debt finance is limited for private listed firms. These results highlight the necessity of investigating the issue of financing constraints in the private listed sector. Moreover, the average value of the financialization index is 6.691, indicating that most private listed firms are located in relatively highly marketized provinces. This suggests that private listed firms tend to benefit from a more competitive and developed

institutional climate.

Table 2. 2: Descriptive Statistics: Financial Constraints, Political Connection, and Firm Characteristics

Variable	Mean	Min	Median	Max	SD	Obs
WW Index	-0.838	-1.213	-0.985	0.000	0.373	10115
PC	0.457	0.000	0.000	1.000	0.498	10115
PC Level	1.467	0.000	0.000	4.000	1.711	10115
Fin Index	6.691	0.760	7.650	10.000	2.901	10115
Size	21.711	19.262	21.602	26.395	1.057	10115
Tobin	2.059	0.816	1.678	13.527	1.211	10115
Age	1.406	0.000	1.609	3.296	1.007	10115
Leverage	0.370	0.026	0.355	0.900	0.192	10115
Profit	0.123	-1.415	0.116	0.722	0.160	10115
Cash	0.044	-1.080	0.044	0.600	0.076	10115
ROA	0.048	-0.473	0.048	0.220	0.060	10115
ROE	0.061	-45.551	0.078	7.805	0.587	10115
Liquidity	3.098	0.220	1.950	35.501	3.409	10115
Tangibility	0.922	0.207	0.954	1.000	0.092	10115
Distance	4.626	1.000	5.740	7.984	2.498	10115
Debt cost	0.010	0.000	0.001	13.642	0.206	10115
Bank loan	0.163	0.000	0.144	1.709	0.126	8000
SA Index	-3.709	-5.543	-3.709	-2.113	0.247	10115
State Ownership	0.004	0.000	0.000	0.313	0.019	10115
Default	0.585	0.000	1.000	1.000	0.493	10115
Government subsidies	15.527	6.804	15.774	21.431	1.972	1207

Figure 2.3 displays a geographical distribution map of Chinese private listed companies, highlighting a significant concentration of these firms along the eastern seaboard, particularly in economically vibrant provinces such as Guangdong, Zhejiang, and Jiangsu. These areas are known for their robust economic activities and supportive business environments, which attract a large number of private enterprises. In contrast, the map shows that fewer private listed companies are located in the western provinces. This discrepancy is largely due to the less favorable economic conditions in these regions, including lower industrial development, limited access to markets, and fewer governmental support initiatives compared to their eastern counterparts. This geographical disparity underscores the uneven economic development across China and suggests a potential area for policy intervention to encourage more balanced

regional economic growth.

Figure 2. 3: Geographical distribution map of Chinese private listed companies



Note: Original data from CSMAR Database.

Table 2.3 presents the correlation matrix, indicating that the correlation coefficients between the variables do not exceed 0.5. The negative signs between the PC and PC Level variables align with the anticipated relationship. Overall, the correlation matrix shows no significant issues of multicollinearity between the variables, supporting the suitability of the dataset for regression analysis.

Table 2. 3: Correlation Matrix for Financial Constraints, Political Connections, and Firm Characteristics

	WW	PC	PC Level	Fin	Size	Tobin	Age	Lev	Profit	Cash	ROA	ROE	Liquidity	Tangibility
WW Index	1													
PC	-0.10*	1												
PC Level	-0.11*	0.93*	1											
Fin	-0.03*	0.02*	0.05*	1										
Size	-0.27*	0.01	0.05*	0.02*	1									
Tobin	0.01	-0.03*	-0.03*	0.05*	-0.29*	1								
Age	-0.15*	-0.00	0.02	0.09*	0.45*	0.12*	1							
Lev	-0.26*	0.02*	0.03*	-0.00	0.50*	-0.18*	0.39*	1						
Profit	-0.03*	0.01	0.01	0.04*	0.02*	0.09*	-0.12*	-0.24*	1					
Cash	0.03*	-0.00	0.01	-0.05*	0.04*	0.12*	0.03*	-0.16*	0.18*	1				
ROA	0.03*	0.01	0.01	-0.03*	-0.03*	0.15*	-0.21*	-0.32*	0.79*	0.32*	1			
ROE	-0.01	0.01	0.02*	-0.02*	0.02*	-0.00	-0.04*	-0.08*	0.28*	0.05*	0.31*	1		
Liquidity	0.10*	-0.01	-0.01	0.03*	-0.32*	0.08*	-0.32*	-0.62*	0.24*	0.03*	0.20*	0.02*	1	
Tangibility	0.05*	0.00	-0.00	-0.08*	-0.10*	-0.04*	-0.14*	0.03*	0.03*	-0.03*	0.09*	0.03*	0.15*	1

***, **, *, denotes the significance level at 1%,5% and 10% level.

2.5.2 Baseline Model Regression Analysis

Table 2.4 presents the findings on the impact of political connections on financial constraints. The results indicate that the coefficients of political connections (PC) are negative and statistically significant at the 1% level in both columns (1) (without control variables) and (2) (with control variables). This supports Hypothesis 1a, which suggests that political connections can help private firms alleviate financial constraints. Moreover, columns (3) and (4) present the results for the PC Level Index, which measures the level of political connections of firms. The negative and statistically significant coefficients of the PC Level Index in both columns provide further support for Hypothesis 1b. This suggests that firms with higher levels of political connections are more likely to face fewer financial constraints than firms with lower levels of political connections.

The control variables demonstrate consistent results with previous research conducted by Brito and Mello (1995), Brandt and Li (2003), and Forbes (2007). The findings indicate that larger firms with higher growth opportunities (measured by Tobin's Q), longer listing years, higher leverage levels, and sufficient cash flow are less likely to face financial constraints. However, the study also reveals that firms with more tangible assets experience stronger financing constraints, as evidenced by the positive and significant coefficient at the 1% level. This result contradicts the findings of Almeida and Campello (2007), which could be attributed to the low liquidity of tangible assets in Chinese private firms. The majority of their assets are fixed assets, leading to insolvency and difficulty in repaying debts. Therefore, Chinese private firms need to consider increasing the liquidity of their assets to improve their repayment ability and reduce financial constraints.

Overall, the baseline results are consistent with the predictions and support the hypotheses. The findings suggest that political connections can be a valuable asset for private firms seeking to overcome financial constraints (Liu *et al.*, 2013; Cull *et al.*,

2015). By leveraging their connections with the government and other influential actors, private listed firms can gain access to a wider range of financing options, including bank loans, government subsidies, and corporate bonds (He *et al.*, 2014; Houston *et al.*, 2014; Chen *et al.*, 2014; Schweizer *et al.*, 2020).

Table 2. 4: Regression Analysis for the Impact of Political Connections on Financial Constraints

	(1)	(2)	(3)	(4)
	WW Index	WW Index	WW Index	WW Index
PC	-0.0751*** (-4.79)	-0.0329*** (-3.32)		
PC Level			-0.0225*** (-4.77)	-0.0103** (-2.57)
Size		-0.1135*** (-14.98)		-0.1133*** (-13.59)
Tobin		-0.0465*** (-14.54)		-0.0465*** (-11.97)
Age		-0.2191*** (-30.97)		-0.2190*** (-21.97)
Leverage		-0.4779*** (-13.80)		-0.4766*** (-11.30)
Profit		-0.0480 (-1.20)		-0.0492 (-1.19)
Cash		-0.2674*** (-5.72)		-0.2652*** (-5.50)
ROA		0.0680 (0.60)		0.0725 (0.55)
ROE		-0.0083 (-1.59)		-0.0083 (-1.61)
Liquidity		-0.0080*** (-5.50)		-0.0080*** (-4.50)
Tangibility		0.2031*** (4.21)		0.2034*** (3.29)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Constant	-0.7946*** (-15.50)	1.5459*** (7.35)	-0.8033*** (-16.63)	1.5364*** (7.54)
R ²	0.2548	0.3190	0.2556	0.3188
Observation	10115	10115	10115	10115

***, **, *, denotes the significance level at 1%,5% and 10% level.

2.5.3 Regression Analysis Incorporating Moderating Effects of Financialization Levels

Reviewing the results in Table 2.5, it is evident that the negative coefficient of the financialization index (Fin) is statistically significant at the 1% level in all columns. A higher financialization index indicates a better level of regional financial development, and a negative coefficient suggests that companies face fewer constraints in regions with a higher level of financialization. These results support Hypothesis 2, which posits that political connections can play a greater role in easing financing constraints in regions with less developed financial markets. Furthermore, the previous models in this study have already established that political connections can help reduce financial restrictions. However, this study seeks to delve deeper into the interaction effect between political connections and regional financialization development levels. Upon examining the coefficients of the interaction terms (PC * Fin, PC Level * Fin), it is evident that they are all positive and significant. This finding supports Hypothesis 2, suggesting that political connections play a more significant role in easing financial constraints in regions with lower levels of financialization.

Table 2. 5: Regression Analysis for Incorporating Moderating Effects of Financialization Levels

	(1) WW Index	(2) WW Index	(3) WW Index	(4) WW Index
PC	-0.1442*** (-5.55)	-0.0769*** (-3.18)		
PC Level			-0.0338*** (-4.48)	-0.0316*** (-4.24)
Fin	-0.0393*** (-6.14)	-0.0270*** (-4.55)	-0.0354*** (-5.58)	-0.0337*** (-5.37)
PC * Fin	0.0105*** (2.93)	0.0066** (2.00)		
PC Level * Fin			0.0018* (1.68)	0.0018* (1.71)
Control variables	No	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Constant	-0.5527***	1.7013***	-0.5856***	-1.2136***

	(-4.17)	(8.00)	(-4.43)	(-5.92)
R ²	0.2262	0.3054	0.2307	0.3777
Observation	10115	10115	10115	10115

***, **, *, denotes the significance level at 1%,5% and 10% level.

2.5.4 Addressing Endogeneity Concerns

To address the issue of potential endogeneity, this study employed three methods: Heckman two-step estimation with instrumental variables (IV), lagged models, and propensity score matching (PSM) techniques. Table 2.6 displays the results of the Heckman method with IV. The distance of the firm to the provincial capital city was selected as the instrumental variable for political connections, as explained in the methodology section. In the first-step regression, the dependent variables were the political connection dummy and the political connections level index, while the independent variables included the distance to the provincial capital city (Distance) and control variables. The second-stage regression results are presented in columns (3) to (6). The significant coefficients of the Inverse Mills Ratio (IMR) indicate the possibility of selection bias and omitted variables in the sample. After controlling for these factors, the coefficients of the key interest variables, including political connections and their interaction terms with regional financialization levels, remained significant and consistent with those in the baseline models.

To mitigate the issue of self-selection bias in the sample of politically connected CEOs and chairmen, the study employs PSM techniques. Table 2.7 displays the results of the PSM sample, revealing that the coefficients of the key variables—political connections, political connection levels, financialization index, and their interaction terms—remain statistically significant and consistent with the baseline models. These findings suggest that political connections still play a crucial role in mitigating financial constraints, and the moderating effect of regional financialization development remains significant even after addressing the issue of non-random selection of politically connected firms using PSM.

Moreover, this study further employed a lagged model to address the potential issue of reverse causality between political connections and financial constraints. Table 2.8 presents the results for lagged models, indicating that the conclusions still support the hypothesis even after controlling for reverse causality. In general, the use of Heckman with IV, PSM, and lagged models allows the results to be free from the interference of endogeneity problems.

Table 2. 6: Regression Analysis for Heckman Two-Step Estimation Results Using Instrumental Variables

	(1)	(2)	(3)	(4)	(5)	(6)
	First stage		Second stage			
	PC	PC Level	WW Index	WW Index	WW Index	WW Index
PC			-0.0188*		-0.0734***	
			(-1.89)		(-3.04)	
PC Level				-0.0052*		-0.0125*
				(-1.79)		(-1.81)
Fin					-0.0257***	-0.0197***
					(-4.35)	(-3.40)
PC*Fin					0.0082***	
					(2.47)	
PC Level * Fin						0.0011*
						(1.70)
Distance (IV)	-0.0139***	-0.0030*				
	(-2.61)	(-1.70)				
IMR			0.5086***	1.0683***	0.5024***	1.0572***
			(14.79)	(16.17)	(14.61)	(15.98)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.2042	0.0746	2.4130***	1.8481***	2.5499***	1.9574***
	(-0.50)	(0.14)	(11.50)	(8.90)	(12.03)	(9.32)
R ² / Pseudo R ²	0.0403	0.0154	0.3031	0.3393	0.2934	0.3300
Obs	10115	10115	10115	10115	10115	10115

***, **, *, denotes the significance level at 1%,5% and 10% level

Table 2. 7: Regression Analysis for Using Propensity Score Matching (PSM)
Sample

	(1) WW Index	(2) WW Index	(3) WW Index	(4) WW Index	(5) WW Index	(6) WW Index
PC	-0.0237** (-2.11)		-0.235** (-2.09)		-0.0849*** (-3.06)	
PC Level		-0.0079** (-2.41)		-0.0078** (-2.37)		-0.0372*** (-4.36)
Fin			-0.197*** (-3.16)	-0.0296*** (-3.14)	-0.0266*** (-3.88)	-0.0366*** (-5.06)
PC * Fin					0.0091** (2.42)	
PC Level *Fin						0.0029** (2.47)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.5971*** (6.46)	1.5886*** (6.43)	2.516*** (10.34)	2.511*** (10.32)	2.536*** (10.42)	2.554*** (10.40)
R ²	0.3233	0.3232	0.3199	0.3198	0.3172	0.3791
Obs	8043	8043	8043	8043	8043	8043

***, **, *, denotes the significance level at 1%,5% and 10% level.

Table 2. 8: Regression Analysis for Using Lagged Models for Political Connections and Financial Constraints

	(1) WW Index	(2) WW Index	(3) WW Index	(4) WW Index	(5) WW Index	(6) WW Index
L.PC	-0.0394*** (-2.99)		-0.0397*** (-3.01)		-0.0887*** (-2.77)	
L.PC Level		-0.0109*** (-2.83)		-0.0110*** (-2.85)		-0.0157* (-1.72)
L.Fin			-0.0157** (-2.20)	-0.0156** (-2.19)	-0.217*** (-2.72)	-0.0175** (-2.22)
L.PC * Fin					0.0073* (1.68)	
L.PC Level *Fin						0.0007* (1.71)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.6604** (2.16)	0.6427** (2.10)	2.0081*** (6.45)	2.0033*** (6.43)	2.0352*** (6.53)	2.0152*** (6.47)
R ²	0.2672	0.2672	0.2596	0.2596	0.2556	0.2578
Obs	6350	6350	6350	6350	6350	6350

***, **, *, denotes the significance level at 1%,5% and 10% level.

2.5.5 Additional Analysis: Examining Channels for the Impact of Political Connections on Financial Constraints

The chapter previously examined the influence of political connections on financing constraints but did not explore the mechanisms underlying this relationship. To fill this gap, this section conducts additional tests to investigate the potential channels through which political connections affect financial constraints. The Chinese banking system is primarily dominated by state-owned banks (Allen *et al.*, 2005; Allen *et al.*, 2019), and prior research has indicated that government-controlled banks tend to provide more loans and lower interest rates to politically connected firms (Sapienza, 2004). Additionally, Claessens *et al.* (2008) found that politically connected businesses experienced a substantial increase in their bank funding following each election, highlighting the importance of political connections in accessing bank credit. Furthermore, Bliss and Gul (2012) indicate a positive and significant correlation between leverage and political linkage in their study of the Malaysian sample. Therefore, it is plausible that political connections were leveraged to alleviate the financing constraints of private companies in China by increasing bank lending and reducing debt costs.

The results presented in Table 2.9 show that political connections, as measured by PC and PC Level, have a positive and significant effect on bank lending in both the first and second columns of the regression table, providing evidence that political connections do indeed facilitate access to bank credit for private firms in China. Further analysis reveals that increased bank lending, as indicated by the negative coefficients on bank lending in columns (3) and (4) of the table, is associated with reduced financing constraints for private firms, supporting the argument that political connections can ease financing constraints by increasing bank lending.

Additionally, the study finds evidence that political connections can reduce the cost of lending for private firms, as indicated by the negative coefficients on PC and PC Level

in columns (5) and (6). Moreover, increased debt costs, as indicated by the positive coefficients on debt cost in columns (7) and (8), are associated with increased financing constraints, supporting the notion that political connections can ease financing constraints by reducing the cost of loans. Overall, the results suggest that political connections can be an important factor in facilitating access to bank credit and reducing debt costs, thereby alleviating financing constraints for private firms.

Table 2. 9: Regression Analysis for Mediating Role of Bank Loans on Debt Cost

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Bank loan				Debt cost			
	Bank loan	Bank loan	WW Index	WW Index	Debt cost	Debt Cost	WW Index	WW Index
PC	0.0055*		-0.0304***		-0.0122*		-0.0031*	
	(1.71)		(-3.01)		(-1.71)		(-1.69)	
PC Level		0.0017*		-0.0097***		-0.0036*		-0.0045*
		(1.82)		(-3.24)		(-1.69)		(-1.69)
Bank loan			-0.1016**	-0.1012**				
			(-1.99)	(-1.98)				
Debt cost							0.0068**	0.0068**
							(2.41)	(2.41)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.2203***	0.2209***	1.2162***	1.2076***	0.2161	0.2106	1.5490***	1.9773***
	(5.89)	(5.91)	(5.82)	(5.78)	(1.32)	(1.52)	(7.36)	(9.41)
R ²	0.2190	0.2185	0.2471	0.2469	0.1226	0.1322	0.3190	0.3175
Observation	8000	8000	8000	8000	10115	10115	10115	10115

***, **, *, denotes the significance level at 1%,5% and 10% level.

2.5.6 Robustness Testing

Table 2.10 presents the robustness analysis conducted in this study. Firstly, to ensure the consistency of the conclusions, the WW Index is replaced by the SA Index. The results in columns (1) and (2) reveal that the coefficients of PC and the PC Level Index remain negative and statistically significant, which is consistent with the findings in the baseline models. Therefore, the robustness test confirms that the conclusions drawn in the baseline models are robust to changes in the measurement of financial constraints.

Secondly, to control for any potential confounding factors that vary across provinces and could affect the results, the study includes province effects as a control variable in the models. This control variable helps to ensure that the observed effects of political connections on financial constraints are not simply driven by differences in provincial economic conditions or other local factors in China. The negative sign of PC and PC Level in columns (3) and (4) indicates that political connections still play a significant role in easing financing constraints even after controlling for province effects.

Thirdly, to address the concern that the conclusions may be driven by state ownership in private firms rather than by the firm's top management, the study replaces PC and PC level with state ownership as an alternative measure of political connection in columns (5) and (6). The results in both models, with and without control variables, show that the coefficients of state ownership are statistically insignificant. This lack of significance aligns with the initial observation that state-owned shares are uncommon among private listed companies and that their shareholding percentages are generally low. Hess *et al.* (2010) argue that state ownership in public firms confers benefits only when it exceeds 35% in China, particularly for private listed firms. According to this criterion, firms with governmental ownership exceeding 50% would be classified as state-owned enterprises (SOEs). However, the data analysis revealed that only eight listed private companies in the sample had state-owned shareholdings between 35%

and 50%. The fact that only a handful of private listed firms met Hess *et al.*'s condition further suggests that the influence of state-owned shares is unlikely to be a driving factor in the study's outcomes. This also supports the argument that using the personal political networks of CEOs and chairmen to measure the political connections of Chinese privately listed companies is reasonable.

Fourth, in assessing the dynamics of China's financing environment, this study rigorously evaluates the ramifications of the 2014 bond default event, recognized as a considerable exogenous shock. The bond default episode represented a stress test for the financial system, potentially altering the accessibility and cost of capital for firms. The analytical focus on this period is to discern whether firms with established political connections experienced a different trajectory regarding financial constraints compared to those without such ties. Columns (7) and (8) present findings that are particularly telling. Despite the widespread tightening of credit and increase in financing constraints triggered by the bond default, firms with political connections appeared to be insulated to a degree from these adverse effects. This suggests that such connections may have provided these firms with a protective buffer, allowing them continued access to financing or more favorable borrowing terms even as the broader market grappled with the default's fallout.

This aspect of the research not only highlights the resilience of politically connected firms during economic disturbances but also underscores the tangible benefits of political ties in navigating financial challenges. The persistence of political connections as a mitigating factor during periods of market stress reinforces the need to consider political capital as a critical asset in corporate financial strategy. These findings enrich the discussion on the interplay between political influence and corporate finance, particularly in the context of market shocks.

The findings, as detailed in rows (9) and (10) of Table 2.10, demonstrate that the government subsidy coefficient is statistically significant. Government subsidies serve

as another variable of political relevance, lending additional support to the hypothesis that political connections can mitigate financing constraints for private listed enterprises. It is worth noting that the data for government subsidies spanning 2008 to 2019 exhibit numerous gaps, resulting in 1,207 observations. This is because companies report relevant data only if they receive government subsidies; otherwise, the data remain empty. This scarcity reflects the tendency for private listed enterprises to receive fewer government subsidies. Despite the reduced sample size compared to the primary model, the empirical analysis remains feasible because the sample size is sufficiently large to meet the empirical requirements.

In the final robustness test, this study seeks to ascertain if fictitious political connection firms significantly influence a firm's financial constraints by conducting a placebo test. To achieve this, the study randomly selects individuals as the treatment group and conducts 500 random samples for the key variable, PC. The results of this test are presented in Figure 2.4, which depicts the distribution of the estimated coefficients and corresponding p-values for the 500 "pseudo-PC dummy variables." The x-axis of the graph shows the magnitude of the estimated coefficients for the "pseudo-PC dummy variables," while the y-axis shows the densities and p-values. The red curve represents the kernel density distribution of the estimated coefficients, while the blue dots represent the p-values corresponding to the estimated coefficients. The vertical dashed line represents the true estimate of the baseline model (-0.0329), while the horizontal dashed line indicates the significance level of 0.1. The results indicate that the estimated coefficients are mostly concentrated around zero, deviating significantly from the true value (-0.0329). Additionally, most estimates have p-values greater than 0.1, indicating insignificance at the 10% level. These findings suggest that the study's estimates are unlikely to have been obtained by chance. Overall, the robustness tests provide further evidence supporting the importance of political connections in mitigating financing constraints for private firms in China.

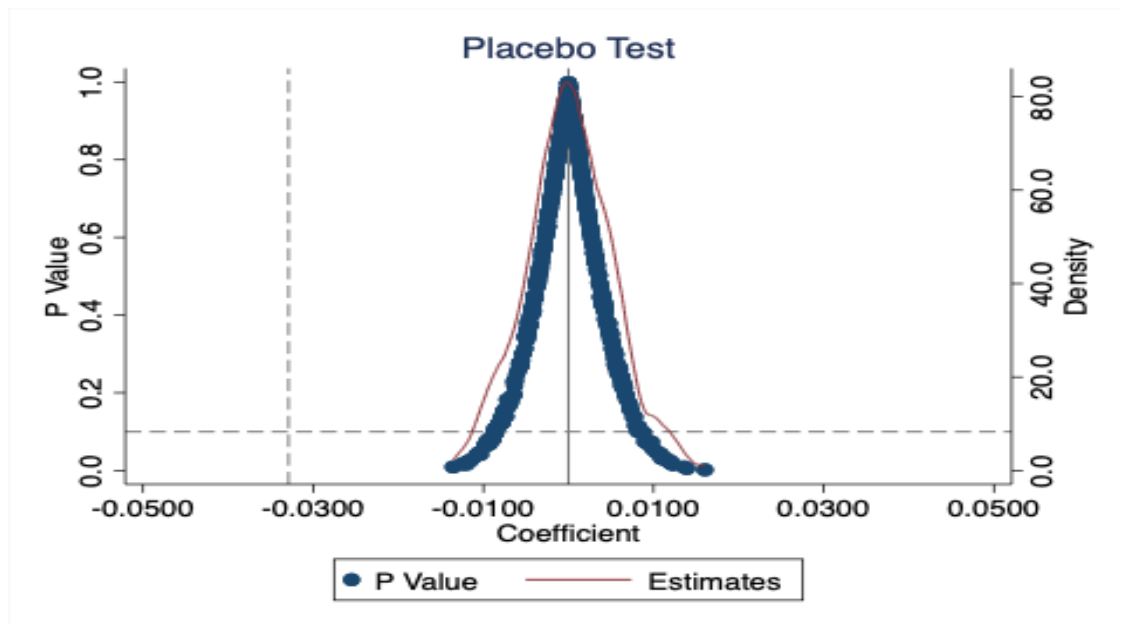
Table 2. 10: Robustness Regression Analysis for Political Connections and Financial Constraints

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Replacing WW Index with SA index		Controlling province effects		Replacing PC with state ownership		Bond default shock in 2014		Replacing PC with government subsidies	
	SA	SA	WW	WW	WW	WW	WW	WW	WW	WW
PC	-0.0031*		-0.0339***				-0.0016*			
	(-1.74)		(-3.41)				(-1.66)			
PC Level		-0.0009*		-0.0104***				-0.1011*		
		(-1.69)		(-3.55)				(-1.68)		
State ownership					-0.1116	-0.0634				
					(-0.92)	(-0.55)				
Default							0.4397	0.2751**		
							***	*		
							(22.97)	(10.11)		
PC*Default							-0.0263**			
							(-2.23)			
PC Level*Default								-0.0056**		
								(-2.43)		
Government subsidies									-0.0221***	-0.0175*
									(-2.31)	(-1.91)
Province effects	No	No	Yes	Yes	No	No	No	No	No	No
Control	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes

variables										
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-3.0981***	-3.5625***	1.5898***	1.5782***	-0.8697***	2.3917*	2.3811**	2.3768**	-0.9178**	-1.6568***
						**	*	*		
	(-74.43)	(-154.46)	(6.88)	(6.84)	(-7.77)	(11.57)	(11.52)	(11.50)	(-2.55)	(-3.67)
R ²	0.3063	0.2974	0.3033	0.3036	0.1542	0.3187	0.4044	0.3192	0.1420***	0.2575
Obs	10115	10115	10115	10115	10115	10115	10115	10115	1207	1207

***, **, *, denotes the significance level at 1%,5% and 10% level.

Figure 2. 4: Distribution of Coefficients and P-Values for Random Sampling - Political Connections.



2.6 Conclusion

This study provides empirical evidence of the significant influence of political connections on the financial constraints faced by China's private listed enterprises. The findings highlight that private listed firms with political connections experience fewer financing constraints compared to those without such connections. Moreover, the study reveals that the relationship between political connections and financial constraints is more pronounced for firms with higher levels of political connections. The results suggest two potential explanations for these findings. Firstly, the dominance of state-owned banks in the Chinese banking system leads to a greater propensity to provide loans to politically connected firms. Consequently, political connections facilitate access to bank loans, thereby easing financing constraints. Secondly, politically connected firms also benefit from lower interest rates offered by government-controlled banks, resulting in reduced debt costs and, subsequently, fewer financing constraints.

Additionally, the study demonstrates that the impact of political connections on financial constraints is particularly significant for private listed enterprises operating in regions with less developed financial markets. These firms face greater challenges in accessing financial resources due to limited competition, making political connections a valuable avenue to mitigate financial constraints. However, the limitation of this study should also be acknowledged. The study focuses only on Chinese-listed private firms and does not examine the impact of political connections on other types of firms or non-listed private enterprises. Future research could explore the impact of political connections on the financing behavior of other types of firms in China.

This chapter makes significant contributions to the existing literature on Chinese corporate finance and strategic management by addressing several research gaps. For the theoretical contribution, while previous studies have recognized the importance of political connections in various settings (Berger and Udell, 1995; Fisman, 2001; Johnson and Mitton, 2003; Faccio, 2006; Claessens *et al.*, 2008; Berkman *et al.*, 2010;

Duchin and Sosyura, 2012; Chan *et al.*, 2012; Ferris, 2016; Zhao and Lu, 2016; Ge *et al.*, 2017; Schweizer *et al.*, 2020), few have focused specifically on financing constraints for Chinese private listed firms. Therefore, this chapter contributes to the literature on the relationship between political connections and financial constraints specifically for Chinese private listed firms, enriching the broader literature in this domain.

Moreover, this chapter extends the literature by examining the mechanisms through which political connections impact financial constraints, an aspect that has not been thoroughly explored before. It dissects the channels through which political affiliations provide access to essential resources, offering a detailed understanding of the symbiotic relationship between private listed firms and the political sphere. Through this exploration, the chapter contributes to a nuanced comprehension of how private enterprises navigate the complexities of China's distinctive political and economic environment. Additionally, this chapter further explores the moderating effect of regional financial development on the relationship between political connections and financing constraints. Therefore, this aspect expands the existing literature on the nuanced interplay between political connections and regional financial dynamics in the context of China's unique business landscape.

The second contribution of this chapter is methodological. While previous studies have examined the impact of political connections on corporate finance in China using samples from different categories or time periods (Luo and Zhen, 2008; Chan *et al.*, 2012; Zhao and Lu, 2016; Ge *et al.*, 2017), most have had relatively short sample periods, sometimes as little as one year (Zhao and Lu, 2016; Ge *et al.*, 2017). This limitation restricts the generalizability of their findings and raises concerns about the impact of specific time periods. In contrast, this study analyzes a sample of Chinese-listed private firms over an extended period from 2008 to 2019, providing more comprehensive insights into the impact of political connections on financing constraints for these firms.

Additionally, many of these studies largely ignore the endogeneity of political connections. This study addresses potential endogeneity issues related to political connections by employing various methodological approaches, such as Heckman two-step analysis with instrumental variables, lagged models, and propensity score matching (PSM). These robust methodologies provide a more reliable and valid framework, offering valuable references for subsequent empirical research.

The third contribution of this chapter is related to data collection. Previous studies often used a binary variable to measure political connections without considering the differences in the political power of firms at different levels of the Chinese administrative hierarchy (Faccio, 2006; Luo and Zhen, 2008; Ge *et al.*, 2017). In addition to using dummy variables, this study manually collects detailed data on the administrative hierarchy of political connections and establishes an ordinal variable called the PC Level index to comprehensively analyze the degree of political connection among sampled firms. By comparing the methodology with those of Sun and Jiang (2015) and Deng *et al.* (2019), who respectively categorize firms geographically and sum up political affiliations of board members and executives, this chapter distinctively focuses on the direct political connections of CEOs and chairmen. This approach aims to reflect the actual political influence more accurately. Therefore, even though there are several similar measures of levels of political connection, this chapter still provides a specific method for measuring political connections for subsequent research.

The final contribution of this chapter is practical, offering valuable implications for stakeholders of private listed enterprises in China. The research in this chapter holds reference value as it is based on the real challenges faced by Chinese private enterprises. For the government, the findings suggest implementing policies to streamline the process of accessing finance for private listed enterprises. This could include simplifying regulatory requirements, providing financial incentives for lenders to

extend credit to these firms, or creating specialized financial programs tailored to the needs of these enterprises. Private listed firms could use the findings to develop strategies for accessing finance more effectively or managing their financial risks in the Chinese market.

Moreover, policymakers could use the research findings to inform the development of policies aimed at promoting a more inclusive and efficient financial environment. This could include initiatives to improve financial literacy among private listed enterprises, enhance transparency in the financial sector, or promote the development of alternative financing mechanisms for these firms. Furthermore, investors could use the research findings to assess the financial health and risk profile of firms more effectively. This could help them make more efficient investment decisions, potentially leading to better returns and reduced investment risk. Overall, these practical implications aim to support both policymakers and practitioners in enhancing the financial ecosystem for private listed firms in China.

Overall, the findings underscore the influential role of the institutional setting in shaping firms' financing behavior in emerging markets. The study highlights the criticality of political connections in alleviating financial constraints and emphasizes the prevailing influence of the government in China's financing landscape. Neglecting the significance of CEO/chairman political connections is likely to hinder the financing activities of Chinese private enterprises. Furthermore, as China faces challenges related to rising wages and diminishing labor advantage, supporting private firms with high potential becomes a crucial concern for the country. In comparison to other developing countries in Southeast Asia, such as Vietnam and Cambodia, where low wages have fueled rapid growth, Chinese private listed firms can play a pivotal role in absorbing labor and sustaining economic development. Hence, reducing financial constraints and fostering an enabling environment for private listed firms should be a priority for Chinese government in the foreseeable future.

3 DETERMINANTS OF DEBT MATURITY MISMATCH: EMPIRICAL INSIGHS FROM CHINESE LISTED FIRMS

3.1 Introduction

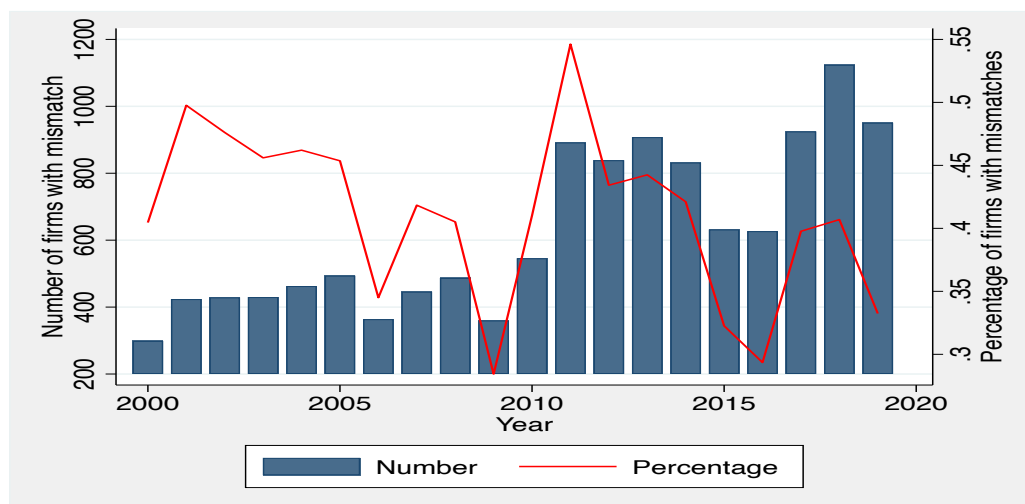
According to the theory of corporate debt maturity, the structure of debt maturity is a crucial component of a company's financial strategy, significantly influencing corporate behavior (Diamond, 1991; Flannery, 1986). This influence arises from the relationship between debt maturity and corporate actions, where the timing and structure of debt repayments impact decision-making processes, investment choices, and risk management practices. In line with the debt maturity matching theory, it is logical to fund long-term assets with long-term financing and short-term assets with short-term financing. This strategic alignment promotes financial stability and ensures efficient capital allocation, reducing the risk of maturity mismatches and optimizing the company's overall liquidity management (Morris, 1976).

However, it is important to acknowledge that capital market imperfections can disrupt the strict adherence to the term matching rule and introduce distortions in corporate investment decisions. While the principle of aligning asset duration with appropriate financing remains theoretically sound, various real-world factors such as information asymmetry, transaction costs, and market frictions can hinder the perfect implementation of this matching strategy (Campello *et al.*, 2010). These imperfections can result in situations where companies lack access to ideal financing options that match the duration of their assets. Consequently, firms resort to suboptimal funding choices, such as using short-term financing for long-term assets, due to limitations in the availability or cost of financing alternatives.

In recent years, the prevalence of maturity mismatches has become a notable phenomenon among Chinese companies. Figure 3.1 is depicted using the dataset employed in the subsequent empirical research of this chapter, which consists of a total of 3,089 Chinese listed companies, forming an unbalanced panel dataset. This implies that the number of companies varies each year within our sample period. It's important to note that the denominator used to calculate the percentage of firms with maturity

mismatches is the total number of Chinese public firms in the sample for each specific year, accommodating the unbalanced nature of the panel data. As illustrated in Figure 3.1, the bar chart shows the annual count of firms experiencing tenure mismatches, while the accompanying line chart depicts the percentage of firms with such mismatches relative to the total number of listed firms each year. Quantitatively, there is a discernible upward trajectory in the number of companies resorting to debt maturity mismatches, underscoring the prevalent practice of Chinese listed companies using short-term debt for long-term investment initiatives.

Figure 3. 1: Utilization of Short-Term Debt for Long-Term Investment: Trend Analysis of Chinese Listed Firms



*** Following the methodology outlined by Frank and Goyal (2003) to estimate the financing deficit, this study employs the approach of subtracting long-term financing from long-term investment expenditures to identify companies experiencing maturity mismatches. The detailed calculations and methodology can be found in Section 3.3.2.1. The data used for this analysis is sourced from the CSMAR Database.

Noteworthy is the trend observed in the percentage of companies employing maturity mismatches relative to the total number of firms each year. The pronounced rise in short-term debt usage observed in 2010 and 2011, as illustrated in the figure, aligns with a confluence of economic and regulatory developments in China during that time. The year 2010 marked a period of vigorous credit expansion as part of China's response to the global financial crisis. To stimulate economic growth and offset the downturn's impacts, the government implemented a substantial stimulus package that resulted in a

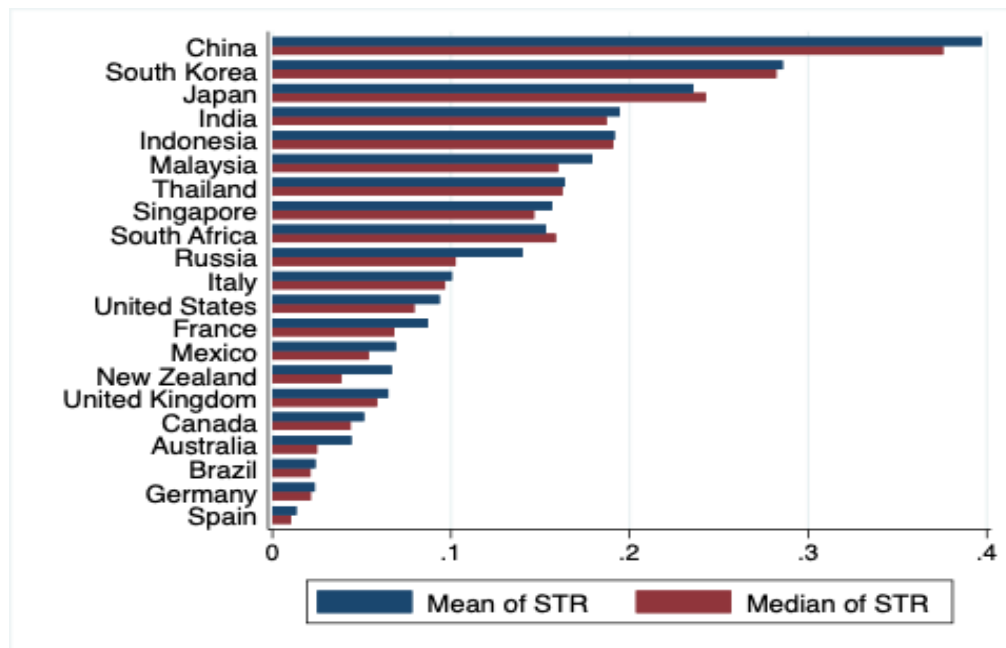
significant increase in bank lending. Consequently, the curve showed an upward trend until 2014.

Although the number of companies using debt maturity mismatches is increasing, the proportion relative to the total number of listed companies is declining due to the rapid expansion of the listed company sector in China. By the end of the research sample in 2019, the number of listed companies had quadrupled compared to 2000. The pattern of fluctuations is punctuated by significant economic events that led to marked troughs in 2009 and 2015. The global financial crisis in 2008, its aftermath in 2009, the bond defaults in 2014, and the stock market crash in 2015 significantly affected the financing behavior of companies. These events resulted in heightened risk aversion among capital providers and a consequent reduction in the availability of both long-term and short-term debt.

Despite the fluctuations, a substantial portion of companies, ranging from 30% to 50%, have been utilizing short-term debt to finance long-term investments. This consistent usage underscores the prevalence of the debt maturity mismatch strategy within the Chinese market. The data suggest that despite changing economic conditions, the practice of mismatching debt maturities remains a significant feature of corporate financial management in China.

Additionally, Figure 3.2 displays the median and mean values of short-term debt ratios across 21 countries from 2000 to 2019. Notably, China emerges as the country with the highest short-term debt ratios throughout this period, both in terms of the median and mean values. The higher short-term debt ratios observed in China can be attributed to the characteristics of its financial system, which is considered to be relatively immature (Allen *et al.*, 2005; Li *et al.*, 2008; Allen *et al.*, 2019). Consequently, it suggests that Chinese listed companies are more inclined to engage in debt maturity mismatch by utilizing short-term debt as a financing source for long-term investments compared to their counterparts in other countries.

Figure 3. 2: Mean and Median Short-Term Debt Ratio (STR) of Public Companies within 21 Countries: 2000-2019.



*** **This figure plots the mean and median short-term debt ratios (short-term borrowings to total debts) of listed firms in 21 markets from 2000 to 2019. Short-term borrowings are those which are to be repaid in full, usually with interest, within one year. The X-axis presents the value of short-term borrowings to total debts, and the Y-axis indicates the countries. The data are sourced from the S&P Capital IQ database.

However, it is worth noting that the practice of debt maturity mismatch by utilizing short-term debt for long-term investments results in an excessive concentration of short-term liabilities within a company's capital structure. This situation substantiates the notion that an over-reliance on short-term debt has emerged as a significant concern, as supported by research conducted by Della Seta *et al.* (2020). This concern arises due to the increased frequency of debt renegotiations, which in turn amplifies the likelihood of companies facing disruptions in their credit availability (Diamond, 1991; Acharya *et al.*, 2011).

Despite its practical significance, previous studies exploring the relationship between debt maturity and asset, or investment maturity have been limited. While numerous studies have examined the determinants of debt maturity structure (Titman and Wessels, 1988; Diamond, 1991; Barclay and Smith, 1995; Guedes and Opler, 1996; Stohs and Mauer, 1996; Antoniou *et al.*, 2006; Fan *et al.*, 2012; Goyal and Wang, 2013), they

primarily focused on the choice between long-term and short-term debt without explicitly considering alignment with asset or investment maturity. Therefore, there is a compelling need for a comprehensive study focusing on the phenomenon of maturity mismatch.

Furthermore, previous studies in the field of debt maturity have predominantly focused on conventional firm characteristics, such as size, growth, and tax, while neglecting the exploration of other unconventional factors that significantly influence firms' financing decisions. Inspired by previous debt management theories, factors such as financial constraints, bankruptcy risk, and information asymmetry are crucial considerations intricately linked to firms' choices regarding debt maturity. These factors hold potential relevance to financing theories and need thorough examination to provide a comprehensive understanding of the determinants of maturity mismatches. However, few studies have addressed these aspects. Therefore, the primary objective of this chapter is to address the existing gaps in the literature by expanding the scope of investigation.

Firstly, based on the current state of financing in China, this study posits that one of the most significant factors contributing to maturity mismatches by firms is the presence of financing constraints. The phenomenon of financing constraints has been extensively studied and documented in the existing literature, as explored in detail in Chapter 2 of this thesis. Financing constraints can arise from various factors, including restricted access to certain types of financing, regulatory limitations, or specific market conditions (Fazzari *et al.*, 1987; Allen *et al.*, 2005; Savignac, 2008; Allen *et al.*, 2019). In the context of the Chinese financial system, long-term financing options primarily encompass equity financing, bond financing, and bank loans. However, Chinese firms face challenges in accessing long-term financing through these channels.

Banks play a dominant role in the financial channels in China, providing the primary source of financing for firms and playing a crucial role in driving economic growth

(Ayyagari *et al.*, 2010; Allen *et al.*, 2019). However, the Chinese financial system exhibits weaknesses in terms of investor protection and information transparency, resulting in banks being more cautious about extending debt maturity due to risk considerations. As a risk mitigation strategy, banks tend to control corporate default risk by providing short-term debt (Fan *et al.*, 2012; Custódio *et al.*, 2013).

The Chinese bond market, although growing rapidly, still lags behind developed markets in terms of efficiency and depth. This limited development restricts the availability and accessibility of long-term debt instruments for companies (Allen *et al.*, 2005; Allen *et al.*, 2019; Schweizer *et al.*, 2020). Similarly, equity financing in China is subject to various restrictions and regulatory requirements, making it less accessible for firms seeking long-term funding (Allen *et al.*, 2019). The inefficiencies and restrictions in the Chinese bond and equity markets pose significant obstacles to companies in obtaining long-term financing (Fan *et al.*, 2012; Allen *et al.*, 2019).

Consequently, the scarcity of long-term financing instruments in China, encompassing both bank financing, the corporate bond market, and the equity market, presents significant challenges for Chinese companies in their pursuit of sustainable and appropriate funding for long-term investment projects. This dearth of available options compels companies to change debt maturity, and short-term debt can be a means to bridge the gap between their long-term investment requirements and the limited availability of long-term funding avenues (Bleakley and Cowan, 2010; Luo *et al.*, 2019). Based on the analysis of the Chinese long-term financing market, this study suggests that financing constraints can serve as a significant factor driving Chinese companies to engage in debt maturity mismatches.

Secondly, firms should not overlook the importance of assessing their current bankruptcy risk or financial situation when making financial management or investment decisions. It is vital to carefully evaluate the company's financial health, debt servicing capabilities, and contingency plans to address potential liquidity shortfalls. This is particularly relevant in cases where cash flows generated from long-

term projects are not immediately recoverable in the short term. The risk of financial distress can potentially threaten the firm's ability to continue its operations as a going concern (Diamond, 1991; Acharya *et al.*, 2011).

Specifically, firms with higher bankruptcy risks face considerable constraints that significantly impact their financial strategies, particularly regarding debt maturity mismatches. Due to their precarious financial state, these firms often have limited access to both short-term and long-term credit markets. Lenders are typically reluctant to extend credit under such conditions, which can severely restrict the firm's financial flexibility. As a result, these firms frequently find themselves needing to scale back or completely halt long-term investments. This not only diminishes the feasibility of engaging in maturity mismatches but also reduces the necessity of doing so. Essentially, when companies at high risk of bankruptcy encounter long-term investment opportunities, their preference would ideally be for corresponding long-term financing. However, in the absence of such long-term debt options, they are compelled to curtail their investment activities. The choice between leveraging long-term debt or reducing long-term investments leads to a decreased reliance on maturity mismatches, as the firms aim to align their debt profiles more closely with their reduced investment activities.

Thirdly, the influential work by Myers and Majluf (1984) highlights the significance of information asymmetry in determining firms' ability to secure long-term debt. Information asymmetry refers to the difference in information between firms and external investors, such as lenders or bondholders. The degree of information asymmetry significantly impacts the availability and terms of financing options. Goyal *et al.* (2013) further emphasize that information asymmetry represents a major obstacle to enterprises' access to funding.

In the Chinese capital market, the availability and transparency of information regarding firms' future prospects are highly imbalanced, creating a challenging environment for firms seeking funding (Allen *et al.*, 2005; Goyal and Wang, 2013;

Allen *et al.*, 2019). Specifically, the regulatory environment and disclosure requirements are not as stringent or transparent compared to more developed capital markets. This can result in limited access to reliable and comprehensive information for external investors, making it challenging to accurately assess the financial health and risk profile of Chinese companies. As a result, firms possessing favorable or superior information are reluctant to lock in their cost of financing by relying on long-term debts (Barclay and Smith, 1995). This reluctance stems from their desire to maintain flexibility and capitalize on potential favorable market conditions in the future.

It is interesting to note that firms with unfavorable information also exhibit a similar pattern. However, the underlying reason differs between the two groups. First, they face challenges in accessing long-term financing due to their perceived risk. Secondly, firms with bad information attempt to imitate the behavior of companies with good information as a strategic move to disguise their true financial condition and secure financing (Diamond, 1991).

On the other hand, funding suppliers, such as banks or financial intermediaries, face challenges in assessing the creditworthiness and quality of firms, especially in the presence of significant information asymmetry. This uncertainty leads to their reluctance to provide long-term debt, as they struggle to differentiate between high-quality and low-quality companies. The lack of accurate and transparent information hinders their ability to make informed lending decisions. Consequently, as analyzed earlier in terms of both borrowers' and lenders' considerations, this study considers that the presence of information asymmetry can exacerbate the maturity mismatch problem.

Fourth, turning to the realm of corporate governance, the seminal works of Stiglitz (1974) and Myers (1977) demonstrate that in a perfectly efficient market, the choice between short-term and long-term debt would be inconsequential. However, in reality, markets are imperfect, and the existence of agency conflicts stemming from the separation of ownership and control significantly influences corporate financing decisions. In this context, short-term debt serves not only as an internal control

mechanism imposed by shareholders but also as an effective external control mechanism imposed by financial providers (Jensen and Meckling, 1976a; Stulz, 1990). This duality arises from the role of short-term debt in aligning the interests of shareholders and lenders, mitigating agency problems, and reducing the risk of asset diversion or expropriation.

Studies conducted by Anderson *et al.* (2004), Arslan and Karan (2006), and Tosun and Senbet (2020) support the idea that firms with strong corporate governance systems tend to have longer-duration debt. A well-functioning corporate governance system can enhance the utilization of long-term debt by replacing the monitoring function traditionally fulfilled by short-term debt. Firms enhance transparency, accountability, and oversight, thereby reducing information asymmetry and agency conflicts, by having a robust corporate governance system. Inspired by these valuable insights, this study seeks to delve deeper into the potential impact of corporate governance mechanisms on firms' decisions regarding the use of short-term debt for long-term investments.

This chapter adopts an empirical approach, collecting data from Chinese listed companies to test the hypotheses derived from previous theoretical frameworks and discussions. The empirical analysis reveals several findings: firstly, a significant and positive relationship between financial constraints and debt maturity mismatch. Secondly, firms with a higher risk of bankruptcy tend to exhibit lower levels of maturity mismatches. Furthermore, there is a significant positive relationship between information asymmetry and maturity mismatches. Finally, stronger corporate governance practices positively impact reducing maturity mismatches.

Additionally, this chapter explores the consequences of debt maturity mismatch, a crucial aspect previously overlooked. Specifically, it examines the impact of maturity mismatch on debt costs, considering the distinct costs of long-term and short-term debt. Due to the different characteristics and risks of long-term and short-term debt,

analyzing how maturity mismatches influence debt costs is crucial. Additional findings show that using short-term debt for long-term investments can reduce debt costs. However, the impact differs between non-SOEs and SOEs: the negative relationship between maturity mismatch and debt cost is significant for non-SOEs, but not for SOEs. This disparity can be attributed to the preferential lending rates enjoyed by SOEs due to their political connections (Li *et al.*, 2006; Bertrand *et al.*, 2018). Non-SOEs, lacking the same political ties and government backing, are more sensitive to potential debt cost reductions from maturity mismatch. Thus, the influence of maturity mismatch on debt costs is more significant for non-SOEs.

Furthermore, maturity mismatches have adverse consequences due to the renewal and negotiation costs of short-term contracts (Myers, 1977; Bleakley and Cowan, 2010). In times of financial distress, managers of affected firms may conceal negative information to secure external funding. When the accumulation of bad news becomes inevitable, disclosing such information is likely to cause significant stock price crashes (Chen *et al.*, 2001; Kim *et al.*, 2011a; Kim *et al.*, 2011b). To explore the relationship between maturity mismatch and stock price crash risk, an additional test is conducted in this chapter. The findings reveal a significant association between maturity mismatches and an increased likelihood of share price collapses. This finding highlights the vulnerability of firms with maturity mismatches to sudden, severe stock price declines, shedding light on the risks faced by companies relying on short-term debt for long-term investments.

Overall, the empirical evidence provided by this chapter contributes to a comprehensive understanding of the factors influencing the occurrence of maturity mismatches in Chinese companies, encompassing both theoretical and practical contributions. The contributions of this chapter are discussed in detail in Section 3.5.

This chapter is organized as follows: In Section 3.2, this chapter reviews relevant prior research and develops the hypotheses based on the identified gaps in the literature.

Section 3.3 presents the details of the sample data collection process, measurement method, and research design employed in the study. Section 3.4 analyzes and interprets the results obtained from the empirical analysis. Section 3.5 concludes the chapter.

3.2 Literature Review and Hypothesis Development.

3.2.1 Review and Analysis of the Theory of Debt Maturity Mismatch and Financial Constraints

The selection of an appropriate debt maturity structure is a fundamental concern in corporate finance. Extensive research in this field has investigated the determinants of debt maturity decisions, highlighting the significance of various factors such as leverage, growth options, credit quality, size, cash, industry structure, and information asymmetry (Flannery, 1986; Diamond, 1991; Barclay and Smith, 1995; Guedes and Opler, 1996; Scherr and Hulburt, 2001; Dang, 2011; Brick and Liao, 2017). These studies provide valuable insights into the drivers of debt maturity choices in different contexts. The maturity structure of debt plays a critical role in financial decision-making for firms, serving as an important reference for executing investment programs and planning the lifespan of projects.

Firms have the flexibility to choose between long-term and short-term debt when making investment decisions. However, the concept of maturity matching theory, initially proposed by Morris (1976), suggests that aligning the maturities of assets and liabilities offers significant benefits. According to this theory, long-term investments should be financed with long-term liabilities, while short-term investments should be supported by short-term liabilities. This matching principle aims to minimize the risk of inadequate cash flow to meet both principal and interest obligations. The theory underscores the importance of synchronizing the timing of assets and liabilities to mitigate financial risks. By aligning maturities, firms can reduce their cash flow vulnerability and ensure a better match between their investment returns and debt obligations.

Financial constraints can arise from various factors, including restricted access to certain types of financing, regulatory limitations, or specific market conditions prevalent in the Chinese financial landscape (Fazzari *et al.*, 1987; Allen *et al.*, 2005;

Savignac, 2008; Allen *et al.*, 2019). In China, long-term financing options primarily encompass equity financing, bond financing, and bank loans. However, Chinese firms face significant challenges in accessing long-term financing through these channels.

Firstly, banks play a dominant role in the financial system in China, providing the primary source of financing for firms, as bond and equity financing channels have faced various restrictions (Ayyagari *et al.*, 2010). However, banks in China prefer providing short-term loans to companies due to their reluctance to bear the risks associated with underperforming long-term debts. This preference is based on the belief that short-term credit offers several advantages in terms of credit risk management, liquidity management, and addressing adverse selection and moral hazard concerns within enterprises. While this approach requires additional resources for debt renegotiation, it allows banks to avoid the potential consequences of non-performing long-term loans (Allen *et al.*, 2005; Allen *et al.*, 2019; Fu, 2020).

Fan *et al.* (2012) supports this approach by highlighting that banks in China perceive short-term credit as a means to control credit risks and strengthen liquidity management. They emphasize that the stability of the institutional environment and the development of the legal system significantly impact a firm's reliance on short-term bank loans. In less stable institutional environments with less developed legal systems, firms tend to rely more heavily on short-term bank loans.

Additionally, the dominant banks in China are all government-controlled entities, as highlighted by Ayyagari *et al.* (2010) and Fu (2020). This government control over the top four banks translates to significant influence over the allocation of financing resources, particularly with regards to long-term bank loans. Consequently, the Chinese government's intervention in the financial sector plays a crucial role in determining firms' access to external financing. This is also discussed in detail in Chapter 2 of this thesis. Therefore, the government's influence on the financial sector creates challenges for firms that lack political connections, making it more difficult for them to obtain

long-term bank loans from state-owned banks (Cull *et al.*, 2015). This situation implies that certain enterprises face obstacles or discriminatory practices when seeking bank financing for their long-term investment projects (Li *et al.*, 2006). As a result, the limited availability of long-term financing options due to the government's control and intervention in the banking sector poses significant challenges for Chinese companies.

Moreover, in the Chinese financial system, other sources of long-term financing, apart from traditional bank loans, are also restricted. One notable aspect is the underdeveloped corporate bond market, which has yet to reach its full potential as an effective avenue for long-term financing in China. Several reasons contribute to the underdevelopment of the corporate bond market in China. Firstly, the regulatory framework governing bond issuance and trading has been relatively restrictive. Regulatory authorities impose stringent approval processes and requirements, impeding the smooth issuance and trading of corporate bonds. Secondly, the market lacks a well-established secondary trading platform, hampering liquidity and hindering investors' ability to buy and sell bonds easily. Thirdly, there is a limited number of specialized intermediaries, such as credit rating agencies and bond underwriters, that play crucial roles in facilitating bond issuance and market transparency. Fourth, investor participation in the corporate bond market is relatively limited, with a significant portion of bond holdings dominated by institutional investors, such as banks and insurance companies. The lack of diversified investor participation can lead to a less liquid market and limited pricing efficiency, deterring companies from utilizing the corporate bond market as a viable long-term financing option (Allen *et al.*, 2005; Allen *et al.*, 2019; Schweizer *et al.*, 2020).

Moreover, the equity market in China encounters several restrictions and limitations, further exacerbating the shortage of long-term financing instruments available to companies (Zhou *et al.*, 2021). One significant restriction is the stringent regulatory framework governing equity issuance and trading. Regulatory authorities impose strict control measures to maintain stability and prevent excessive volatility in the equity

market. These measures include approval requirements, lock-up periods, and limitations on share issuance, which can hinder timely and efficient access to long-term financing through equity offerings.

Apart from traditional financing channels, the impact of peer-to-peer (P2P) lending and private loan firms in China from 2012 to 2018 was significant and warrants thorough consideration. During this period, these non-traditional lending platforms experienced explosive growth, altering the financial landscape. This chapter focuses on listed firms, which are larger companies. However, P2P platforms and private loans mainly serve small and medium-sized enterprises (SMEs) and individual borrowers who previously had limited access to traditional banking services. It is evident that listed companies in the Chinese market engage in P2P activities primarily as a strategic investment to generate high profits, rather than to obtain financing (Pan *et al.*, 2021).

In a well-developed financial market, enterprises have the flexibility and resources to adjust their debt structure in accordance with the matching theory. This reduces the likelihood of maturity mismatches and potential financial risks associated with relying on short-term debt for long-term investments (Acharya *et al.*, 2011). However, capital market imperfections can disrupt the ideal maturity matching rule and negatively impact corporate investment decisions (Campello *et al.*, 2010). As discussed earlier, Chinese companies face varying degrees of long-term financing constraints. The scarcity of long-term financing instruments in China, including bank financing, the corporate bond market, and the equity market (Fan *et al.*, 2012), presents significant challenges for Chinese companies in their pursuit of sustainable and appropriate funding for long-term investment projects. This lack of available options forces companies to seek alternative sources of financing, and short-term debt can serve as a means to bridge the gap between their long-term investment requirements and the limited availability of long-term funding avenues (Bleakley and Cowan, 2010; Luo *et al.*, 2019).

By recognizing the impact of financial repression and the limited range of financing channels, this chapter proposes that the utilization of short-term debt for long-term investment is primarily driven by severe financing constraints.

Hypothesis 1: In the presence of other controlling factors, there exists a positive association between the financial constraints faced by firms and their propensity to utilize short-term debt for long-term investment.

3.2.2 Review and Analysis of the Theory of Debt Maturity Mismatch and Information Asymmetry

In the early literature, the role of information asymmetry in corporate finance has garnered substantial recognition. This asymmetry, characterized by unequal access to and distribution of information between different market participants, has profound implications for firms' financing choices, investment decisions, and overall financial performance (Barnea *et al.*, 1980; Myers and Majluf, 1984). Scholars have extensively acknowledged that information asymmetry plays a crucial role in shaping various aspects of corporate finance decisions. For example, the models of debt maturity, pioneered by scholars such as Flannery (1986) and Diamond (1991), have provided valuable insights into the effects of information asymmetry on the pricing of debt securities and its relationship with debt maturity. These models highlight that information asymmetries between borrowers and lenders can create uncertainty and result in the mispricing of debt securities. Borrowers possess private information about their financial health, investment opportunities, and risk profiles, which lenders lack.

According to Flannery's (1986) model, when bond market investors cannot accurately distinguish between good and bad firms, it creates opportunities for firms to strategically choose their debt issuance. In this context, firms with favourable information but facing information asymmetry perceive that their long-term debt is relatively underpriced by the market. As a result, they have an incentive to issue short-

term debt instead of long-term debt. By doing so, they can take advantage of the perceived underpricing and secure financing at a lower cost. On the other hand, firms with unfavorable information recognize that their long-term debt may be overpriced due to the lack of investor differentiation. Consequently, they are motivated to issue long-term debt, exploiting the overpricing, and obtaining higher proceeds. Rational investors, aware of these incentives and the potential mispricing, consider them when pricing risky corporate debt. They incorporate the behavior of firms into their expectations and adjust the pricing of debt securities accordingly. The interaction between the incentives of borrowers and the inferences made by investors determines the equilibrium outcome in the debt market.

Diamond (1991) extends the analysis of debt maturity structure by considering the impact of information asymmetry and private information about future credit ratings. He suggests that the presence of information asymmetry implies that borrowers have private information regarding their creditworthiness that is not fully known to lenders. Furthermore, Barclay and Smith (1995) contribute to the understanding of debt maturity structure by examining the relationship between information asymmetry, firm quality, and the choice between short-term and long-term debt. Their findings suggest that high-quality firms with higher levels of information asymmetry are more inclined to rely on short-term debt rather than long-term debt. The rationale behind this preference lies in the anticipation of favorable future borrowing conditions. High-quality firms, despite having more information asymmetry, expect their creditworthiness to improve over time. By opting for short-term debt, they can take advantage of lower current borrowing costs, with the intention of refinancing at more favorable rates in the future when their creditworthiness becomes more transparent and favorable. In other words, they prefer to maintain flexibility in their financing decisions and avoid locking in their cost of financing with long-term debt.

Goyal and Wang (2013) recognize that borrowers' private information about their default risk plays a crucial role in determining their debt maturity choices. They

demonstrate that borrowers' choice of debt maturity depends on their private information about their default probabilities. Borrowers with positive private information tend to favor short-term debt, whereas borrowers with negative private information prefer long-term debt. To examine the validity of this proposition, they delve into the dynamics of debt issuers' default risk following the issuance of debt. Specifically, when borrowers opt for short-term debt instruments, a discernible decline in asset volatility is observed, accompanied by an enhancement in their distance to default. This implies that short-term debt issuance is linked to a reduction in the overall risk profile of the borrowers, rendering them more resilient to potential financial distress. Conversely, when borrowers employ long-term debt instruments, there is an evident increase in asset volatility, indicating a higher degree of uncertainty surrounding their financial position. Additionally, the distance to default exhibits a deterioration, reflecting a diminished ability to meet their financial obligations in the face of adverse circumstances.

In the presence of high information asymmetry, the existing literature on contracting indicates that lenders often adopt more rigorous contract terms. These terms are specifically crafted to address the risks associated with information asymmetry and safeguard the lenders' interests. When there is a significant disparity in information between borrowers and lenders, lenders face heightened uncertainty and potential adverse selection problems. To mitigate these risks, lenders employ stricter contract provisions to reduce the adverse effects of information asymmetry and protect themselves against potential losses. These stringent contract terms include higher interest rates, collateral requirements, financial covenants, and frequently rolling over short-term debt (Berlin and Mester, 1992; Carey *et al.*, 1994).

Traditional indicators used to assess a company's repayment ability, such as company size, liquidity, and stock returns, cannot reliably measure solvency. These indicators can be easily manipulated, especially in uncertain economic environments. Relying solely on such metrics to make financial decisions can be misleading and potentially

dangerous. Given the challenges posed by information asymmetry, capital suppliers are more likely to adopt precautionary measures to compensate for the lack of accurate information. For example, they request higher returns for loans or even refrain from issuing long-term loans altogether (Berlin and Loeys, 1988). This cautious approach is driven by the need to mitigate risks associated with inadequate information and protect their own interests. In this environment, short-term debt emerges as a relatively safer option for the supply side of funding (Berger *et al.*, 2005). Short-term debt allows lenders to limit their exposure to the borrower's uncertain financial situation and potential adverse events. By providing shorter repayment periods and more frequent assessment opportunities, lenders can better monitor the borrower's performance and adjust their lending decisions accordingly.

Previous studies have corroborated the existence of highly asymmetrical information dynamics between capital suppliers and firms in the Chinese capital market (Xu *et al.*, 2013; Allen *et al.*, 2019). This information asymmetry poses a substantial hurdle in effectively matching the supply and demand of capital in the Chinese market. From the perspective of capital-using companies, there is a tendency to conceal positive financial developments by using short-term debt, while negative information can be obscured through the assumption of long-term debt. However, for capital providers who cannot accurately assess the company's true financial state, opting for short-term debt becomes a safer strategy as it limits their exposure to long-term uncertainties. This decision by capital providers corresponds with the actions of companies that conceal positive developments and prefer short-term debt. Conversely, companies that aim to obscure adverse information and secure long-term debt often find their options limited. They must either reluctantly accept the available terms or disguise their true circumstances as they seek opportunities to secure long-term financing. Accordingly, this chapter proposes that:

Hypothesis 2: In the presence of other controlling factors, there exists a positive association between the level of information asymmetry faced by firms and their propensity to utilize short-term debt for long-term investment.

3.2.3 Review and Analysis of the Theory of Debt Maturity Mismatch and Bankruptcy Risk

In reality, firms facing higher bankruptcy risks often leads to limited access to both short-term and long-term credit markets, with lenders typically hesitant to extend credit under such risky conditions. Bankruptcy risk refers to the likelihood that a company's operating cash flows are insufficient to meet its current liabilities, including accounts payable, short-term debt, and interest charges. In severe cases, bankruptcy occurs when a company is unable to fulfill its financial obligations, potentially leading to liquidation (Wruck, 1990; Platt and Platt, 2002). Consequently, these firms find themselves needing to scale back or completely halt long-term investments, reducing both the feasibility and necessity of engaging in maturity mismatches. This is particularly relevant in cases where cash flows generated from long-term projects are not immediately recoverable in the short term (Diamond, 1991; Acharya *et al.*, 2011).

However, it is only when the risk of bankruptcy becomes exceedingly high that a company finds it challenging to obtain financing of any maturity. In contrast, when the bankruptcy risk is elevated but not extreme, the firm still has the opportunity to engage in a debt maturity mismatch. Existing research indicates that firms with moderate bankruptcy risk can still access credit markets, albeit at higher costs, enabling them to undertake strategic debt structuring (Barclay and Smith, 1995; Stohs and Mauer, 1996; Custódio *et al.*, 2013). This strategic behavior often involves the use of short-term debt to finance long-term projects, despite the inherent risks, as firms strive to balance their liquidity needs with investment opportunities (Graham *et al.*, 2013). This section, therefore, considers the link between bankruptcy risk and debt maturity mismatches.

According to Wiggins (1990), there is a positive relationship between asset risk and debt maturity. As asset risk increases, companies tend to choose longer debt maturities. This finding suggests that companies facing higher levels of asset risk prefer to match the maturity of their debt with the expected duration of their assets. This strategy allows them to spread out repayment obligations over a longer period, lock in fixed interest rates, and reduce exposure to interest rate fluctuations, providing a hedge against potential increases in borrowing costs. Guedes and Opler (1996) found that risky companies tend to avoid issuing short-term debt to prevent inefficient liquidations. These companies are aware of the potential challenges they face in meeting short-term debt obligations, particularly when cash flows are insufficient or uncertain. The aversion to short-term debt stems from concerns that defaulting on short-term obligations could lead to inefficient liquidation of assets.

Diamond (1991) extends the analysis of debt maturity structure by considering the impact of credit ratings. For borrowers with higher credit ratings, short-term debt serves as a form of “bridge financing.” They anticipate positive developments, such as improved credit ratings or favorable market conditions, in the near future. By using short-term debt, they retain the flexibility to refinance or access more favorable financing options when these positive developments materialize. This allows them to take advantage of better terms and conditions, ultimately reducing their financing costs.

Additionally, in Diamond’s model, firms initially rated as high-risk face difficulties in obtaining long-term debt due to a high probability of negative NPV projects. This aligns with the findings of the debt contracting literature, where high-risk borrowers are subject to more restrictive contract terms under conditions of asymmetric information (Berlin and Loeys, 1988).

Berger *et al.* (2005) empirically test the implications of Diamond’s (1991) models regarding the influence of risk on debt maturity decisions. To accomplish this, they analyze a comprehensive dataset of over 6,000 commercial loans in the US. Their findings largely align with the predictions of Diamond’s model for low-risk firms,

which tend to opt for shorter debt maturities due to lower risk levels and greater access to favorable financing terms. However, their findings for high-risk firms present a contrasting picture. Contrary to Diamond's model, high-risk firms do not show a preference for shorter-term debt. This suggests that factors beyond risk significantly influence debt maturity decisions for these firms.

Similarly, Goyal and Wang (2013) contribute to the understanding of debt maturity decisions by exploring the relationship between firms' operating conditions and their debt choices. Their findings reveal that firms experiencing challenging operating conditions tend to prefer long-term debt as their financing option. This preference for long-term debt can be seen as a strategic response to mitigate the risks associated with adverse operating environments. By opting for longer maturities, these firms aim to secure stable and predictable financing, allowing them to navigate through uncertainties and potential financial difficulties.

The sustainability of debt maturity mismatches in China hinges on the successful rollover of short-term debt (Allen *et al.*, 2019). While under normal circumstances, debt can be renewed at a suitable yield, the situation changes if firms are perceived to be at high risk of bankruptcy or if there is a market failure. In such cases, funders are reluctant to extend the maturity of short-term loans, leading to difficulties in rolling over the debt (Della Seta *et al.*, 2020). The refusal to roll over short-term debt due to bankruptcy risk has significant implications for firms. It limits their ability to rely on short-term financing, forcing them to reassess their funding sources and potentially seek alternative financing forms. High bankruptcy risk can also adversely affect the price of newly issued debt, as investors demand higher yields to compensate for the perceived higher risk, thereby increasing borrowing costs. Furthermore, the increased risk of default and losses on debt rollover can deteriorate the financial position of firms, amplifying their financial distress (Della Seta *et al.*, 2020). Consequently, firms are compelled to reduce their reliance on short-term financing due to these rollover difficulties caused by elevated bankruptcy risk.

Based on previous theories and the Chinese financial environment, this chapter posits that the risk of bankruptcy acts as a deterrent for companies when considering maturity mismatches. Firms with high bankruptcy risk ideally prefer long-term financing when they encounter long-term investment opportunities. Issuing long-term debt allows these companies to spread their debt repayments over an extended period, reducing the immediate financial burden. By opting for long-term debt, these companies aim to demonstrate to creditors and stakeholders a commitment to overcoming their current financial challenges and improving their financial position over time.

However, this rationale assumes a perfect scenario where high-risk companies can secure long-term liabilities to match their long-term projects. According to Berger *et al.* (2005) and considering the Chinese financial environment's preference for short-term debt to manage risks, long-term financing channels are less accessible. Therefore, firms facing higher bankruptcy risks often have limited access to long-term credit markets. Consequently, these firms find themselves needing to scale back or completely halt long-term investments, reducing both the feasibility and necessity of engaging in maturity mismatches.

Unlike firms with low bankruptcy risk, which have sufficient financial health to manage the potential risks associated with maturity mismatches, high-risk firms are compelled to adopt a more cautious approach. Even when presented with long-term investment opportunities, they often refrain from pursuing these if they cannot secure the necessary long-term financing. This cautious strategy is primarily driven by the need to avoid further financial strain that could result from mismatched debt, which would amplify repayment pressures and overall financial risk.

Therefore, high-risk companies tend to match long-term debt with long-term investments when possible, aligning the maturities of their assets and liabilities to mitigate refinancing pressures and financial risk. If long-term financing is not available, they are likely to reduce their long-term investments. In either case, whether they

choose long-term liabilities or cut back on long-term investments, firms with high risks are generally discouraged from engaging in maturity mismatches. Therefore, this study presents the following hypothesis to explain this relationship:

Hypothesis 3: In the presence of other controlling factors, there exists a negative association between the level of bankruptcy risk faced by firms and their propensity to utilize short-term debt for long-term investment.

3.2.4 Review and Analysis of the Theory of Debt Maturity Structure and Corporate Governance

Under ideal market assumptions, the choice between short-term and long-term debt is often considered irrelevant, as all market participants have access to perfect information and there are no frictions impeding the efficient functioning of financial markets (Stiglitz, 1974). However, real-world financial markets are characterized by imperfections, one of which is the separation of ownership and control within firms. This separation gives rise to agency conflicts between managers and shareholders, leading to agency costs that can impact decision-making, including debt maturity choices (Myers, 1977).

Debt introduces a disciplining mechanism by imposing contractual obligations on firms and providing creditors with monitoring and control rights. However, these obligations and monitoring activities entail costs arising from potential conflicts of interest between managers and creditors (Jensen and Meckling, 1976a).

As highlighted by Jensen and Meckling (1976a), Stulz (1990), and Petersen and Rajan (1995), agency costs can play a significant role in determining the optimal debt structure. Agency theory argues that managers can benefit from debt by using funds for risky projects and engaging in moral hazard behaviors, especially when monitoring

mechanisms are ineffective. Short-term debt creates stronger incentives for managers to focus on short-term performance and meet debt obligations promptly to avoid default, aligning the interests of managers and creditors in the short run and reducing agency costs associated with debt.

On the other hand, according to Stulz (1990, 2000), the supply side of funding, such as banks and other creditors, prefer short-term debt due to its frequent contract renewal feature. This characteristic allows providers to maintain closer oversight of the firm's activities, financial condition, and repayment ability. Frequent renewals provide creditors with the ability to exert external control over managers, potentially preventing opportunistic behavior such as evasion, asset shifting, and risk switching.

Knopf *et al.* (2002) argue that effective corporate governance serves as an internal control mechanism that complements the use of short-term debt. They demonstrate that when a manager's compensation is closely tied to stock prices, managers are discouraged from engaging in excessive risk-taking behavior. Conversely, when their compensation is more sensitive to stock return volatility, it can incentivize higher risk-taking. Creditors are aware of these incentives and incorporate them into their assessment of default risks. Similarly, Brockman *et al.* (2010) recognize that the compensation structure of CEOs, particularly the sensitivity of their compensation to stock prices and return volatility, can significantly impact their risk-taking behavior. They find a robust and statistically significant negative relationship between the sensitivity of compensation to stock prices and the utilization of short-term debt. This negative relationship indicates that when managers' compensation is strongly tied to stock prices, they have a reduced inclination to use short-term debt. Managers incentivized by stock price performance prefer to focus on long-term strategies that can boost stock prices, leading them to opt for longer-term debt instruments that align with their strategic goals.

Moreover, following the paradigm of agency theory, Tosun and Senbet (2020) contribute to the understanding of the relationship between corporate governance and debt duration by emphasizing the role of good governance as an internal disciplinary mechanism over management. Building on the agency theory perspective, their study provides further insights into how corporate governance practices influence the choice of debt maturity. The findings of Tosun and Senbet (2020) suggest that good corporate governance, characterized by a more independent board, can serve as an effective substitute for short-term debt in disciplining management behavior. As board independence increases, the internal monitoring and control mechanisms become more robust, mitigating agency problems, and reducing the need for short-term debt to exert control over management.

Additionally, previous research has consistently highlighted the positive relationship between good corporate governance practices and favorable debt financing outcomes. For example, Anderson *et al.* (2004) examined a sample of S&P 500 companies and discovered that firms with a more independent board of directors experienced lower debt costs. The presence of independent directors on the board is often associated with better monitoring and oversight of management, reducing agency conflicts, and enhancing the confidence of lenders. As a result, these companies can secure debt financing on more favorable terms, reflecting the positive impact of strong corporate governance on debt-related costs. Similarly, Arslan and Karan (2006) investigated the relationship between ownership structure and debt maturity. They found that organizations with a concentrated ownership structure, where a significant portion of shares is held by a limited number of shareholders, tend to have longer debt maturities. Concentrated ownership can indicate good corporate governance practices, aligning the interests of major shareholders with those of the company, fostering a long-term orientation, and reducing agency conflicts (Rediker and Seth, 1995; Schweizer *et al.*, 2019).

Overall, the literature discussed earlier has demonstrated that a well-designed corporate governance system can help avoid conflicts of interest and promote responsible decision-making by aligning the interests of shareholders and managers. On the one hand, a strong corporate governance system serves as an effective substitute for short-term debt in disciplining management behavior. On the other hand, the presence of effective governance mechanisms, such as independent boards of directors, executive compensation structures tied to performance, and transparent disclosure practices, helps instill confidence in creditors. Lenders perceive that the company's managerial team is accountable and committed to long-term value creation, thereby reducing concerns about agency problems, and increasing their willingness to extend long-term financing. This, in turn, reduces the perceived risks associated with long-term lending and boosts lenders' confidence in extending loans with longer maturities. Typically, long-term loans are preferred in situations where the investment horizon aligns with the nature of the assets or projects being financed. These loans offer stability, allow for effective planning, and provide the necessary financial resources for the successful implementation of long-term initiatives. Therefore, this chapter proposes that companies with a well-designed corporate governance system can reduce their use of short-term debt for long-term investments. Accordingly, this chapter proposes that:

Hypothesis 4: In the presence of other controlling factors, there exists a negative association between corporate governance and the propensity to utilize short-term debt for long-term investment.

3.3 Methodology

3.3.1 Data

This chapter adopts a comprehensive approach by including all A-share firms listed on the Shanghai and Shenzhen Stock Exchanges. The data utilized for analysis were obtained from the esteemed China Stock Market and Accounting Research (CSMAR) database and the S&P Capital IQ database. Specifically, all financial data is from CSMAR, except for data on debt with different maturities, which was sourced from the Capital IQ database. The sample period spans from 2000 to 2019. The choice of 2000 as the starting year serves two main purposes.

Firstly, the implementation of the Securities Law of the People's Republic of China in July 1999 marks a significant turning point in China's debt market. The introduction of new regulations, improved market transparency, and enhanced investor protection had a profound impact on the functioning and dynamics of both the bond and stock markets, making it an important reference point for studying the maturity structure of debt.

Secondly, since this study aims to investigate the determinants of maturity mismatch rather than focusing on a specific event, the choice of a longer sample period further strengthens the stability and reliability of the research findings. Covering the period from 2000 to 2019 allows for a more comprehensive examination, as it represents the timeframe for which complete data was available for the empirical research conducted in this chapter.

To ensure the validity and reliability of the research findings, this study has employed several common treatments specific to the research sample. These treatments aim to enhance data quality and mitigate potential biases or distortions in the analysis. The following treatments have been adopted: (1) Financial firms are excluded due to their unique capital structure and regulatory environment, which differ significantly from

non-financial firms. (2) Samples with missing data are excluded to ensure a complete and accurate dataset for analysis. (3) Companies with a debt-to-total asset ratio exceeding 1 are excluded, as this indicates an unusual and financially imprudent level of indebtedness. (4) Companies with an ST (Special Treatment) or PT (Particular Transfer) status are excluded. These labels, assigned by Chinese stock exchanges, flag companies facing financial difficulties or regulatory issues that could significantly affect their performance. (5) All data are winsorized at the 1% and 99% levels. The final sample comprises a total of 3,089 Chinese listed companies, resulting in a dataset with 31,083 observations.

3.3.2 Key variables Measurement

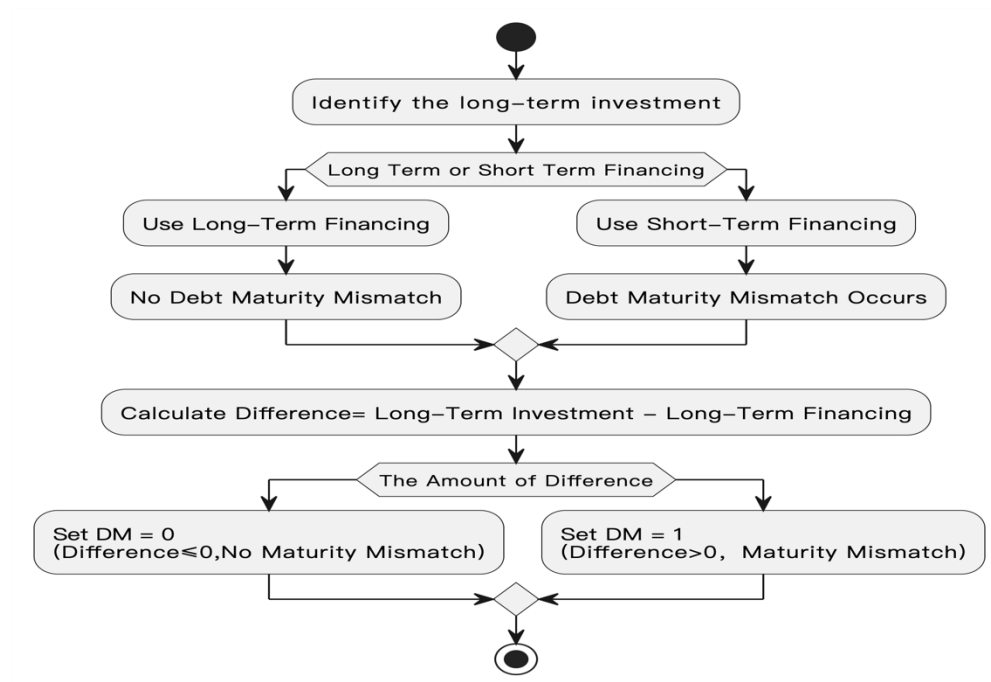
3.3.2.1 Measuring Asset-Debt Maturity Mismatch

Frank and Goyal (2003) proposed the measurement of the financial deficit, beginning with obtaining long-term investment expenditures, which include capital expenditures and other investments aimed at enhancing the firm's long-term productive capacity. This encompasses investments in property, plant, and equipment, research and development, and other similar long-term projects. Next, the long-term financing is determined, which includes sources of funding specifically intended for long-term purposes, such as long-term loans, bond issuances, equity financing, other forms of capital raised with a long-term perspective, and cash flow from day-to-day operations.

Following the principle of financial deficit proposed by Frank and Goyal (2003), many recent studies use a method that subtracts long-term financing from long-term investment expenditures to measure the extent of asset-debt maturity mismatch (Cheng *et al.*, 2020; Wang *et al.*, 2021; Ma and Hou, 2023; Xu *et al.*, 2024). A positive difference indicates that firms rely on short-term debt to fund their long-term investments, while a negative or zero difference suggests no maturity mismatch. This

study draws a detailed flowchart that visually outlines the construction process of the DM variable (Figure 3.3).

Figure 3. 3: Construction Methodology for Debt Maturity Mismatch Variable



In line with Figure 3.3, the first step involves calculating the amount of long-term investment:

$$\text{Long term investment}_{i,t} = \text{Cash paid for the purchase and construction of fixed assets, intangible assets and other long term assets}_{i,t}$$

Secondly, calculating the amount of long-term finance:

$$\begin{aligned} \text{Long term fiannce}_{i,t} &= \text{Increase in the long term borrowing}_{i,t} \\ &+ \text{Increase in the equity}_{i,t} + \text{Operating net cash flow}_{i,t} \\ &+ \text{Cash inflows for the sales of fixed, intangible and other long term assets}_{i,t} \end{aligned}$$

Where the term “long-term borrowing” refers to loans sourced from banks or other financial institutions with a maturity term exceeding one year, as reported on the company’s balance sheet. “Increase in equity” denotes the rise in paid-in capital over the current year, as detailed in the statement of shareholders’ equity. “Operating net

cash flow” and “Cash inflow from the sales of fixed, intangible, and other long-term assets” are derived from the cash flow statement.

Thirdly, the difference between long-term investment and long-term finance can be calculated as follow:

$$Difference_{i,t} = Long\ term\ investment_{i,t} - Long\ term\ finance_{i,t}$$

In conclusion, this study utilizes the calculated value of $Difference_{i,t}$ to establish both a dummy variable (DM) and a ratio variable (Mismatch), with the goal of capturing and quantifying the extent of debt maturity mismatch. The dummy variable, denoted as “DM,” functions as an indicator of whether a company has implemented maturity mismatches. Specifically, when $Difference_{i,t} > 0$, the DM is set to 1, indicating that the firms are involved in the practice of maturity mismatch. This positive value suggests that the company’s long-term investment exceeds the available long-term financing, leading it to resort to short-term financing for funding long-term investments.

Conversely, when $Difference_{i,t} \leq 0$, the DM is set to 0, indicating that the firms do not engage in the behavior of maturity mismatch. In this case, the company possesses sufficient long-term financing to cover its long-term investment needs, eliminating the necessity for a maturity mismatch. This logical structure ensures a clear understanding of how the dummy variable DM is constructed based on the calculated difference value, providing a robust framework for measuring the level of debt maturity mismatch in the study.

Additionally, the ratio variable labeled “Mismatch” quantifies the extent of maturity mismatch implemented by a company. This ratio is calculated by dividing the value of $Difference_{i,t}$ / $Total\ asset_{i,t}$. By incorporating the total assets of the firm, the “Mismatch” variable provides a measure of the proportion of the company’s total assets that are involved in the maturity mismatch.

3.3.2.2 Measuring Financial Constraints

In order to conduct studies related to financing constraints, researchers require a reliable method to measure the strength of these constraints. Numerous methods have been proposed in previous literature, including investment-cash flow sensitivities (Fazzari *et al.*, 2000), the Kaplan and Zingales (KZ) financial constraint index (Kaplan and Zingales, 1997), the Whited and Wu (WW) financial constraint index (Whited and Wu, 2006), and the SA index (Hadlock and Pierce, 2010), as well as various sorting metrics based on firms' characteristics. However, the question of which method is the most appropriate for measuring financing constraints has been the subject of debate among scholars.

One approach previously considered to be a measure of financial constraints is the high sensitivity of investments with respect to their cash flows. However, Hadlock and Pierce (2010) argue that the investment cash flow ratio suffers from endogeneity issues, which results in measurement bias for financial constraints. As such, alternative measures have been proposed to capture the strength of financing constraints more accurately.

The KZ index, developed by Kaplan and Zingales (1997), is another widely used method. In their study, they ranked 49 firms on a scale of one to four financial constraints based on their characteristics and performed an ordered logit regression of this scale on measurable firm features. However, the KZ index's validity as a measure of financial constraint has been called into serious question by Hadlock and Pierce (2010). They argue that the dependent and independent variables both contain the same information mechanically, raising doubts about the KZ index's accuracy in reflecting financial constraints. Moreover, the use of the KZ index coefficients on a broader sample of firms in different settings also raises concerns about its ability to accurately measure financing constraints (Erickson and Whited, 2000).

To address the aforementioned issues, Whited and Wu (2006) introduced an alternative index to measure financial constraints, employing GMM estimation. Unlike the KZ index, the WW index considers not only the financial characteristics of the firm itself but also the characteristics of the external industry in which the firm operates, making it more economically significant. Moreover, the WW index can avoid serious sample selection and measurement error problems associated with large datasets through structural estimation. Since the firms in our sample are publicly traded private firms, the data used to construct the WW index is readily available to the study. Thus, the WW index is well-suited for the study, and it will be used to measure financial constraints. According to Whited and Wu (2006), a higher WW index implies more severe financial constraints.

Hadlock and Pierce (2010) constructed the SA index as an alternative method for measuring financial constraints. Compared with the KZ and WW indexes, the SA index relies only on two relatively exogenous firm characteristics: size and age, to determine the level of financial constraints. This simplicity allows for easy implementation and interpretation of results, as well as the potential to avoid sample selection and measurement error problems associated with large datasets. However, the SA index cannot capture the full extent of financing constraints faced by firms, as it ignores other relevant factors such as profitability and investment opportunities. Thus, while the SA index provides a useful alternative, it should be interpreted with caution and its limitations should be considered when interpreting the results of studies that use it. Therefore, instead of using the SA and KZ indexes to measure financial constraints in the main regression, this study applies them only as alternative methods in robustness tests. Similar to the WW index, higher values of the SA and KZ indexes indicate more severe financial constraints. The second chapter of this thesis delves into the topic of political connections and financing constraints, offering an in-depth examination of various measures used to assess financing constraints. The detailed calculations and methodologies for determining the three financing constraint indices are provided in Appendix A.

3.3.2.3 Measuring Information Asymmetry

To measure firms' information asymmetry, this study adopts the methodology proposed by Gul *et al.* (2010) and Xu *et al.* (2013), using stock price synchronicity as an indicator. The calculation process begins with determining the weekly return, denoted as $R_{i,t}$.

$$R_{i,t} = \alpha + \beta_1 R_{m,t} + \beta_2 R_{m,t-1} + \beta_3 R_{I,t} + \beta_4 R_{I,t-1} + \varepsilon_{i,t}$$

Where $R_{i,t}$ represent the weekly return of firm i at time t . $R_{m,t}$ denote value-weighted all A-share market return, $R_{I,t}$ represents the industry return. The industry return is calculated using all firms in the same industry. The fitting coefficient R^2 of the regression model to measure the level of information asymmetry. The economic meaning of R^2 in the model is that market fluctuations can explain changes in the stock price of individual companies. Therefore, a larger R^2 indicates that the stock price contains less company-level information, and its synchronization with the market is greater.

However, to overcome the restricted scope of R^2 within $[0,1]$, following (Morck *et al.*, 2000) and Xu *et al.* (2013), this study employs a logistic transformation of R^2 .

$$\text{Infor_Asy}_{i,t} = \log[R_{i,t}^2 / (1 - R_{i,t}^2)]$$

After transformation, a greater score of $\text{Infor_Asy}_{i,t}$ reflects that the stock price includes more market information and less firm-level information, implying a high degree of information asymmetry for a firm.

3.3.2.4 Measuring Bankruptcy Risk

Drawing inspiration from Merton's seminal work in 1974 (Merton, 1974), Bharath and Shumway (2008) present a comprehensive model for evaluating bankruptcy risk by estimating the expected default frequency (EDF). The concept of the EDF is rooted in capital structure theory and options theory. According to options theory, shareholders can be viewed as holding a call option on the company's assets with a strike price equivalent to the company's debt. This perspective highlights the relationship between a firm's asset value, its liabilities, and the probability of default. When a company's asset value surpasses its liabilities, shareholders will exercise their call option by paying off the debt and retaining ownership of the company. However, if the value of a company's assets falls below its liabilities, shareholders will choose to default on the debt, violating the contractual obligations. Thus, the risk of default is closely linked to the value of the option, and the probability of a firm facing bankruptcy risk is determined by the interplay between its assets and debts. By incorporating current information from the capital markets, the EDF offers a forward-looking indicator of default risk, enabling the timely identification of firms facing significant challenges.

The EDF model has garnered considerable attention in the realm of financial distress measurement and has found widespread application in empirical studies. Esteemed researchers have extensively employed the EDF model to investigate bankruptcy risk and unravel its implications in various contexts (Berndt *et al.*, 2005; Duffie *et al.*, 2009; Chava and Purnanandam, 2010; Ho *et al.*, 2016). These studies have explored the association between bankruptcy risk, stock return, and leverage, shedding light on the dynamics of corporate distress and its potential impact on firm performance.

Accordingly, this study employs the methodology proposed by Bharath and Shumway (2008) to calculate the EDF as a measure of bankruptcy risk. By following the established methodology, this study ensures consistency and comparability with previous research in the field. For a detailed description of the EDF calculation process,

please refer to Appendix B, where this study provides a comprehensive overview of the methodology employed.

3.3.2.5 Measuring Corporate Governance

Schweizer *et al.* (2019) have highlighted the potential biases and issues of multicollinearity that can arise when using single governance variables. To address this concern, they propose the development of a comprehensive governance index that combines multiple indicators to provide a more robust measure of corporate governance. This composite index comprises several secondary indices, including chairman age, chairman tenure, board size, board independence, board meetings, supervisory board size, ownership concentration, foreign auditor, and state shares. These indices are aggregated after undergoing a specific processing procedure. While this comprehensive governance index is based on relevant literature, it is important to acknowledge that much of that literature is predominantly grounded in the context of Western countries. Consequently, there are variations and disparities in the applicability and relevance of these indicators within the specific context of China.

In the context of the Chinese institutional environment, Zhou *et al.* (2020) developed a comprehensive method to measure the quality of corporate governance. Drawing on their approach, this study constructed a corporate governance index using principal component analysis (PCA) and incorporated seven key indicators that are particularly relevant in the Chinese context.

Two indicators were selected to represent the incentive mechanism in corporate governance. The first is the sum of executive remuneration, reflecting the alignment of executives' interests with shareholders' interests. A higher ratio indicates a greater alignment, as executives have a significant stake in the company's performance. The second indicator is the executive shareholding ratio, focusing on the proportion of

shares held by executives. A higher executive shareholding ratio signifies a stronger commitment and incentive for executives to prioritize the company's long-term success.

To assess the monitoring role of the board, two indicators are considered. The ratio of independent directors to the size of the board provides insights into the level of independence and objectivity within the board. A higher ratio suggests a greater ability to exercise effective oversight and reduce potential conflicts of interest. Additionally, board size was included as another indicator of the board's monitoring role. An excessively large board can lead to challenges in communication, coordination, and decision-making. Larger boards face difficulties in achieving consensus and experience delays in decision-making processes. The presence of many directors can also lead to diffusion of responsibility and potential conflicts of interest, potentially undermining the effectiveness of governance mechanisms.

The monitoring role of the shareholding structure was assessed using two indicators. The first indicator is the ratio of institutional shareholding, which measures the proportion of shares held by institutional investors. A higher ratio indicates a greater presence of institutional investors and their potential influence on governance practices. The second indicator is the degree of checks and balances in shareholding, measured by the sum of the shareholdings of the second to fifth largest shareholders relative to the controlling shareholder's shareholding. This indicator captures the level of dispersion and balance in share ownership, which can enhance external monitoring and improve corporate governance.

Furthermore, the study included the indicator of separate responsibilities between the CEO and the chairman as a proxy for the decision-making power of the general manager. This indicator examines whether the roles of CEO and chairman are held by separate individuals, aiming to promote a system of checks and balances and reduce the concentration of power.

In line with their approach, this study constructs a similar corporate governance index. By applying principal component analysis (PCA) to these seven indicators, the study derived the first principal component, serving as a comprehensive measure of corporate governance quality. The PCA approach enabled the combination and weighting of these indicators, considering their individual contributions to the overall assessment of corporate governance. Therefore, this composite index provides a comprehensive evaluation of corporate governance quality within the Chinese context. According to Zhou *et al.* (2020), a higher corporate governance index signifies a higher level of corporate governance, indicating that the company has adopted effective practices and structures to promote transparency, accountability, and the protection of shareholder interests. For a detailed explanation of the construction and calculation process of the corporate governance index, please refer to Appendix C.

3.3.3 Model Construction

According to the aforementioned hypotheses, this study develops four baseline models. These models serve as the foundation for analyzing the relationship between the variables of interest and testing the proposed hypotheses. The construction of these baseline models allows for a systematic examination of the research questions and provides a starting point for further analysis.

$$Mismatch_{i,t} = \alpha + \beta * FC_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

$$Mismatch_{i,t} = \alpha + \varphi * INF_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

$$Mismatch_{i,t} = \alpha + \omega * EDF_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

$$Mismatch_{i,t} = \alpha + \gamma * GOV_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

In the models, $Mismatch_{i,t}$ represents the maturity mismatch of the firm in year t . It is comprised of a ratio variable, denoted as “Mismatch,” which captures the extent of maturity mismatch, and a dummy variable, denoted as “DM,” which indicates whether the firm experiences a maturity mismatch or not. $FC_{i,t}$ reflects the level of financial constraints faced by the firm; $INF_{i,t}$, measures the degree of information asymmetry

within the firm. The $EDF_{i,t}$ serves as an estimate of the probability that a firm will default in the following year. $GOV_{i,t}$ captures the quality of corporate governance within the firm. Additionally, this study includes the related dummies $Industry_i$ and $Year_t$ to adjust for heterogeneity generated by industry and year.

In addition to the aforementioned variables, this study incorporates several control variables to account for potential factors that impact the maturity mismatch of firms. Following previous studies on debt maturity (Fan *et al.*, 2012; Custódio *et al.*, 2013; Huang *et al.*, 2016; Cheng *et al.*, 2020; Wang *et al.*, 2021), the control variables include size, Tobin's Q, ROA, ROE, leverage, cash, liquidity, PPE, profitability, age, SOE, and other relevant factors commonly examined in related research. By including these control variables, the analysis aims to mitigate the influence of confounding factors and enhance the accuracy of the findings. Time and industry fixed effects are included to account for unobserved heterogeneity across time and industry. Detailed definitions and descriptions of all the included variables can be found in Table 3.1.

To analyze the relationship between debt maturity mismatches and their determinants, this chapter employs different modeling techniques based on the nature of the explanatory variables. Specifically, a fixed-effects model is used when the explanatory variable is the ratio variable—maturity mismatch (Mismatch). The fixed-effects model is suitable for examining how changes within firms over time affect the maturity mismatch. In contrast, a probit model is employed when the explanatory variable is the dummy variable (DM). The probit model is well-suited for analyzing the impact of binary variables, such as the dummy variable (DM), on the probability of experiencing a maturity mismatch. This model allows for estimating the likelihood of a maturity mismatch occurring based on the presence or absence of the explanatory variable.

Table 3. 1: Variable Definition for the Study of Determinants of Debt Maturity Mismatch

Variable name	Definitions	Original data source
Maturity mismatch	Dummy variables (DM) equal 1 for firms with a maturity mismatch and 0 otherwise. The ratio variable (Mismatch) equals the difference between long-term investment and long-term finance divided by total assets. See Section 3.3.2.1.	CSMAR Database
Financial constraints	Following Whited and Wu (2006), a higher WW index indicates a higher level of financial constraints (see Appendix A).	CSMAR Database
Information asymmetry	Following Gul <i>et al.</i> (2010) and Xu <i>et al.</i> (2013), the higher the value, the higher the degree of information asymmetry. See Section 3.3.2.3.	CSMAR Database
Bankruptcy risk	The probability that a firm will default in the next year (EDF) was developed by Bharath and Shumway (2008). See Appendix B.	CSMAR Database
Governance index	Following Zhou <i>et al.</i> (2020), a higher corporate governance index indicates a higher level of corporate governance. See Appendix C.	CSMAR Database
SIZE	Natural logarithm of total assets.	CSMAR Database
TOBIN Q	Market value of total asset/book value of total assets.	CSMAR Database
ROA	Net profit/Total asset	CSMAR Database
ROE	Net profit/Total equity	CSMAR Database
LEV	Total liabilities/Total assets	CSMAR Database
Cash	Operating net cash flow/Total assets	CSMAR Database
Liquidity	Current assets/Current liabilities	CSMAR Database
PPE	Net value of property, plant, and equipment (PPE) / Total assets	CSMAR Database
Profit	Profit before interest and tax/Total assets	CSMAR Database
Age	Natural logarithm of the total number of years the company has been listed.	CSMAR Database
SOE	Equal to 1 if the company is a state-owned enterprise, and 0 otherwise.	CSMAR Database
KZ Index	Following by Kaplan and Zingales (1997), see Appendix A.	CSMAR Database
SA Index	Following by Hadlock and Pierce (2010), see Appendix A.	CSMAR Database
Debt cost	Interest /average interest-bearing liabilities $(Debt_{t-1} + Debt_t)/2$	CSMAR Database
EDF _{Merton}	Expected default frequency, following by Merton (1974), see Appendix B.	CSMAR Database
EDF _{KMW}	Expected default frequency, following the method	CSMAR Database

	develop by KMW company D. see Appendix B.	
Share	The average of the daily stock turnover rate in a	CSMAR Database
Turnover	year.	
Governance	Following by Zhou <i>et al.</i> (2017). See Appendix C.	CSMAR Database
index _{Robust}		
M2	Natural logarithm of the amount of M2.	CSMAR Database
GDP	Natural logarithm of the amount of GDP.	CSMAR Database

3.3.4 Endogenous Concern

To address the problem of endogeneity caused by causality and omitted variables, this study employs difference models and lagged variables to run regressions. The utilization of these models is a recognized methodological approach in finance and economics, particularly for tackling endogeneity issues.

Specifically, difference models are commonly used to address endogeneity problems, especially those caused by omitted variables. Endogeneity arises when certain variables in the model are correlated with the error term, leading to biased and inconsistent parameter estimates. This issue is prevalent when there are omitted variables or other underlying biases present in the model. Difference models address endogeneity by employing differencing operations, which involve taking the difference between the current period and the previous period for the variables of interest. By differencing the variables, the error term in the model is eliminated or its correlation is reduced, effectively addressing the endogeneity problem.

The fundamental idea behind difference models is to capture time-dependent effects by examining how variables change over time while simultaneously eliminating time-independent effects. This approach allows for the elimination of endogeneity caused by time-invariant omitted variables, as the changes in those variables over time can be captured through differencing. In summary, difference models are a valuable tool for addressing endogeneity problems caused by omitted variables in economics. By incorporating differencing operations, these models help eliminate or reduce the

correlation between variables and the error term, leading to more reliable and robust estimates of the relationships under investigation.

The use of lagged variables accounts for the temporal relationship between the variables of interest and addresses the endogeneity problem arising from reverse causality. Specifically, reverse causality occurs when the relationship between variables operates in the opposite direction than initially assumed. In other words, the dependent variable causes changes in the independent variable rather than the other way around. Lagged models help address endogeneity problems by providing a temporal ordering that reduces the possibility of reverse causality. By including lagged variables as independent variables, the model captures the effect of past values on the current value, thus mitigating concerns regarding reverse causality. By incorporating lagged variables in the regression models, the study examines how past values of the variables influence current outcomes, providing a more comprehensive understanding of the underlying relationships. This approach is particularly relevant in finance research, where variables often exhibit persistence and long-term effects. Therefore, using lagged models, this study can establish a more causal interpretation of the results and enhance the internal validity of the findings.

Overall, these approaches help alleviate biases from omitted variables and reverse causality, enhancing the reliability and validity of the empirical findings. By incorporating these models, this study aims to mitigate potential biases arising from endogeneity and enhance the validity of the empirical analysis.

3.3.5 Additional Analysis

3.3.5.1 Maturity Mismatch and Debt Cost

In addition to examining the determinants of debt maturity mismatch, this study extends its analysis to explore the probability outcomes of such mismatches. Specifically, this

study investigates the potential impact of maturity mismatches on the cost of debt. The rationale behind this analysis stems from the observation that short-term debt typically carries lower interest rates compared to long-term debt. Consequently, firms with higher levels of maturity mismatches are expected to experience lower debt costs due to the advantageous interest rate differentials associated with short-term borrowing. However, this reduction in interest expenses emerges as a potential consequence of the maturity mismatch—not as its initial cause.

One important point to discuss is that the potential for reducing interest charges is not the reason why companies practice maturity mismatching. In the basic regression models, this chapter explored how financial constraints affect debt maturity decisions. The findings indicate that companies perceived as financially constrained engage in more mismatching by using more short-term debt. This preference, however, is not primarily driven by an intention to reduce interest expenses. Instead, it often reflects the practical constraints faced by these firms, particularly in contexts like China, where companies find it challenging to secure long-term financing.

Subsequently, when such firms engage in debt maturity mismatches by leveraging more short-term debt, they may incidentally benefit from lower interest expenses compared to what they would have incurred with long-term debt. The decision to opt for short-term debt is more about accessibility and less about cost savings from the outset in the Chinese market. Thus, while lower cost-of-debt might appear as a beneficial outcome of maturity mismatch, it is critical to recognize this as a secondary effect rather than a primary motive. Moreover, even if a company manages to reduce its interest expenses through maturity mismatches, the potential disadvantages associated with refinancing risks and repayment pressures may outweigh these benefits in some cases.

Next, this study explores whether maturity mismatch can indeed reduce debt costs. To gain deeper insights into the relationship between debt maturity mismatch and the cost of debt, this study further divides the sample based on the nature of ownership of the

enterprises, distinguishing between state-owned and non-state-owned firms. This distinction allows for an examination of how ownership structure influences the relationship between maturity mismatch and debt costs. The rationale behind this division lies in the potential differences in financial policies and access to financing between state-owned and non-state-owned firms (Li *et al.*, 2006; Bertrand *et al.*, 2018). State-owned enterprises often have unique characteristics and operate under different financial constraints compared to their non-state-owned counterparts. These differences affect their ability to strategically employ maturity mismatches and the subsequent impact on debt costs. The analysis will examine whether the observed negative relationship between debt maturity structure and cost of debt holds true for both ownership types or if there are variations in the magnitude or direction of this relationship. To test this assumption, this study builds the following model:

$$Debt\ Cost_{i,t} = \alpha + \beta * Mismatch_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

Specifically, $Debt\ Cost_{i,t}$ is measured by the ratio of interest cost to average debt of firm i in year t . The variable $Mismatch_{i,t}$ consisting of both a ratio variable (Mismatch) and a dummy variable (DM). The controls are the same as in the previous baseline model. The definitions of these variables can be found in Table 3.1.

3.3.5.2 Maturity Mismatch and Stock Crash Risk

In addition to examining the impact on the cost of debt, this study extends its analysis to investigate the potential consequences of debt maturity mismatch on stock crash risk. The study considers the implications of successive renewal and negotiation costs associated with short-term contracts, which can increase debt service pressure and elevate the risk of financial distress (Myers, 1977; Bleakley and Cowan, 2010). In financially distressed firms, managers are more inclined to withhold negative information to secure external funding. However, when the accumulation of bad news becomes inevitable, the disclosure of such information can lead to higher stock crashes

(Chen *et al.*, 2001; Kim *et al.*, 2011a; Kim *et al.*, 2011b).

This section adds a discussion suggesting that the test relates to the detection of increased maturity mismatch caused by information asymmetry discussed earlier, because the risk of stock price crash is related to information asymmetry. This raises questions about the causal relationship between stock price crash risk and maturity mismatch. Although stock price crash risk is associated with information asymmetry, it is not a comprehensive proxy for it. In this section, the market-adjusted weekly return of stock (NCSKEW) and the down-to-up volatility of firm-specific weekly returns (DUVOL) are used to quantify stock price crash risk. These indicators are more frequently used in the financial literature for measuring stock price crash risk.

During periods when a company is visibly at risk of a stock price crash, securing financing becomes exceedingly difficult. Lenders, wary of the heightened risk of default, are typically reluctant to provide any form of financial support, be it long-term or short-term debt, until the company returns to normal. This aversion is due to the potential for substantial financial losses that could arise if the company fails to stabilize its operations and fulfill its debt obligations. Thus, in reality, stock price crash risk has the potential to be a consequence of maturity mismatch rather than a cause.

To empirically test the assumption that debt maturity mismatch exacerbates stock crash risk, this study constructs the following model:

$$Crash\ risk_{i,t} = \alpha + \beta * Mismatch_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t}$$

Specifically, $Crash\ risk_{i,t}$ is measured by the NCSKEW and the DUVOL. The detailed construction and calculation of these indicators are provided in Appendix D. In addition to the crash risk indicators mentioned, this study incorporates the same control variables as those used in the previous baseline model. A comprehensive explanation of the control variables can be found in Table 3.1.

3.3.6 Method for Robustness Testing

3.3.6.1 Employing Alternative Indicators for Financial Constraints

The above analysis of financial constraints is based on the WW index (Whited and Wu, 2006). In this subsection, the study conducts robustness tests by employing alternative measures of financial constraints. Specifically, the KZ index (Kaplan and Zingales, 1997) and the SA index (Hadlock and Pierce, 2010) are used as alternative measures to assess the level of financial constraints. The KZ index and the SA index offer different perspectives on the financial constraints faced by firms, providing additional insights into the relationship between financial constraints and the variables of interest. The detailed calculations for the KZ index and the SA index can be found in Appendix A. By employing multiple measures of financial constraints, the study enhances the robustness of the analysis and strengthens the validity of the findings.

3.3.6.2 Employing Alternative Indicators for Bankruptcy Risk

The indicator of bankruptcy risk used in the baseline module is developed by Bharath and Shumway (2008). In this robustness test, the study considers alternative measures of bankruptcy risk as a means to validate the results obtained from the baseline model. Following the methodology proposed by Berndt *et al.* (2004), this study applies the Expected Default Frequency (EDF) developed by Moody's KMV and Merton (1974) separately as alternatives to measure bankruptcy risk. By considering multiple measures of bankruptcy risk, the study strengthens the robustness of the analysis and provides a more comprehensive assessment of the relationship between bankruptcy risk and the variables under investigation. The detailed calculations for EDF_{Merton} and EDF_{KMV} index can be found in Appendix B.

3.3.6.3 Employing Alternative Indicators for Information Asymmetry

In this study, the inclusion of stock turnover as an additional indicator of information asymmetry serves as a robustness test, further validating the findings. Drawing on the arguments presented by Eckbo and Norli (2005), higher turnover rates typically indicate greater liquidity in the stock market, whereas lower turnover rates suggest reduced liquidity and a higher liquidity risk burden. The interpretation of turnover in stock trading revolves around the idea that informed traders, who have close connections to the firms, possess superior information about the firms' business conditions and prospects compared to other traders. In contrast, uninformed traders, concerned about potential losses stemming from their informational disadvantage, demand a "lemon premium" as compensation for the adverse selection issues they face. Insights from Gervais *et al.* (2001) indicate that, at lower turnover levels, investors are less likely to acquire information about the intrinsic price of a stock through order flow. However, when the turnover rate surpasses a certain threshold, information asymmetries decrease.

Moreover, higher turnover rates imply lower liquidity risk for the stock, consequently reducing the required risk premium for future investments, as highlighted by Acharya and Pedersen (2005). Generally, a high turnover rate signifies greater trading activity and information dissemination, leading to faster incorporation of information in the market and increased disclosure. Additionally, a higher turnover rate signifies increased market participation, facilitating the exchange and transmission of information. As a result, higher turnover rates can alleviate information asymmetry and enhance market efficiency. On the other hand, low turnover levels provide more information regarding the uncertainty associated with a stock. Therefore, firms with high turnover rates tend to exhibit lower levels of information asymmetry.

By incorporating turnover as a measure of information asymmetry, this study aims to examine the robustness of the findings regarding the relationship between information asymmetry and maturity mismatch.

3.3.6.4 Employing Alternative Indicators for Corporate Governance

To test the robustness of the results regarding corporate governance and debt maturity mismatch, this study incorporates a different corporate governance index, as proposed by Zhou *et al.* (2017). The authors selected eight corporate governance variables and used principal component analysis to construct a comprehensive evaluation index of corporate governance quality. This alternative index captures various aspects of corporate governance, including the separation of the positions of chairman and general manager, the proportion of independent directors, the proportion of shares held by the top ten shareholders, the proportion of shares held by the top shareholder, the size of the board of directors and supervisory board, the sum of the remuneration of the top three executives, and the shareholdings held by the management.

The composition of the alternative corporate governance index proposed by Zhou *et al.* (2017) indeed exhibits similarities to the Corporate Governance Index used in the baseline regression, as they share some common variables, such as the separation of the positions of chairman and general manager, the proportion of independent directors, and board size. However, there are notable differences in their composition, which highlight distinct aspects of corporate governance. One difference lies in the measurement of management compensation. While the original index considers the compensation of all executives, this alternative index focuses solely on the compensation of the top three executives. This variation reflects a more concentrated assessment of executive compensation practices within the organization. Another difference pertains to the inclusion of the supervisory board. The alternative index incorporates the size of the supervisory board as a governance variable, whereas the original index incorporates balances related to equity ownership. This difference indicates a divergence in emphasis.

Overall, the two indices share similarities in their composition and capture various dimensions of corporate governance. These differences arise from the distinct variable

selection and considerations employed in constructing each index. By utilizing this alternative corporate governance index, this study can examine whether the relationship between corporate governance and debt maturity mismatch remains consistent.

3.3.6.5 Controlling for the Impact of Macroeconomics Factors

In addition to controlling for year and industry fixed effects in the baseline models, it is important to account for macroeconomic factors that can affect the results. To address this concern, this study incorporates two key macroeconomic parameters: the amount of broad money (M2) and the size of the Gross Domestic Product (GDP). The consideration of macroeconomic variables is crucial as they capture the overall economic environment in which firms operate. Changes in M2 and GDP can reflect shifts in monetary policy, economic growth, and financial market conditions, which have implications for the variables under investigation. By adding M2 and GDP to the baseline models, this study can examine the robustness of the findings and assess whether the inclusion of macroeconomic factors alters the relationships observed.

3.3.6.6 Controlling for the Impact of Peer-to- Peer lending (P2P)

It is worth discussing that the influence of P2P lending between 2012 and 2018 had a profound impact on China's financial sector. This period marks a significant phase in the evolution of China's financial markets, reflecting broader trends towards digital finance and the challenges that come with it. P2P lending became popular in China in 2012. However, by mid-2018, the sector experienced a sudden surge in bankruptcies.

P2P lending platforms facilitated the democratization of finance by enabling direct matches between borrowers and investors, bypassing conventional banking channels. This often resulted in more favorable lending terms for borrowers, including lower interest rates and more flexible repayment terms compared to those offered by

traditional banks. Moreover, P2P lending provided a vital source of credit during a time when banks were tightening their lending practices. During this period, these non-traditional lending platforms experienced explosive growth, significantly altering the financial landscape, especially for small and medium-sized enterprises (SMEs) and individual borrowers who previously had limited access to traditional banking services.

While P2P platforms primarily served small and medium-sized enterprises (SMEs) and individual borrowers, this chapter focuses on listed firms. Listed companies are more likely to join the P2P model as P2P investors, rather than borrowers (Pan *et al.*, 2021). These companies, predominantly financial entities such as banks and securities firms, engage in P2P activities primarily as a strategic investment to generate high profits. For instance, in 2014, Minsheng Bank launched its own P2P online lending platform. Similarly, GF Securities Company announced that it had invested nearly 100 million yuan in the Shenzhen-based P2P online lending platform Tou Na.com, acquiring a shareholding ratio of over 30%. Even state-owned listed companies, such as Beijing Haidian State Investment Corporation, have initiated P2P online lending platform projects. This trend underscores the strategic investment approach of listed companies in the P2P sector.

It is worth discussing that the influence of P2P lending between 2012 and 2018 had a profound impact on China's financial sector. This period marks a significant phase in the evolution of China's financial markets, reflecting broader trends towards digital finance and the challenges that come with it. Given the substantial changes during this period, it was crucial to treat the years 2012 to 2018 as a distinct phase in the analysis of China's financial markets to thoroughly understand the impact of these non-traditional financial services.

To accurately assess the influence of this pivotal period and ensure the robustness of our conclusions, this test involved extracting samples exclusively from 2012 to 2018 for regression analysis while excluding data from other years. This methodological

choice was designed to isolate the effects of the significant financial shifts during this period, ensuring that the overall conclusions of our research remain steadfast.

3.4 Results and Discussion

3.4.1 Descriptive Statistics

Table 3.2 presents the summary statistics for our dependent variable, independent variables, and control variables. The table includes the number of observations, mean, median, standard deviation, as well as the minimum and maximum values for each variable. For the dependent variable, Mismatch, we observe a mean value of -0.02. This indicates that, on average, Chinese companies' long-term financing does not cover their long-term investments. There is a general tendency to rely on short-term financing for long-term investments. The mean of the dummy variable DM, which represents maturity mismatch, is 0.4. This suggests that approximately 40% of the companies in our sample engage in maturity mismatching practices, where the maturity of their financing does not align with the maturity of their investments.

Table 3.3 presents the correlation matrix, examining the relationships between the dependent variable and the control variables. Notably, the correlations between the dependent variable and the control variables are all below 0.5. This indicates that there are no significant issues of multicollinearity among the variables.

Table 3. 2: Descriptive Statistics: Debt Maturity Mismatch and Firm Characteristics

Variable	Mean	Min	Median	Max	SD	Obs
Mismatch	-0.02	-0.37	-0.02	0.31	0.095	31083
DM	0.40	0.00	0.00	1.00	0.490	31083
WW Index	-1.00	-1.26	-1.00	1.29	0.091	28609
Infor_Asy	-0.10	-4.74	0.49	-0.05	0.831	31070
EDF _{Bhsh}	0.00	0.00	0.00	0.09	0.001	31083
GOV	-0.10	-3.02	-0.25	3.72	0.979	24997
Size	21.96	19.18	21.78	26.44	1.270	31083
Lev	0.45	0.04	0.45	0.96	0.201	31083
Tobin q	1.89	0.82	1.50	17.65	1.231	31083
ROA	0.03	-0.58	0.03	0.22	0.065	31083
ROE	0.05	-2.36	0.07	0.38	0.172	31002
Cash	0.05	-0.24	0.05	0.29	0.073	31083
Liquidity	2.11	0.19	1.47	25.40	2.240	31083
Profit	0.05	-0.56	0.05	0.30	0.068	31083
Age	1.92	0.00	2.08	3.30	0.872	31083
State	0.57	0.00	1.00	1.00	0.496	31083
PPE	0.25	0.00	0.21	0.81	0.176	31083
Debt Cost	0.00	0.00	0.00	0.15	0.011	28410
NCSKEW	-0.25	-2.71	2.31	-0.22	0.703	30371
DUVOL	-0.17	-1.59	1.52	-0.17	0.477	30371
KZ Index	2.12	-6.35	2.02	15.45	2.965	31083
EDF _{KMV}	0.23	0.00	0.102	1.00	0.301	31080
EDF _{Merton}	0.00	0.00	0.00	0.74	0.006	31080
Turnover	0.02	0.00	0.02	0.22	0.019	31083
GOV _{Robust}	-0.00	-4.20	-0.11	3.44	1.000	19961
M2	13.62	11.81	13.92	14.50	0.795	31083
GDP	13.04	11.51	13.29	13.81	0.685	31083

Table 3. 3: Correlation Matrix for Debt Maturity Mismatch and Firm Characteristics

	Mis	DM	WW	KZ	Inf	Gov	Size	Lev	Tobin	ROA	ROE	Cash	Liqui	Profit	Age	State	PPE
Mis	1																
DM	0.74*	1															
WW	0.17*	0.15*	1														
KZ	0.34*	0.27*	0.26*	1													
Inf	-0.01*	-0.03*	-0.09*	0.01	1												
Gov	-0.04*	-0.05*	0.32*	-0.12*	-0.12*	1											
Size	-0.05*	-0.06*	-0.81*	-0.04*	0.14*	-0.43*	1										
LEV	0.08*	0.06*	-0.22*	0.55*	0.04*	-0.29*	0.45*	1									
Tobin	-0.13*	-0.08*	0.24*	-0.13*	-0.12*	0.10*	-0.34*	-0.29*	1								
ROA	-0.25*	-0.19*	-0.25*	-0.43*	-0.02*	-0.04*	0.03*	-0.34*	0.15*	1							
ROE	-0.17*	-0.13*	-0.26*	-0.28*	0.01	-0.08*	0.11*	-0.17*	0.05*	0.84*	1						
Cash	-0.39*	-0.36*	-0.19*	-0.42*	0.03*	-0.11*	0.04*	-0.15*	0.08*	0.34*	0.21*	1					
Liqui	-0.07*	-0.05*	0.15*	-0.42*	-0.05*	0.25*	-0.28*	-0.61*	0.18*	0.19*	0.07*	-0.00	1				
Profit	-0.26*	-0.20*	-0.27*	-0.37*	-0.02*	-0.08*	0.07*	-0.24*	0.12*	0.98*	0.81*	0.37*	0.11*	1			
Age	-0.07*	-0.07*	-0.25*	0.17*	0.09*	-0.42*	0.43*	0.35*	-0.02*	-0.15*	-0.07*	0.01*	-0.32*	-0.11*	1		
State	0.02*	0.00	-0.10*	0.25*	0.13*	-0.51*	0.24*	0.28*	-0.14*	-0.06*	-0.01	0.05*	-0.23*	-0.02*	0.42*	1	
PPE	0.02*	0.01*	-0.00	0.15*	0.07*	-0.18*	0.05*	0.07*	-0.13*	-0.07*	-0.06*	0.27*	-0.25*	-0.01*	0.07*	0.22*	1

* indicates a significant level.

3.4.2 Baseline Model Regression Analysis

The results of the baseline model, as presented in Table 3.4, provide valuable insights into the relationship between financing constraints, information asymmetry, bankruptcy risk, corporate governance, and the maturity mismatch behaviors of Chinese firms.

In models (1) and (2), the positive and significant coefficients on the variable WW support Hypothesis 1, indicating that firms facing greater financing constraints are more likely to engage in maturity mismatch by using short-term debt for long-term investments. This result aligns with previous theoretical frameworks and empirical studies (Campello *et al.*, 2010; Acharya *et al.*, 2011; Fan *et al.*, 2012). This finding suggests that firms facing financing constraints, which impede their ability to secure long-term funding, opt for short-term debt to meet their investment needs. This strategic decision can create a mismatch between the maturity of the debt and the duration of their long-term investments. By relying on short-term debt, these firms can bridge the funding gap and continue their investment activities, albeit at the cost of potentially higher refinancing risk and vulnerability to changes in market conditions. The results highlight the importance of addressing financing constraints and creating an environment that supports firms in accessing long-term funding sources, which can contribute to more sustainable and balanced capital structures.

Upon examining the model concerning information asymmetry, we observe notably positive coefficients for the variable representing information asymmetry in both Model (3) and Model (4). These findings underscore the substantial impact of information asymmetry on debt maturity mismatch. The results align with Hypothesis 2, suggesting that firms characterized by higher levels of information asymmetry are more inclined to adopt the practice of debt maturity mismatches. Previous studies have corroborated the existence of highly asymmetrical information dynamics between capital suppliers and firms in the Chinese capital market (Xu *et al.*, 2013; Allen *et al.*,

2019). In such circumstances, companies are compelled to engage in debt maturity mismatches as a strategic response to navigate the constraints imposed by information asymmetry. Therefore, this empirical result is fully consistent with the actual situation in China's market.

Additionally, it's worth noting that the observed positive correlation between information asymmetry and debt maturity mismatch reflects the challenges that companies face in effectively managing their capital structure amid informational disparities. Policymakers can take specific measures to reduce information asymmetry, fostering a fair and effective financing environment. Enhancing transparency in communication through comprehensive disclosures, adhering to standardized reporting practices, and engaging in regular communication with stakeholders are key strategies. These measures demonstrate a commitment to transparency, openness, and fairness in financial dealings, creating an environment where financing decisions are based on a more equitable understanding of the company's financial position and prospects.

Furthermore, the results of models (5) and (6) indicate that firms' bankruptcy risk significantly influences their maturity mismatch behaviors. The negative and significant coefficients on the bankruptcy risk variable (EDF) suggest that firms with higher bankruptcy risk are less likely to engage in maturity mismatches. This finding supports the notion proposed in Hypothesis 3. Specifically, when firms have a higher risk of bankruptcy, they become more cautious about taking on short-term debt, as it can lead to greater vulnerability during financial difficulties. The fear of defaulting on short-term obligations and the subsequent liquidation of assets at unfavorable terms can have detrimental effects on the firm's value and future prospects.

Moreover, lenders are typically reluctant to extend credit under such conditions, which can severely restrict the firm's financial flexibility. As a result, these firms frequently need to scale back or completely halt long-term investments. This not only diminishes the feasibility of engaging in maturity mismatches but also reduces the necessity of

doing so. Essentially, when companies at high risk of bankruptcy encounter long-term investment opportunities, their preference would ideally be for corresponding long-term financing. However, in the absence of such long-term debt options, they are compelled to curtail their investment activities. The choice between leveraging long-term debt or reducing long-term investments leads to a decreased reliance on maturity mismatches, as firms aim to align their debt profiles more closely with their reduced investment activities. Consequently, these firms prioritize preserving their assets and minimizing the risks associated with maturity mismatches. This finding is consistent with previous research and theoretical expectations (Wiggins, 1990; Guedes and Opler, 1996; Berger *et al.*, 2005; Della Seta *et al.*, 2020).

Finally, models (7) and (8) examine the impact of corporate governance on firms' maturity mismatch behaviors. The negative and significant coefficient on the corporate governance variable supports Hypothesis 4, suggesting that firms with higher levels of corporate governance are less likely to engage in maturity mismatches. This finding aligns with previous theories (Knopf *et al.*, 2002; Brockman *et al.*, 2010; Tosun and Senbet, 2020) and implies that a well-functioning corporate governance system can enhance firms' access to long-term loans and reduce their reliance on short-term debt for long-term investments. When firms have robust corporate governance mechanisms, it signifies effective checks and balances within the organization. These mechanisms can include independent board directors, transparent reporting systems, and accountability structures. Such governance practices instill confidence in external finance providers and shareholders, indicating that the firm's management acts in the best interest of all stakeholders. Therefore, when faced with long-term investments, these firms are more likely to have access to long-term funding, thereby reducing debt maturity mismatch.

Overall, the results of the baseline model provide empirical support for the hypotheses related to financing constraints, information asymmetry, bankruptcy risk, and corporate governance in explaining firms' maturity mismatch behaviors. These findings

contribute to understanding the factors influencing firms' debt maturity structure decisions and have important implications for policymakers, investors, and practitioners in managing financing risks and improving corporate governance practices.

Table 3. 4: Regression Analysis for Determinants of Maturity Mismatch

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Financial constraints		Information asymmetry		Bankruptcy risk		Corporate governance	
	Mismatch	DM	Mismatch	DM	Mismatch	DM	Mismatch	DM
WW	0.0234*** (2.59)	0.4088*** (2.70)						
Inf			0.0040*** (5.99)	0.0302*** (2.62)				
EDF _{bhsh}					-5.4469*** (-4.69)	-13.3378*** (-2.81)		
GOV							-0.0023* (-1.87)	-0.0219* (-1.79)
Size	-0.0036*** (-2.86)	0.0134 (1.09)	-0.0048*** (-4.33)	-0.0077 (-0.82)	-0.0044*** (-3.98)	-0.0090 (-1.39)	-0.0072*** (-4.88)	-0.0400*** (-4.06)
Lev	-0.0687*** (-10.82)	-0.4800*** (-6.91)	-0.0626*** (-10.41)	-0.4547*** (-6.81)	-0.0640*** (-10.72)	-0.2227*** (-7.23)	-0.0643*** (-9.10)	-0.3916*** (-5.36)
Tobin	-0.0020*** (-2.94)	-0.0047 (-0.49)	-0.0016*** (-2.60)	0.0051 (0.55)	-0.0021*** (-3.32)	0.0064** (2.07)	-0.0021*** (-3.07)	-0.0424*** (-5.00)
ROA	-0.1221* (-1.68)	-2.7170*** (-2.79)	-0.1091* (-1.66)	-3.0020*** (-3.25)	-0.1056 (-1.61)	-1.0106*** (-3.21)	-0.1026 (-1.40)	-3.9050*** (-3.83)
ROE	-0.0026 (-0.38)	0.1402 (1.40)	-0.0054 (-0.88)	0.1475 (1.56)	-0.0047 (-0.79)	0.0226 (0.73)	0.0022 (0.33)	0.1786 (1.64)
Cash	-0.8523*** (-92.61)	-12.2305*** (-69.68)	-0.8601*** (-98.13)	-12.6251*** (-74.17)	-0.8615*** (-98.54)	-3.4236*** (-77.58)	-0.8724*** (-87.23)	-12.8991*** (-67.73)
Liqui	-0.0068*** (-10.96)	-0.0559*** (-10.50)	-0.0063*** (-11.65)	-0.0559*** (-11.11)	-0.0064*** (-11.72)	-0.0249*** (-10.35)	-0.0055*** (-10.21)	-0.0379*** (-7.40)

Profit	0.0399 (0.64)	1.4528* (1.74)	0.0362 (0.63)	1.5751** (1.96)	0.0323 (0.56)	0.6055** (2.16)	0.0040 (0.06)	2.4773*** (2.80)
Age	-0.0248*** (-15.32)	-0.1490*** (-11.84)	-0.0236*** (-15.62)	-0.1492*** (-12.58)	-0.0235*** (-15.59)	-0.1048*** (-12.48)	-0.0222*** (-12.55)	-0.1428*** (-11.00)
State	0.0036 (0.62)	0.0595*** (2.81)	0.0039 (0.69)	0.0524** (2.54)	0.0033 (0.60)	-0.0156 (-0.46)	-0.0064 (-0.71)	0.0706*** (3.02)
PPE	0.0213*** (3.48)	1.1492*** (19.11)	0.0226*** (3.84)	1.1944*** (20.36)	0.0230*** (3.91)	0.0849*** (2.76)	0.0211*** (2.83)	1.2443*** (18.75)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.1817*** (6.79)	0.6498*** (3.04)	0.1807*** (7.07)	0.7099*** (3.40)	0.1729*** (6.79)	1.0338*** (7.22)	0.2791*** (7.52)	1.5825*** (7.11)
R2 / Pseudo R2	0.3663	0.2308	0.3767	0.2387	0.3776	0.2301	0.3619	0.2335
Obs	28609	28609	31070	31070	31083	31083	24997	24997

*, ** and *** indicate 10%, 5% and 1% significant level

Additionally, to address the issue of endogeneity and potential omitted variable bias, this study employs dynamic models and lagged models to estimate the regressions. By calculating the difference between the variable's value in year t and its value in the previous year ($t-1$), the study captures the annual change in the variable. Using the annual change as a measure allows for the identification of the factors driving the changes in the variable of interest. It helps to separate the impact of time-varying factors from the inherent characteristics of the firm or other unobserved factors that remain constant over time. Specifically, the variable $DMismatch$ represents the change in the maturity mismatch of firm i from year $t-1$ to year t . Similarly, DFC captures the change in financial constraint, $DEDF$ represents the change in bankruptcy risk, and $DGOV$ represents the change in the governance index, all from year $t-1$ to year t . Furthermore, $DControls$ denotes the change in the control variables of firm i from year $t-1$ to year t . Table 3.5 presents the results for the difference models, where the current year's value minus the previous year's value is used in the regressions.

After controlling for potential endogeneity issues arising from omitted variables, the results in Table 3.5 demonstrate that the main variables of interest, namely DWW , $DINF$, $DEDF$, and $DGOV$, continue to exhibit the same direction and remain statistically significant. These findings are consistent with the results obtained in the baseline model, suggesting that the relationships between these variables and the dependent variable are unaffected by endogeneity concerns.

Moreover, the study incorporates lagged variables to address potential endogeneity issues in the analysis. By including these lagged variables, this study can mitigate concerns related to reverse causality. The results presented in Table 3.6 provide compelling evidence that the main variables of interest maintain their significance and exhibit consistent directional relationships even after accounting for endogeneity. Specifically, the one-period lagged variables ($L.WW$, $L.INF$, $L.EDF$, $L.GOV$) consistently support our hypotheses, further reinforcing the validity of the conclusions. Therefore, by introducing difference models and lagged variables, and controlling for

omitted variables and causality, the study enhances the reliability and robustness of the results. The consistent findings across different model specifications strengthen confidence in the relationships identified and provide stronger evidence for the hypotheses. Consequently, it can be concluded that the results are reliable and that endogeneity problems have been controlled.

Table 3. 5: Regression Analysis for Dynamic Difference Models for Determinants of Maturity Mismatch.

	(1)	(2)	(3)	(4)
	DMismatch	DMismatch	DMismatch	DMismatch
DWW	0.0193** (2.41)			
DInf		0.0031*** (3.67)		
DEDF			-0.6859*** (-3.42)	
DGOV				-0.0031* (-1.72)
DControls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Industry Fixed effect	Yes	Yes	Yes	Yes
Constant	0.0149 (0.53)	0.0172 (1.62)	0.0175 (1.63)	0.0658 (1.13)
R ²	0.3577	0.3764	0.3783	0.3176
Obs	24316	26631	26644	20648

*, ** and *** indicate 10%, 5% and 1% significant level.

Table 3. 6: Regression Analysis for Lagged Models for Determinants of Maturity Mismatch

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Financial constraints		Information asymmetry		Bankruptcy risk		Corporate governance	
	Mismatch	DM	Mismatch	DM	Mismatch	DM	Mismatch	DM
L.WW	0.0268*** (3.00)	0.4362*** (4.13)						
L.INF			0.0037*** (4.25)	0.0448*** (3.98)				
L.EDF _{bhsh}					-1.1087* (-1.71)	-15.7655* (-1.80)		
L.GOV							-0.0027* (-1.67)	-0.0007* (-1.81)
L.Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.1347 (0.52)	0.6736*** (5.51)	0.1644*** (4.57)	1.2559*** (6.91)	0.1743*** (4.87)	1.2278*** (6.90)	0.1823* (1.91)	0.3094*** (2.61)
R ² / Pseudo R ²	0.1343	0.1434	0.1421	0.1450	0.1424	0.1389	0.1560	0.1407
Obs	25146	25130	26701	26704	26712	26712	21032	21032

*, ** and *** indicate 10%, 5% and 1% significant level.

3.4.3 Additional Analysis: Examining the Consequence of Debt Maturity Mismatch

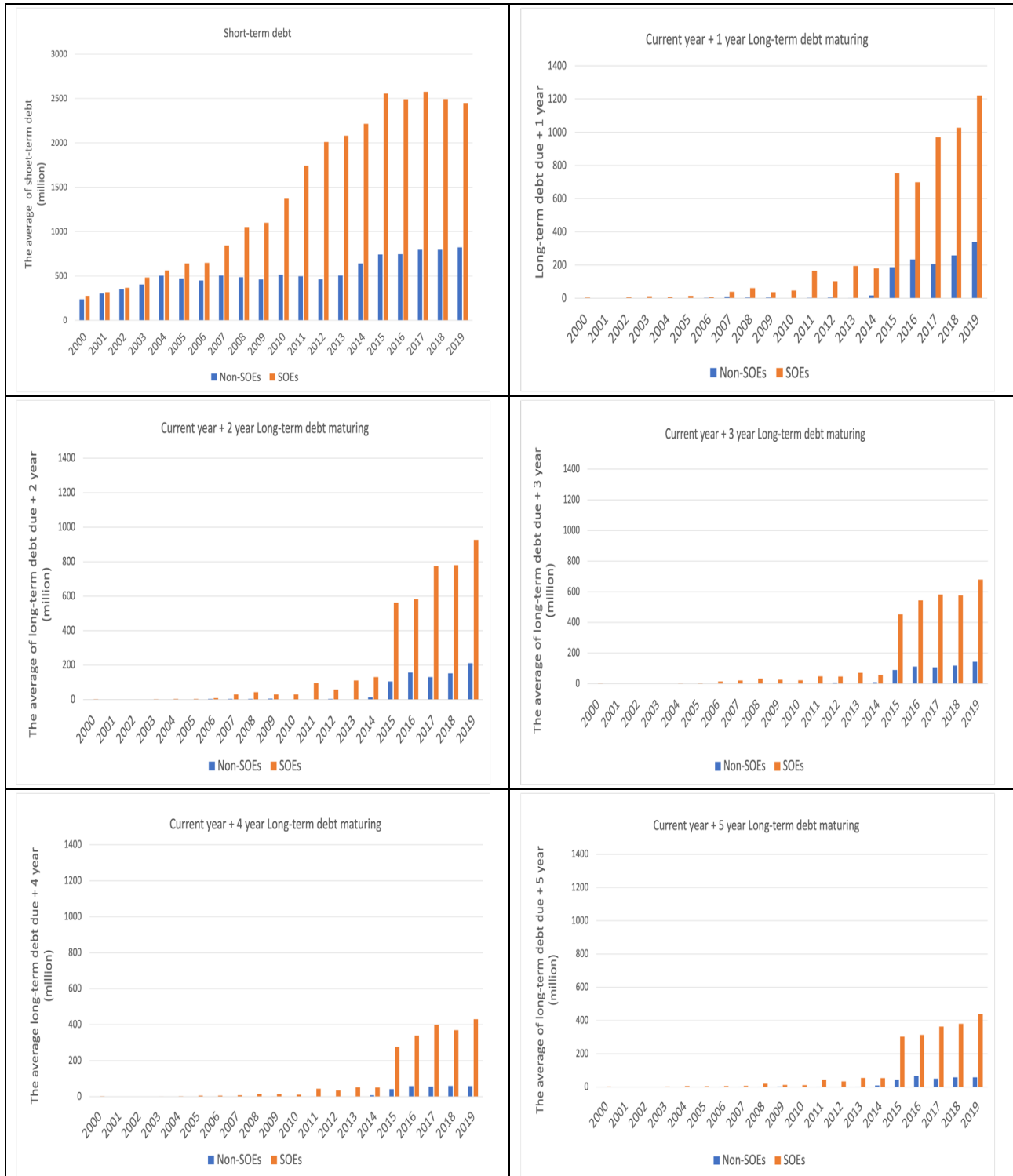
3.4.3.1 Debt Maturity Mismatch and Debt Cost

In the previous analysis, this study focused on identifying the factors that lead to companies engaging in maturity mismatch of their debt. However, the consequences of using short-term debt for long-term investment were not addressed. This additional analysis aims to investigate the implications of maturity mismatch on debt cost, considering the heterogeneity in ownership structure, specifically between SOEs and non-SOEs.

First, debt data of various maturities were collected from the Capital IQ database to understand the distribution and comparison of specific debt maturities between state-owned enterprises (SOEs) and private enterprises (non-SOEs). As depicted in Figure 3.4, SOEs significantly surpass non-SOEs in both short-term and long-term debt across various maturities. Figure 3.4 provides a visual representation that vividly showcases the significant imbalance in the debt market, heavily favoring SOEs over non-SOEs.

Then, this analysis conducts t-tests on the average amount of debt for different maturities from 2000 to 2019 (as shown in Table 3.7). The results reveal that SOEs have access to higher levels of debt compared to non-SOEs, irrespective of the maturity of the debt. These findings are statistically significant at the 1% level. In Panel B of Table 3.7, another t-test is performed to compare the debt costs between SOEs and non-SOEs. The results indicate that the debt costs for SOEs are significantly lower than those for non-SOEs. This suggests that, despite maturity mismatches potentially influencing the cost of debt, the effect varies depending on the ownership structure.

Figure 3. 4: Comparative Data on Debt Amount with Varying Maturities of State-Owned Enterprises (SOEs) and Non-State-Owned Enterprises (Non-SOEs) from 2000 to 2019



The data is sourced from the S&P Capital IQ database.

Table 3. 7: T-Test for Mean Debt across Different Maturities: A Comparison of State-Owned and Non-State-Owned Enterprises in China (2000-2019).

Panel A: T-test for the mean of debts with different maturities for SOEs and non-SOEs					
Types	Whole sample	SOEs	Non-SOEs	Difference of mean	T-statistics
ST	1137.159	1530.354	655.1743	875.1795***	18.6138
LT Due +1	239.2619	319.937	140.3689	179.5681***	6.4892
LT Due +2	172.0054	241.374	86.97209	154.4019***	6.7590
LT Due +3	130.2486	183.6389	64.80182	118.8371***	6.6699
LT Due +4	79.72946	119.341	31.17283	88.1682***	7.1957
LT Due +5	79.22858	118.5994	30.96712	87.63224***	7.1976
Obs	28328	15601	12727		
Panel B: T test for debt cost of SOEs and non-SOEs					
Mean of debt cost	0.0371	0.0035	0.0040	-0.0005***	-4.3154
Obs	28328	16655	11755		

* The above figures are in millions. ST means short-term debt, representing debt mature within one year. LT Due +1 represents long-term with a maturity of more than one year; LT Due +2 represents long-term with a maturity of more than two year; LT Due +3 represents long-term with a maturity of more than three year; LT Due +4 represents long-term with a maturity of more than four year; LT Due +5 represents long-term with a maturity of more than five year. *, ** and *** indicate 10%, 5% and 1% significant level.

The regression results in Table 3.8 not only confirm the findings of the t-tests but also provide more detailed information on the relationship between maturity mismatch and debt cost. Models (1) and (2) run regressions on the full sample, and the coefficients on Mismatch and DM are found to be significantly negative. This indicates that maturity mismatch does indeed save debt costs. Combining these regression results with the previous baseline findings, it can be concluded that the decision of whether a company engages in maturity mismatching is influenced by various factors. However, regardless of the influencing factors, the practice of maturity mismatching can result in interest cost savings for the company. This outcome, however, is not primarily driven by an intention to reduce interest expenses. Instead, it often reflects the practical constraints faced by these firms, particularly in contexts like China, where companies find it challenging to secure long-term financing. Therefore, while lower cost-of-debt might appear as a beneficial outcome of maturity mismatch, it is critical to recognize this as a secondary effect rather than a primary motive. Moreover, even if a company manages

to reduce its interest expenses through maturity mismatches, the potential disadvantages associated with refinancing risks and repayment pressures may outweigh these benefits in some cases.

However, the influence of debt maturity mismatch on debt cost differs for state-owned and non-state-owned enterprises. To investigate this heterogeneity, the sample is further divided based on the nature of ownership. The results reveal that the motivation for reducing the cost of debt appears to be stronger for non-state-owned firms compared to state-owned firms. This difference can be attributed to the preferential lending rates that state-owned enterprises enjoy for long-term debt due to their political connections. Consequently, using more short-term debt for long-term investment does not significantly affect the cost of debt for state-owned enterprises. Conversely, non-state-owned enterprises face financing constraints and are more inclined to rely on short-term loans. By utilizing a larger proportion of short-term debt instead of long-term debt, they can effectively reduce their interest costs. However, it is important to consider that while interest costs are saved, there is an increased risk of refinancing and additional costs associated with renegotiating debt covenants.

Table 3. 8: Regression Analysis for Debt Cost and Maturity Mismatch

	(1)	(2)	(3)	(4)	(5)	(6)
	The whole sample		Non-SOEs		SOEs	
	Debt cost	Debt cost	Debt cost	Debt cost	Debt cost	Debt cost
Mismatch	-0.0018*** (-2.69)		-0.0034*** (-3.49)		-0.0005 (-0.54)	
DM		-0.0002** (-2.00)		-0.0003* (-1.70)		-0.0002 (-1.20)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.0050 (-0.91)	-0.0050 (-0.91)	0.0049 (0.52)	0.0050 (0.53)	-0.0087 (-1.28)	-0.0086 (-1.26)
R ²	0.1624	0.1623	0.1572	0.1579	0.1631	0.1630
Obs	28315	28315	11731	11731	16584	16584

*, ** and *** indicate 10%, 5% and 1% significant level.

3.4.3.2 Debt Maturity Mismatch and Stock Crash Risk

While using short-term debt for long-term investment reduces the cost of debt, it is important to consider the potential negative consequences of maturity mismatch. One such consequence is an increased stock crash risk. In Table 3.9, the analysis reveals compelling evidence regarding the relationship between using short-term debt for long-term investment and stock crash risk. The coefficients on the variables “Mismatch” and “DM” are consistently positive and statistically significant across both models, where crash risk is measured by negative skewness of the market-adjusted weekly return of stock (NCSKEW) and down-to-up volatility of firm-specific weekly returns (DUVOL). Additional information on specific measures of stock collapse risk can be found in Appendix D. These findings suggest that the practice of employing short-term debt to fund long-term investments indeed contributes to an increase in stock crash risk. This suggests that companies engaging in maturity mismatching are more likely to experience higher stock crash risk.

This finding aligns with our previous discussion that excessive reliance on short-term debt can increase the likelihood of financial distress (Myers, 1977; Bleakley and Cowan, 2010). Financially distressed firms often employ various strategies to conceal unfavorable information in order to secure external funding. These strategies aim to present a more favorable financial position to attract potential investors or lenders. However, the eventual disclosure of accumulated bad news, when the firm can no longer hide it, can have detrimental effects on the firm’s stock price, leading to higher stock crashes. Therefore, financially distressed firms have strong incentives to conceal negative information in an attempt to maintain access to capital markets. By disguising their financial troubles, these firms hope to continue attracting capital and avoid a rapid decline in their stock prices.

Nevertheless, when the accumulated bad news reaches a tipping point, it becomes increasingly difficult for distressed firms to sustain their concealment strategy. At this

critical juncture, the disclosure of the concealed negative information becomes inevitable. Investors and the market, upon learning about the true financial condition of the firm, react swiftly and unfavorably, resulting in higher stock crashes (Chen et al., 2001; Kim *et al.*, 2011a, b).

Therefore, while using short-term debt for long-term investment has the benefit of reducing the cost of debt, it also carries the risk of increased stock crash risk due to potential financial distress and the implications of bad news disclosure. The implications of these findings are crucial for investors, market participants, and policymakers. Recognizing the risks associated with maturity mismatches and the concealment of bad news can help stakeholders make more informed decisions and develop appropriate risk mitigation strategies. Moreover, policymakers can consider implementing measures to enhance transparency and disclosure requirements, thereby reducing the potential for hidden risks and stock crashes.

Table 3. 9: Regression Analysis for Maturity Mismatch and Stock Crash Risk

	(1) NCSKEW	(2) NCSKEW	(3) DUVOL	(4) DUVOL
Mismatch	0.1580*** (2.63)		0.1390*** (3.41)	
DM		0.0208** (2.06)		0.0148** (2.37)
Controls	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Constant	0.0160 (0.08)	1.2159*** (6.88)	0.3462** (2.58)	0.3400** (2.55)
R ²	0.1025	0.1401	0.1305	0.1273
Observation	30280	30280	30280	30280

*, ** and *** indicate 10%, 5% and 1% significant level.

3.4.4 Robustness Testing

Table 3.10 presents the robustness results for key variable substitutions, examining the impact of alternative measurements on the coefficients of interest. The table demonstrates the robustness of our conclusions by replacing key variables with different proxies and indicators. First, the coefficients of the KZ Index and SA Index remain consistently positive and statistically significant across fixed effect models and probit models from model (1) to model (4). Therefore, this study concludes that financial constraints have a positive influence on debt maturity mismatch regardless of the alternative measurements used to evaluate this phenomenon.

Next, the study replaces the EDF_{bhsh} variable with EDF_{Merton} and EDF_{KMV} to examine the robustness of the bankruptcy risk measurement. The coefficients of EDF_{Merton} and EDF_{KMV} in models (5) to (8) are consistently negative and significant, aligning with the coefficient of EDF_{bhsh} in the baseline models. This confirms the robustness of the conclusions concerning the negative relationship between bankruptcy risk and debt maturity mismatch, despite using alternative bankruptcy measurements.

Furthermore, turnover rate is employed as an alternative measure of information asymmetry. Models (9) and (10) demonstrate that a higher share turnover rate is associated with a decrease in maturity mismatch behavior, indicating a lower level of information asymmetry. These results are consistent with the findings of the baseline models, further validating the positive relationship between information asymmetry and debt maturity structure.

Moreover, a different governance index developed by Zhou *et al.* (2018) replaces the original governance index used in the baseline models. The coefficients in models (11) and (12), based on the alternative governance index, are consistent with the coefficients of the original governance index, supporting the robustness of our conclusions regarding the negative impact of corporate governance on debt maturity mismatch.

Finally, this study introduces additional macroeconomic factors, namely the amount of broad money (M2) and the size of gross domestic product (GDP), into the baseline models to assess robustness. The results, presented in Table 3.10, indicate that all key variables remain statistically significant and exhibit the same sign as in the baseline models. This suggests that the inclusion of macroeconomic factors does not alter the relationships between these variables and debt maturity structure.

Table 3.12 specifically examines the period from 2012 to 2018, a time when P2P lending had a significant impact on China's financial markets. This targeted examination helps isolate the effects of these emerging financial channels during their most influential years. The results from this table demonstrate consistency with our baseline findings, underscoring that despite the dynamic changes and potential disruptions introduced by P2P platforms, the overall conclusions of our research remain consistent.

Table 3. 10: Robustness Regression Analysis of Key Variable Substitutions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Financial constraints				Bankruptcy risk				Information asymmetry		Corporate governance	
	Mis	DM	Mis	DM	Mis	DM	Mis	DM	Mis	DM	Mis	DM
KZ	0.0072*** (13.17)	0.0351*** (4.74)										
SA			0.0216*** (2.95)	0.1392*** (3.23)								
EDF _{Merton}					-0.6998*** (-3.32)	-13.8022*** (-7.01)						
EDF _{KMV}							-0.0219*** (-7.98)	-0.1899*** (-4.67)				
Turnover									-0.2046*** (-5.46)	-1.2438** (-2.26)		
GOV _{Robust}											-0.0069*** (-5.04)	-0.0320*** (-2.78)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.1233*** (4.53)	0.8241*** (3.83)	0.2570*** (7.09)	1.5275*** (5.74)	0.1679*** (6.57)	0.1145*** (4.41)	0.6151*** (2.96)	0.3587* (1.66)	0.1914*** (7.43)	0.8114*** (3.68)	0.2301*** (5.89)	0.3892 (0.91)
R ² / Pseudo R ²	0.3609	0.2277	0.3589	0.2274	0.3773	0.3779	0.2399	0.2391	0.3749	0.2387	0.3495	0.2440
Obs	28515	28515	28515	28515	30986	30986	30986	30986	30986	30986	19908	19908

*, ** and *** indicate 10%, 5% and 1% significant level.

Table 3. 11: Robustness Regression Analysis with Macroeconomic Factors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Financial constraints		Information asymmetry		Bankruptcy risk		Corporate governance	
	Mismatch	DM	Mismatch	DM	Mismatch	DM	Mismatch	DM
WW	0.0234*** (2.59)	0.4088*** (2.70)						
Inf			0.0040*** (5.99)	0.0302*** (2.62)				
EDF _{bhsh}					-5.4469*** (-4.69)	-13.3378*** (-2.81)		
GOV							-0.0023* (-1.87)	-0.0113*** (-1.67)
GDPSIZE	-0.2278 (-0.40)	-27.6472** (-2.26)	0.2769 (0.63)	-21.0545** (-2.03)	0.0296 (0.07)	-4.5564 (-1.58)	-0.1412 (-9.43)	-1.6819*** (-6.81)
M2size	0.2199 (0.45)	23.5880** (2.27)	-0.2113 (-0.57)	17.9733** (2.04)	-0.0011 (-0.00)	3.9549 (1.61)	0.1052*** (8.20)	1.4948*** (7.15)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.1817*** (6.79)	0.6498*** (3.04)	0.1807*** (7.07)	0.7099*** (3.40)	0.1729*** (6.79)	1.0338*** (7.22)	0.2386*** (7.29)	0.6023*** (5.22)
R ² / Pseudo R ²	0.3663	0.2308	0.3767	0.2387	0.3776	0.2301	0.3596	0.2416
Observations	28515	28515	30973	30973	30986	30986	21428	21428

*, ** and *** indicate 10%, 5% and 1% significant level.

Table 3. 12: Robustness Regression Analysis Considering P2P Influence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Financial constraints		Information asymmetry		Bankruptcy risk		Corporate governance	
	Mismatch	DM	Mismatch	DM	Mismatch	DM	Mismatch	DM
WW	0.1208*** (4.00)	1.8237*** (4.59)						
Inf			0.0035*** (3.72)	0.0297** (2.11)				
EDF _{bhsh}					-6.9457*** (-5.41)	-16.1704** (-8.02)		
GOV							-0.0043** (-2.29)	-0.0017* (-2.25)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.4846*** (6.46)	1.0561*** (3.39)	0.4731*** (6.87)	1.7754*** (5.94)	0.4564*** (6.74)	1.1622*** (3.87)	0.4915*** (6.48)	0.7639*** (2.11)
R2 / Pseudo R2	0.2908	0.2250	0.3016	0.2282	0.3138	0.2359	0.3031	0.2372
Obs	13500	13500	15104	15104	15111	15111	12081	12081

*, ** and *** indicate 10%, 5% and 1% significant level.

3.5 Conclusion

This study investigates the factors influencing firms' decisions to use short-term debt for long-term investment. The analysis focuses on the impact of financing constraints, information asymmetry, bankruptcy risk, and corporate governance on such maturity mismatches. The findings highlight the significant role these factors play in shaping firms' financing choices. The results demonstrate that financing constraints are a critical determinant driving firms to engage in maturity mismatches, particularly among firms with a low risk of bankruptcy. These firms are less concerned about creditors' apprehensions regarding their ability to meet debt obligations, allowing them to utilize short-term debt for long-term investment. Conversely, firms facing a higher risk of bankruptcy exhibit a reduced propensity to rely on short-term debt for long-term investment, as timely debt repayment becomes a challenge.

Additionally, the analysis reveals that companies characterized by a high degree of information asymmetry are more likely to resort to short-term debt for long-term investment. This underscores the importance of information transparency and disclosure in firms' financing decisions. On the other hand, improved corporate governance practices play a crucial role in mitigating maturity mismatches. Enhanced corporate governance facilitates the availability and utilization of long-term debt, reducing firms' reliance on short-term debt. Furthermore, these governance mechanisms replace the traditional monitoring function of short-term debt, leading to a more efficient and aligned capital structure.

Moreover, this study extends its analysis to examine the consequences of employing short-term debt for long-term investment. Specifically, the study investigates the impact of such maturity mismatching on debt costs and stock crash risk. The findings reveal that using short-term debt for long-term investments can lead to cost savings in debt financing. However, this negative relationship between maturity mismatch and debt cost is found to be significant only for non-SOEs. The preferential lending rates enjoyed by SOEs due to their political ties result in a lack of significant impact on debt costs when they engage in maturity mismatches.

Furthermore, the results indicate that maturity mismatching increases stock crash risk. The excessive reliance on short-term debt creates incentives for managers to conceal adverse information to secure external funding. However, once the accumulated bad news can no longer be concealed, its disclosure leads to higher stock crash probabilities. This finding highlights the potential risks associated with using short-term debt for long-term investment and the detrimental effects on stock market stability.

Chapter 3 makes several contributions. Firstly, it provides new empirical insights into the determinants and consequences of debt maturity mismatches in the Chinese market. For the theoretical contribution, while previous research has explored the issue of debt maturity (Titman and Wessels, 1988; Barclay and Smith, 1995; Guedes and Opler, 1996; Stohs and Mauer, 1996; Antoniou *et al.*, 2006; Brockman *et al.*, 2010; Huang and Shang, 2019), few empirical studies have specifically examined the issue of debt maturity mismatch in China, a market that relies heavily on short-term debt. Moreover, this study goes beyond the traditional and intuitive firm characteristics, which have been widely examined in prior research about debt maturity. Instead, it incorporates non-intuitive factors including financial constraints, bankruptcy risk, information asymmetry, and corporate governance. By considering these factors, the chapter offers a nuanced analysis of the determinants of firms' decisions regarding the use of short-term debt for long-term investment. Therefore, the outcomes of this chapter contribute to the expanding literature concerning the employment of debt maturity mismatch within the unique landscape of Chinese companies.

Secondly, this chapter delves into the impact of maturity mismatches on debt costs and explores its heterogeneous effects on ownership structure. The heterogeneous effect of maturity mismatches on the cost of debt, particularly in terms of ownership, has received limited research attention thus far. Going beyond previous empirical studies, an intriguing finding emerges from additional tests, indicating that the impact of maturity mismatch on the cost of debt is significant only for non-SOEs. This can be attributed to the fact that SOEs have enjoyed borrowing privileges that eliminate the need for engaging in maturity mismatch. The findings

shed light on the unique considerations and dynamics associated with ownership structure in Chinese firms, thereby contributing to the understanding of the complex relationships between debt maturity management, ownership characteristics, and financing costs.

Thirdly, this study contributes to the literature on debt maturity mismatches and stock crashes, an aspect that has received relatively less attention in previous research on debt maturity structure. While previous studies have primarily focused on the relationship between debt maturity structure and various firm outcomes such as financing costs and firm performance (Titman and Wessels, 1988; Barclay and Smith, 1995; Guedes and Opler, 1996; Stohs and Mauer, 1996; Antoniou *et al.*, 2006; Brockman *et al.*, 2010; Huang and Shang, 2019), the examination of the impact on stock crashes has been relatively limited. By providing new evidence that maturity mismatches are associated with an increased risk of stock crashes, this chapter adds to our understanding of the potential negative consequences that arise from relying on short-term debt for financing long-term investments.

The final contribution of this chapter is highly practical and relevant to China's current economic landscape. Stakeholders across various sectors stand to benefit from the insights derived from this research. For instance, companies can leverage these insights to optimize their debt maturity structures, ensuring a balanced blend of short-term and long-term debt to sustain their operational needs effectively. Moreover, these findings empower firms to detect potential risks, such as stock market crash vulnerability, within their financing strategies and proactively implement risk-mitigation measures.

Furthermore, it is imperative for governmental bodies and other institutions to devise strategies that expand long-term financing avenues while maintaining a harmonious equilibrium between long-term and short-term financing, thus fostering stability within the financial markets. This research not only offers actionable guidance for firms but also underscores the broader importance of strategic financial management in ensuring economic resilience and sustainability.

**4 CORPORATE STRATEGY DECISION AFTER THE DEREGULATION OF
MARGIN TRADING: EMPIRICAL INSIGHTS FROM CHINESE
LISTED FIRMS**

4.1 Introduction

This chapter is dedicated to examining the strategic decisions undertaken by Chinese listed companies in response to shifts in the financial environment. Corporate strategy has emerged as a fundamental framework for guiding business decision-making and achieving long-term success. It provides managers with a structured and practical approach to formulating and implementing plans that align with the organization's overarching goals and aspirations (Miles *et al.*, 1978; Caves, 1992).

In the field of corporate strategy, a critical question is how firms can achieve and sustain a competitive advantage. This question becomes even more pertinent in the current dynamic and innovation-driven business environment, where firms must constantly strive to differentiate themselves from competitors and adapt to changing market conditions (Meyer and Rowan, 1977; Teece *et al.*, 1997; Bentley *et al.*, 2013). Early scholars such as Andrews (1980) and Porter (1980) emphasized the importance of strategic orientation in achieving organizational success. Additionally, Miles and Snow (2003) noted that a firm's performance is heavily influenced by its strategic choices in response to the operating and economic environment in which it operates.

At an early stage, studies have brought attention to the significant influence of internal factors and industry changes on firms' strategic decisions. These factors include organizational capabilities, competitive advantages, and market dynamics (Meyer and Rowan, 1977; Porter, 1980; Porter, 1985; Miles *et al.*, 1978; Miles and Snow, 2003). However, there has been a growing recognition among scholars and practitioners of the critical role played by the external business environment in shaping firms' strategic decisions. The dynamic and complex nature of the external environment presents both opportunities and challenges that can significantly impact a firm's competitive position and long-term success.

For example, Hutchinson (1996) examined how business strategies respond to environmental policies, and Khanna and Palepu (1999) studied changes in corporate strategy in Chile and

India following significant national economic policy changes. Additionally, Bao *et al.* (2011) analyzed how Chinese companies adopted defensive or expansionary strategies in response to environmental shocks during the 2008 economic crisis. Sitaloppi *et al.* (2021) and Yuan *et al.* (2020) investigated the integration of corporate social responsibility into business strategy. Furthermore, Hitt *et al.* (2021) explored how changes in the business environment during the COVID-19 pandemic have shaped the global landscape and, in turn, affected the strategies of multinational enterprises.

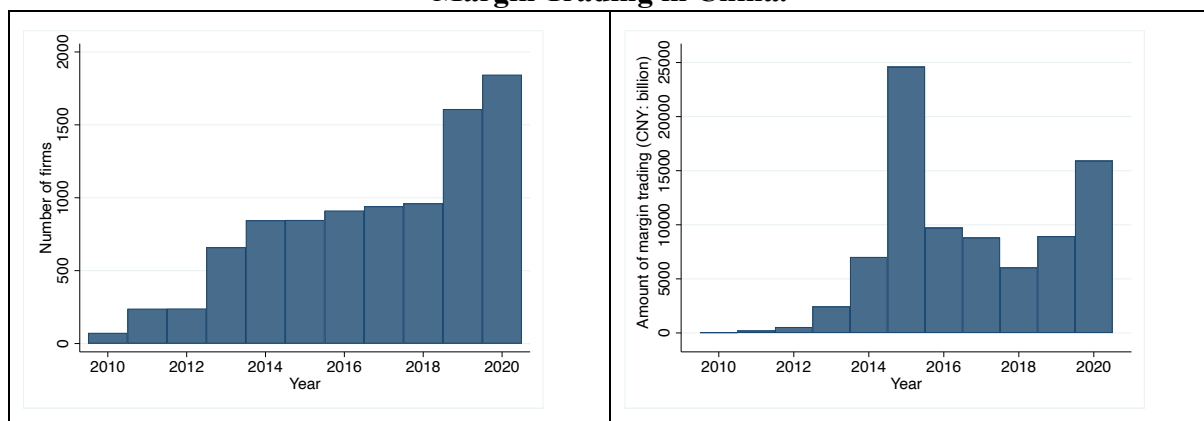
The studies mentioned highlight the diverse range of external factors that can shape a company's strategy, including social responsibility, technological advancements, environmental policies, economic shocks, government regulations, and public health crises. The strategic positioning of firms is indeed influenced by various uncertainties arising from external shocks (Trigeorgis and Reuer, 2017), and understanding these dynamics is crucial for companies operating, especially in a rapidly evolving economy like China's. China's economy has witnessed significant transformations in recent decades, marked by rapid technological advancements, changing consumer preferences, shifting regulatory frameworks, and global economic fluctuations (Allen *et al.*, 2019). These dynamics introduce a multitude of external shocks that can impact corporate strategic decisions and ultimately determine their long-term success. Therefore, it is important to study how Chinese companies respond to the altered external environmental shocks.

The landscape of external shock events that have the potential to impact businesses remains a fertile ground for exploration, with one intriguing yet relatively unexplored occurrence being the deregulation of margin trading. In 2010, a significant regulatory change occurred within the financial landscape: the Chinese Securities and Exchange Commission (SEC) approved the practice of margin trading. This marked a transformative shift, allowing certain stocks to be included in the pilot group eligible for margin trading. Essentially, this regulatory alteration granted investors the capacity to employ margin trading as a mechanism for purchasing shares. This regulatory adjustment represented an immense and exogenous perturbation to the stock

market, wielding substantial influence over the pilot companies.

Figure 4.1 provides a visual representation of the changing landscape of China's margin trading pilot program, focusing on the number of participating companies and the corresponding amount of margin trading transactions from 2010 onwards. The number of companies selected to participate in the margin trading pilot program has witnessed a significant increase over the years. At its inception in 2010, the program involved a relatively limited number of companies, with fewer than 100 entities being granted the privilege to engage in margin trading. According to data from the CSMAR database, by 2020, the number of companies granted permission to participate in margin trading had surged to around 1,800. This accounts for approximately 43% of the total 4,177 listed companies, highlighting the substantial expansion of the program.

Figure 4. 1: Number of Companies Permitted for Margin Trading and the Amount of Margin Trading in China.



Source: China Stock Market & Accounting Research (CSMAR) database

Moreover, the amount of margin trading has also exhibited a rising trend, demonstrating the growing significance of margin trading in the Chinese stock market. However, 2015 stands out as an outlier in the figure. During this year, there was a significant surge in Chinese stock market momentum following substantial gains witnessed from late 2014 to mid-2015, which even led global equity markets. Consequently, the amount of margin trading transactions in 2015 experienced a sharp increase, exceeding three times the level recorded in 2014. However, in the second half of 2015, both the Shanghai and Shenzhen indices experienced a significant

downturn, leading to a sharp decline in stock market performance. As a result, margin trading transactions also declined sharply. Therefore, it is crucial to recognize that this exceptional rise in margin trading transactions in 2015 was not representative of typical market dynamics but rather influenced by the unique circumstances of the stock market surge.

In summary, Figure 4.1 highlights the significant impact of the deregulation of margin trading as a non-negligible exogenous shock for companies operating in China. This deregulation represents a major financial environmental change, attracting substantial interest due to its potential to enhance market exposure and amplify risks for both investors and companies (Chang *et al.*, 2014; Li, 2016). The previous discussions emphasized the potential influence of external shocks on firm strategies, reflecting the current external opportunities and threats faced by firms, such as the 2008 economic crisis (Bao *et al.*, 2011), corporate social responsibility (Siltaloppi, 2021), and the COVID-19 pandemic (Li *et al.*, 2021). Given the significance of the deregulation of margin trading as a notable shock in the Chinese stock market, it becomes imperative to explore how this specific change influences firms' corporate strategies and strategic positioning.

Despite its potential to reshape financial markets and influence corporate decision-making, the intricate effects of this deregulation have received limited scholarly attention, creating a research gap that needs to be addressed. Therefore, this chapter seeks to fill this gap by examining the impact of the deregulation of margin trading on firms' strategic decisions and positioning within the evolving financial landscape of China.

Regarding firms' strategic positioning, Miles *et al.* (1978) and Miles and Snow (2003) developed a classification of corporate strategies into prospectors, defenders, and analyzers. Each strategic position entails different levels and types of business and market risks. Different strategic positions offer distinct advantages and disadvantages, and the selection of an appropriate strategy depends on the firm's goals, competitive landscape, and risk appetite. Specifically, firms classified as prospectors are characterized by their strong emphasis on

product innovation, technological advancements, and market expansion. These firms actively seek new opportunities and are often the first to adopt new technologies and enter emerging markets. Their strategic orientation involves taking significant risks to achieve high growth and competitive advantage. In contrast, defensive firms exhibit a more conservative approach to business and market expansion. They concentrate on a limited number of existing products or services and prioritize strategies that aim to reduce costs and enhance product quality. These firms focus on protecting their market position and maintaining stability by minimizing risks and avoiding unnecessary changes. Analyzers, as the name suggests, occupy a position between prospectors and defenders in terms of strategic orientation. Analyzers demonstrate a pragmatic approach, leveraging their existing resources and capabilities while exploring new avenues to sustain their competitive position. They carefully balance the risks and rewards of innovation and market expansion, often adopting successful innovations from prospectors while maintaining efficient operations like defenders.

**Figure 4. 2: A Comprehensive Overview of Corporate Strategies and Specific Measures:
A Synthesis of Miles and Snow (2003) and Bentley *et al.* (2013) Frameworks.**



Then, drawing upon seminal works by Miles *et al.* (1978), Miles and Snow (2003), and Bentley *et al.* (2013), the framework depicted in Figure 4.2 provides a comprehensive and structured approach to positioning and measuring corporate strategy. At the core of the framework are the strategic archetypes proposed by Miles and Snow, which classify firms into three distinct types

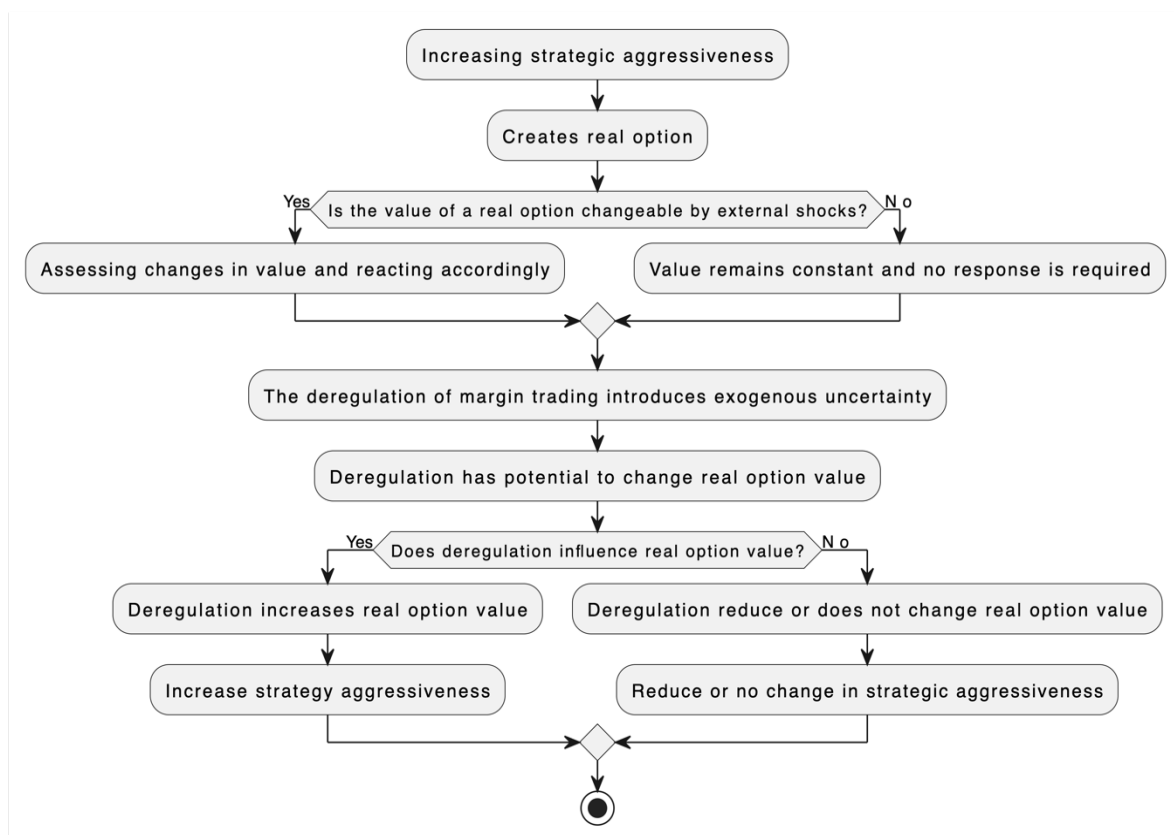
based on their responses to environmental uncertainties and market conditions: prospectors, defenders, and analyzers. Building upon this foundation, Bentley *et al.* (2013) further expanded the framework by employing a comprehensive set of indicators to measure a firm's strategic aggressiveness and positioning. These indicators encompass various dimensions such as innovation, market expansion, cost efficiency, and risk management, enabling a detailed assessment of a firm's strategic behavior. Therefore, in the face of the deregulation of margin trading, this study can assess how firms adapt and adjust their strategic aggressiveness by using this expanded framework.

Myers (1977) is widely credited with introducing the term “real option” and pioneering the application of financial option theory to strategic decision-making. In his seminal work, Myers recognized that strategic decisions often involve uncertainties and irreversibility, similar to financial options. He proposed that managers should view strategic behaviors as real options, which provide flexibility and the ability to adapt to changing market conditions. In the field of management literature, real options theory has garnered significant attention from researchers exploring its application to corporate strategy (Yeo and Qiu, 2003; Adner and Levinthal, 2004; Trigeorgis and Reuer, 2017; Ipsmiller *et al.*, 2019), highlighting its relevance and applicability in strategic decision-making. Thus, the application of real options theory can provide a solid theoretical foundation for investigating the impact of the deregulation of margin trading on corporate strategy in this research.

Ochi (2018) provides an illustrative example of real option management employed by Toyota in Japan, which is noteworthy. The Paris Agreement in 2015 aims to achieve zero emissions within several decades, and the extent to which companies embrace or resist stringent environmental regulations can significantly impact the automobile industry. Toyota set a target to reduce CO₂ emissions by 90% by 2050 compared to 2010 levels, envisioning it as their “CO₂ zero challenge.” This change presents both threats and opportunities for companies. A potential threat, such as stricter environmental regulations, can serve as a catalyst for companies to recognize emerging issues and initiate transformative reforms. These reforms can

lead to the development of new business fields and provide a unique opportunity for companies to establish market dominance. Real option thinking enables Toyota to take advantage of favorable market conditions and capitalize on their expertise and resources to establish a strong presence in the new energy sector and new technology domains. The example of Toyota highlights the relevance and practicality of real option thinking for the adjustment of corporate strategy.

Figure 4. 3: Utilizing Real Options Theory in Corporate Strategy: Exploring the Effects of Margin Trading Deregulation.



Similarly, this study incorporates real options theory to understand firms' strategic behavior following the deregulation of margin trading. As depicted in Figure 4.3, this deregulation represents a significant external shock, introducing new sources of uncertainty. Trigeorgis and Reuer (2017) emphasize that uncertainty can increase the value of real options, providing firms with the potential for higher returns and greater strategic flexibility. The deregulation of margin trading introduces such uncertainty, creating opportunities for companies to align their strategic

decisions with long-term goals and potentially enhance market value. This uncertainty could result in stock price fluctuations as the market adapts to the new regulatory environment, influenced by shifts in investor perceptions and market dynamics.

Specifically, the deregulation facilitates increased market leverage through additional liquidity, which can amplify price movements and potentially lead to a rise in stock prices. This effect is supported by studies such as Hardouvelis and Peristiani (1992) and Bhojraj *et al.* (2009), which indicate that significant volumes of margin trading transactions can elevate share prices under certain conditions. Furthermore, as deregulation allows investors to use borrowed funds to purchase securities, overall demand for these securities increases. This increased demand, coupled with a limited supply, can lead to excess demand, potentially driving up stock prices further.

The influx of risk-seeking investors following the deregulation introduces a new layer of exogenous uncertainty into the market. Investors who use margin trading to buy shares are typically risk enthusiasts seeking high returns on their investments (Chang *et al.*, 2014). These investors are more likely to invest in companies with the potential for future value increases, particularly firms that pursue more aggressive strategies. Such firms often prioritize new products or markets, which can lead to rising share prices. This strategy enables firms to capitalize on new market opportunities and appeals to risk enthusiasts seeking companies willing to take calculated risks for growth and expansion. Thus, real options theory provides a theoretical framework for understanding why and how margin trading deregulation can affect firms' strategic aggressiveness.

For the empirical research, this study uses a comprehensive dataset covering the period from 2007 to 2020 in China. Propensity score matching (PSM) and difference-in-differences (DID) methods are employed to estimate the causal effects of the deregulation of margin trading on firms' strategic behavior while controlling for potential confounding factors. The findings provide compelling evidence of a positive correlation between the deregulation of margin

trading and firms' strategic aggressiveness. The results suggest that deregulation enhances the value of real options, prompting firms to adopt more aggressive strategic behaviors. This implies that firms perceive deregulation as an opportunity to leverage their resources and gain a competitive advantage in the market.

Furthermore, the study examines how contextual factors moderate the relationship between the deregulation of margin trading and firms' strategic behavior. First, the study reveals that the positive relationship between the deregulation of margin trading and corporate strategy aggressiveness is stronger in highly competitive markets. In such environments, companies are compelled to adopt a more aggressive strategic approach.

Second, the study demonstrates that the link between the deregulation of margin trading and corporate strategy aggressiveness is stronger when managerial stockholdings are high. When managers hold substantial stakes in the company, they have a greater incentive to maximize firm value and pursue aggressive strategies. The deregulation of margin trading provides them with a means to capitalize on market opportunities and generate higher returns, aligning with their interests as significant shareholders.

Third, the findings suggest that companies with higher levels of institutional ownership experience a dampening effect on their strategic aggressiveness in response to the deregulation of margin trading. Institutional owners often operate with shorter time horizons and face external pressures to deliver short-term results and meet the expectations of customers and stakeholders in China. These pressures discourage companies from adopting highly aggressive strategies that require longer-term investments.

Fourth, the link between the deregulation of margin trading and corporate strategy aggressiveness is stronger when management's risk preferences are high. Managers' individual risk tolerances are not merely personal traits but also instrumental in shaping the strategic directions of the companies they lead.

Furthermore, this study conducts additional analysis to examine the consequences of increased strategic aggressiveness. The results indicate that firms with higher levels of strategic aggressiveness are more likely to generate more patents. This finding underscores the importance of strategic proactivity in driving innovation and value creation, with long-term implications for firms' competitive advantage and performance. Additionally, the findings indicate that firms with higher levels of strategic aggressiveness are more likely to engage in debt maturity mismatches. This occurs because aggressive strategies provide more opportunities for firms to take on short-term debt to fund long-term investments, despite potential short-term repayment challenges.

Overall, this chapter fills a gap in the literature by exploring the effects of margin trading deregulation on firms' strategic decisions, offering new empirical data on a factor that can influence firms' business strategy choices. It highlights the need to consider not only the financial outcomes on the stock market of deregulation but also its significant impact on corporate strategy, thereby advancing the understanding of the multifaceted effects of regulatory changes in the context of margin trading. Additionally, this chapter provides new evidence on the ongoing debate regarding the role of institutional investors, management shareholding, and their risk preferences in shaping strategic behavior. The contributions of this chapter are discussed in detail in Section 4.6.

The remainder of this chapter is organized as follows. Section 4.2 provides the background of the deregulation of margin trading in China. Section 4.3 reviews the relevant prior research and develops the hypotheses. Section 4.4 presents the sample data, measurement method, and research design. Section 4.5 analyzes the results. Section 4.6 summarizes this chapter.

4.2 The Background of the Deregulation of Margin Trading in China

4.2.1 The Process of Margin Trading in China

During the nascent stages of China's securities market, credit trading, including margin trading,

was strictly prohibited due to concerns about market risk and financial system stability. Regulatory bodies imposed stringent measures to govern and mitigate potential risks associated with credit-based trading. The enactment of the Law of the People's Republic of China on Securities in 1998 emphasized the requirement for securities transactions to be executed on a spot basis, thereby prohibiting securities firms from engaging in margin trading activities with their clients.

According to the 2010 Special Survey and Analysis Report on Credit Trading by CSIPF², the limited development and relative immaturity of the market at that time were primary reasons for the prohibition. Regulatory authorities implemented conservative measures to curb excessive speculation and prevent potential market manipulation, aiming to establish a stable and transparent market environment. By disallowing credit trading, regulators sought to ensure that market participants operated within their financial means, reducing the likelihood of defaults or financial instability. It is important to note that during the early stages of China's securities market, robust regulatory frameworks and surveillance mechanisms were lacking. Consequently, authorities exercised caution regarding the potential impact of credit trading on market volatility and systemic risks.

Recognizing the significance of establishing a robust foundation for the securities market, regulators initially prioritized basic structures before introducing more complex financial instruments and trading practices. This cautious approach aimed to mitigate risks associated with credit-based transactions and foster a gradual evolution toward a more sophisticated and secure market environment. Despite the initial prohibition of credit trading, there was a significant demand for financing within the market. In response, the Law of the People's Republic of China on Securities was amended in 2005 to allow securities companies to provide credit trading services to their clients for securities purchases and sales, contingent on prior approval from the security's regulatory authority under the China State Council. This ensured

² China Securities Investor Protection Fund Limited Liability Company (CSIPF) was established on August 30, 2005, as a wholly state-owned enterprise in China. It operates under the supervision of the China Securities Regulatory Commission (CSRC) and is funded by the State Council of China. The primary objective of CSIPF is to protect the legitimate rights and interests of investors in the Chinese securities market.

a regulated framework for credit trading.

This amendment signifies a recognition of the need for institutional space for credit trading within the securities market, reflecting an evolving stance toward accommodating such practices, initially on a limited pilot basis. To support this development, the China Securities Regulatory Commission (CSRC) issued the Measures for the Administration of Securities Companies for Credit Trading on a Pilot Basis in June 2006. These legislative and regulatory actions indicate a shift towards permitting credit trading within the Chinese securities market, albeit with stringent oversight and gradual implementation.

On October 2008, the CSRC officially announced the commencement of a credit trading pilot program for securities companies. However, not all securities firms were authorized to facilitate margin trading transactions for investors. In 2010, the Shenzhen and Shanghai Stock Exchanges issued a notice targeting six qualified pilot security firms. Subsequently, on March 31, 2010, these six pilot brokers began accepting declarations for margin trading transactions, marking the official launch of margin trading after more than a year of preparatory work. The introduction of margin trading opened avenues for investors to leverage their positions and potentially enhance their investment returns, while providing securities firms with a new revenue stream and expanded business scope.

It is important to note that not all firms were allowed to engage in margin trading transactions. The differential treatment of firms in terms of their eligibility for margin trading provides a unique context to analyze how deregulation shapes corporate strategy. The deregulation of margin trading was implemented in a controlled manner, with specific criteria and guidelines determining which firms were authorized to participate. These criteria typically considered factors such as firm size, liquidity, and return volatility of the underlying securities. The selection of these securities was based on careful considerations to ensure sufficient liquidity and stability in the market. The aim was to balance promoting market efficiency and mitigating excessive risk exposure.

Furthermore, while margin trading presents potential benefits for investors, it also carries inherent risks for securities companies if the borrowed funds or securities are not repaid as per the agreed terms. To mitigate these risks, investors are subject to certain restrictions and qualifications. The precise restrictions vary among different securities firms, depending on their risk management policies and regulatory requirements. By restricting margin trading to qualified investors, securities firms aim to reduce the likelihood of defaults and minimize potential financial losses.

Currently, regulatory authorities have implemented gradual reforms and adjustments to foster the growth of credit trading as the Chinese securities market has continued to develop and evolve. These measures aim to expand the list of eligible stocks, enhance risk management frameworks, and promote investor education and awareness. According to data from the CSMAR database, after multiple rounds of modifications to the eligibility criteria, the pilot program encompassed nearly 2,000 stocks by the end of 2020.

4.2.2 The Effects of Margin Trading Deregulation

The deregulation of margin trading in China in 2010 represents a pivotal moment in the evolution of its financial markets, providing a rich context for exploring the interplay between regulatory changes and market behavior. This section discusses the importance and effects of the deregulation of margin trading.

(a) Increased Market Liquidity

Margin trading, by permitting investors to borrow money to purchase stocks, enhances market liquidity. It facilitates higher transaction volumes, thereby enabling investors to execute large orders without markedly affecting stock prices. This improvement in liquidity is essential for the robustness of financial markets, as it supports efficient price discovery and allows for rapid execution of trades at prices that closely reflect available market information (Kyle, 1985).

(b) Enhancement of Market Efficiency

The deregulation has also contributed to market efficiency. By enabling the purchases of undervalued stocks, margin trading helps ensure that stock prices more accurately mirror all known information about underlying assets. This capability is particularly effective in correcting mispriced stocks, thereby aligning market prices more closely with their fundamental values (Fama, 1970).

(c) Increased Speculation and Market Volatility

However, the introduction of margin trading has also led to heightened levels of speculation. The ability to leverage investments can magnify potential returns, drawing speculators who are willing to take on higher risks for greater rewards. This increase in speculative trading can lead to greater market volatility, as prices shift more dramatically in response to traders rapidly entering and exiting positions based on leveraged bets (Shleifer and Vishny, 1997).

(d) Amplified Risks and Regulatory Challenges

With the potential for higher returns comes increased risk, particularly the risk of magnified

losses. Investors engaging in margin trading might face margin calls that compel them to sell holdings at a loss if prices move unfavorably. This risk necessitates stringent regulatory frameworks to mitigate excessive risk-taking and to prevent such activities from leading to broader systemic issues (Minsky, 1977).

(e) Differential Impacts on Investor Segments

The deregulation has had varied effects on different investor classes. Institutional investors, with their greater access to effective risk management tools and capital, are generally better positioned to deal with the complexities of margin trading. Conversely, retail investors, often less equipped to handle the intricacies and risks of leveraged trading, might be more susceptible to negative outcomes, underscoring the need for targeted investor education and regulatory safeguards (Barber and Odean, 2000).

In conclusion, the deregulation of margin trading in China serves as an exemplary case of how regulatory changes can reshape financial market dynamics. This exogenous change in the form of market deregulation presents a unique opportunity to assess the effects of the deregulation on corporate strategy. In the research design of a study analyzing these effects, the enterprises included in the pilot list are regarded as the treatment group, while those not included in the list are considered the control group.

4.3 Literature Review and Hypothesis Development

4.3.1 The Concept and Analysis of the Theory of Corporate Strategy

In the field of corporate strategy, a fundamental question of great importance is how firms can achieve and sustain a competitive advantage. This question is particularly pertinent in the current dynamic and innovation-driven business environment, where firms must constantly strive to differentiate themselves from competitors and adapt to changing market conditions (Teece *et al.*, 1997). Scholars such as Andrews (1980) and Porter (1980) have emphasized the importance of strategic orientation in achieving organizational success. Miles and Snow (2003) also note that a firm's performance is heavily influenced by its strategic choices in response to the operating and economic environment in which it operates.

To situate the study in a way that highlights both similarities and differences with existing frameworks, this literature review begins by discussing acknowledged frameworks for corporate strategy. Firstly, resource-based theory provides a perspective for understanding corporate strategy, suggesting that a firm's competitive advantage stems primarily from its internal resources. Access to unique and intangible resources can provide a competitive edge for sustainable growth (Learned *et al.*, 1969; Habbershon and Williams, 1999; Skaggs and Youndt, 2004; Ainuddin *et al.*, 2007).

In the 1960s, a prominent work by Learned *et al.* (1969) highlighted the importance of understanding organizational capabilities and distinguishing between strengths and weaknesses, forming the root of resource-based theory. They argued that a firm's capabilities determine its potential achievements, independent of external opportunities. According to the resource-based view, firms gain a competitive edge by acquiring and leveraging resources that are valuable, rare, difficult to imitate, and non-substitutable. These resources can include tangible assets such as manufacturing facilities, distribution networks, and proprietary technologies, as well as intangible assets such as brand reputation, organizational culture, and knowledge-based capabilities. Rumelt (1991) conducted a study supporting this notion by comparing profitability

within and across industries. The findings revealed that the variation in profits among firms within the same industry was greater than the variation observed across different industries. This suggests that firm-specific factors play a more substantial role in influencing performance than industry-wide effects.

Unlike resource-based theory, which focuses on internal resources, the dominant paradigm in strategic management during the 1980s was Porter's (1980) competitive forces approach. Commonly known as Porter's Five Forces model, this framework systematically analyzes the external industry environment to identify sources of competitive advantage and assess industry attractiveness. Rooted in the work of Bain (1956), this approach emphasizes the complex interplay between various barriers and competition in different industries. Bain explores various barriers, such as economies of scale, product differentiation, brand loyalty, and government regulations, and their effects on market dynamics.

Porter's Five Forces model provides a comprehensive framework for understanding the external factors impacting industry competitiveness. The model helps identify key drivers of industry competition, enabling firms to develop strategies to navigate and thrive within their competitive environment. However, it has faced criticism for its static nature and focus on industry structure, which cannot fully capture dynamic and rapidly changing business environments. Additionally, it focuses primarily on external factors and cannot fully capture the internal dynamics and capabilities of individual firms, which is the concern of resource-based theory discussed earlier.

Shapiro (1989) offers an alternative perspective on corporate strategy called the strategic conflict approach. This approach builds upon the earlier competitive forces framework by adding a strategic dimension through the incorporation of game theory concepts. The strategic conflict approach focuses on product market imperfections and the strategic interactions between firms. It acknowledges that competition extends beyond static market conditions to include dynamic actions and reactions among competitors. Game theory provides a framework

for analyzing how firms strategically invest, set prices, signal intentions, and control information to gain an advantage over rivals. Unlike Porter's (1980) framework, it emphasizes the importance of understanding the complex dynamics of strategic interactions in shaping competitive outcomes.

According to the strategic conflict approach, strategic moves in competitive environments can be designed to influence rivals' behavior through signaling. For instance, in predatory pricing, firms use strategic price cuts to signal their aggressive intent and commitment to maintaining market dominance. By engaging in aggressive price reductions, firms convey that they are willing to sustain short-term losses to achieve long-term market power (Kreps and Wilson, 1982). Thus, competitive outcomes result from the effectiveness with which firms navigate strategic interactions. Firms can deter potential entrants, maintain market share, and secure a competitive advantage by keeping their rivals off balance through strategic investments and pricing strategies. Game theory elucidates the rational decision-making process and the possible equilibrium outcomes in competitive settings. It recognizes that competition is not solely determined by market structure but is influenced by the strategic choices and maneuvers of firms within the marketplace.

However, it is important to note that companies with significant cost or competitive advantages are less influenced by their rivals' actions. Their competitive success is primarily driven by market demand conditions rather than the tactical maneuvers of competitors. This means that the strategic deployment and redeployment of competitive assets by rivals have a limited impact on their competitive position. Essentially, when there is significant asymmetry in competitive advantage between firms, the application of game theory analysis yields predictable outcomes. The stronger competitor, despite potential disadvantages in information asymmetry, is likely to gain market share and make inroads into the industry. Their inherent advantages enable them to withstand the actions and counteractions of rivals, maintaining a dominant position (Teece *et al.*, 1997).

The strategic conflict approach is not without challenges and limitations. While it can offer theoretical explanations for observed behavior, it plays a minimal role in less competitive markets. Sutton (1992) suggests that although this approach can rationalize behavior, it cannot provide practical insights or actionable guidance due to its inability to generate specific and empirically verifiable predictions. One challenge arises from the existence of multiple equilibria in many game-theoretic models. The selection of the appropriate game form and its specific configuration can significantly influence the outcomes obtained. This dependence on model specification raises concerns about the generalizability and robustness of the results. Furthermore, equilibrium outcomes in game-theoretic models heavily rely on the beliefs and expectations of the players regarding each other's actions. The interpretation and implications of the results can differ depending on these factors. Despite these limitations, game theory offers a dynamic perspective on strategic moves and interactions. It allows for the analysis of multiperiod scenarios, capturing the evolving nature of strategic decision-making (Teece *et al.*, 1997).

Miles and Snow (2003) suggest that no single theory can fully explain the strategies adopted by firms, as these are shaped by both internal and external factors. These include a firm's internal resources and competencies, as well as broader economic and policy factors such as monetary and fiscal policies, industrial structure, and stakeholder expectations influenced by cultural preferences (Porter, 1980; Miles *et al.*, 1978; Miles and Snow, 2003; Anderson *et al.*, 2004). Therefore, in the event of significant changes in the operating environment, a corresponding change in strategy is essential to ensure alignment between the firm and its economic or operating environment (Figueira-de-Lemos *et al.*, 2011). Recently, Trigeorgis and Reuer (2017) highlighted the significance of uncertainties in shaping firms' strategic decisions. They argue that different types of uncertainties, such as technological advancements, market volatility, and regulatory changes, can significantly influence the strategic choices made by firms. Firms need to assess and adapt to these uncertainties to mitigate risks and capitalize on emerging opportunities.

To achieve success, firms must establish strategic positioning, which influences aspects such as resource integration, acquisitions, and maintaining competitive advantage (Cheng and Krumwiede, 2017). Seminal contributions to the field of management research include the works of Miles *et al.* (1978) and Miles and Snow (2003), who developed a classification of corporate strategies into prospectors, defenders, and analyzers. Each strategic position entails different levels and types of business and market risks. As previously discussed, the choice of corporate strategy and the associated risk level is influenced by various factors, including industry dynamics, market conditions, and the firm's internal capabilities and resources. Different strategic positions offer distinct advantages and disadvantages, and selecting an appropriate strategy depends on the firm's goals, competitive landscape, and risk appetite. This categorization allows for a better understanding of firms' core strategic behaviors, priorities, and competitive positioning.

Firms classified as prospectors emphasize product innovation, technological advancements, and market expansion. These companies actively invest in research and development to create new products, explore emerging market opportunities, and adapt to changing economic conditions (Miles *et al.*, 1978; Miles and Snow, 2003). Their aggressive strategy positions them as risk-takers, pursuing a "high-risk, high-return" approach (Liu and Atuahene-Gima, 2018). In other words, prospectors strive to achieve growth and competitive advantage by continuously exploring new avenues and experimenting with different market dynamics.

In contrast, defensive firms adopt a more conservative approach to business and market expansion. They concentrate on a limited number of existing products or services and prioritize strategies aimed at reducing costs and enhancing product quality (Miles *et al.*, 1978; Miles and Snow, 2003). Defensive firms tend to maintain a stable market position and are less inclined to pursue significant changes or ventures involving higher risks (Linton and Kask, 2017). Their strategy focuses on safeguarding their current market share and ensuring operational stability.

Analyzers, as the name suggests, occupy a position between prospectors and defenders in terms

of strategic orientation (Miles *et al.*, 1978; Miles and Snow, 2003). These firms exhibit a balanced approach by combining characteristics of both prospectors and defenders. They carefully assess market opportunities and risks, selectively adopting strategies that involve moderate levels of risk and innovation. Analyzers demonstrate a pragmatic approach, leveraging their existing resources and capabilities while exploring new avenues to sustain their competitive position.

Following Miles's work, various methods have been developed to measure the strategic positioning and aggressiveness of firms. Ittner *et al.* (1997) introduced the business strategy index, which assesses the competitive strategy of an organization by assigning higher scores to businesses that align more closely with the prospector end of the strategy continuum. This index provides a quantitative measure of a company's strategic orientation.

Building on this framework, Bentley *et al.* (2013) developed another widely used method that employs a comprehensive set of indicators to measure a firm's strategic choices. These indicators capture different aspects of the company's strategy and provide a holistic view of its strategic orientation. The first indicator is the ratio of R&D expenditure to sales, reflecting the company's inclination to seek out new products and technologies. The second indicator is the ratio of employees to sales, measuring the company's capacity to efficiently create and deliver products and services. The percentage change in total revenue is used as the third indicator, indicating the company's historical growth and pursuit of market expansion. The fourth indicator is the ratio of selling, general, and administrative expenses to sales, demonstrating the company's focus on exploring new markets and increasing market share. The fifth indicator is employee fluctuations, reflecting the company's organizational stability and ability to adapt to changing market conditions. Finally, the sixth indicator is capital intensity, representing the company's commitment to technological efficiency and investment in productive assets. By combining these six indicators into a single index, the measurement method provides a comprehensive assessment of a company's overall strategic orientation and aggressiveness.

After discussing the historical evolution of corporate strategy and establishing metrics to measure the level of aggressiveness in corporate strategy and strategic positioning, the subsequent exploration focuses on the hypothetical association between the deregulation of margin trading and corporate strategy.

4.3.2 The Role of the Deregulation of Margin Trading in Corporate Strategy

Real options theory serves as a fundamental basis for understanding how companies adjust their strategic aggressiveness in response to varying environments and uncertainties (Yeo and Qiu, 2003; Adner and Levinthal, 2004; Trigeorgis and Reuer, 2017; Ipsmiller *et al.*, 2019). The concept of “real options,” introduced by Myers (1977), extends financial option theory to strategic decision-making. Traditionally, financial options refer to contracts that grant individuals the right, but not the obligation, to buy or sell underlying assets at a predetermined price within a specified period. Real options theory applies these principles to real assets and investment opportunities, allowing companies to consider strategic decisions involving tangible assets, projects, or business ventures. Researchers such as Yeo and Qiu (2003), Adner and Levinthal (2004), Trigeorgis and Reuer (2017), and Ipsmiller *et al.* (2019) have further developed the application of real options theory in the context of strategic decision-making. They emphasize the importance of flexibility, timing, and adaptability in uncertain and dynamic environments. Real options theory enables companies to evaluate strategic alternatives based on their potential value, similar to the valuation of financial options. Thus, applying real options theory provides a solid theoretical foundation for investigating the impact of the 2010 deregulation of margin trading on corporate strategy in this research.

By conceptualizing increasing strategic aggressiveness as real options, companies can view the adjustment of strategic aggressiveness as a set of choices that provide flexibility to adapt to changing market conditions, uncertainties, and potential risks. For instance, investing in new product development, entering new markets, or increasing advertising expenditure creates real buy options for firms. This approach allows companies to adopt a pioneering strategy, enabling

them to wait for more favorable market conditions (Adner and Levinthal, 2004). It enables firms to capitalize on potential gains without exposing themselves to excessive downside risk under uncertainty. This perspective recognizes that future outcomes are uncertain and that maintaining the flexibility to delay, expand, or abandon investments can be advantageous. Essentially, the real options framework grants companies the right, but not the obligation, to act in the future. However, it is important to note that the value of these options can vary as the business environment evolves (Trigeorgis and Reuer, 2017). In particular, when a company faces external shocks and uncertainties, the value of the option will change accordingly (Ipsmiller *et al.*, 2019).

According to Ipsmiller *et al.* (2019), uncertainty plays a critical role in real option decisions within corporate strategy. Uncertainty refers to the lack of information or predictability regarding future events or outcomes and is a fundamental aspect that influences decision-making processes, particularly in the context of real options. Real options denote the strategic flexibility that firms have to adapt and make decisions in response to uncertain market conditions and changes. The value of real options is influenced by the level of uncertainty surrounding future events and the ability of firms to manage and navigate through that uncertainty.

Pindyck (1993) distinguishes between exogenous and endogenous uncertainty, with the former being uncontrollable and revealed over time. The deregulation of margin trading in 2010 can be classified as exogenous uncertainty, as it is primarily driven by stock market reforms and the behavior of other market participants. Companies have limited control over this type of uncertainty, making it challenging to mitigate its impact on the business environment. Therefore, the deregulation of margin trading indeed introduces a significant source of exogenous uncertainty by allowing increased risk-taking behavior in the stock market. This deregulation attracted more risk enthusiasts to participate in the market. Chang *et al.* (2014) highlight that the deregulation provided investors with the ability to leverage their investments, amplifying potential gains or losses, thereby attracting individuals with a higher risk appetite.

Trigeorgis and Reuer (2017) suggested that uncertainty increases the value of real options, providing potential for higher returns and greater flexibility in decision-making. In the context of the deregulation of margin trading, the resulting uncertainty can create opportunities for companies to make strategic decisions that align with their long-term goals and capture value in the market. One potential benefit of this uncertainty is the possibility of a rise in share prices. As the market adapts to the new regulatory environment, the value of certain stocks may fluctuate, driven by investor perceptions, expectations, and market dynamics. Companies that effectively navigate and respond to this uncertainty can potentially benefit from an increase in their market value.

Previous studies have shown that substantial volumes of margin trading transactions can lead to increased share prices under specific circumstances (Hardouvelis and Peristiani, 1992; Bhojraj *et al.*, 2009). The underlying mechanism behind this phenomenon can be attributed to market leverage, where additional liquidity injected into the market through margin trading amplifies price movements, creating upward pressure on stock prices. Furthermore, as deregulation allows investors to utilize borrowed funds to enter the market, overall demand for securities increases. This increased demand, coupled with limited supply, can create excess demand, leading to a surge in stock prices. This suggests that companies permitted to participate in pilot margin trading programs have the potential to enhance their market value compared to firms not yet allowed to engage in such activities. Consequently, the influx of risk enthusiasts after the deregulation of margin trading introduced a new element of exogenous uncertainty into the competitive landscape, as their trading decisions became a dynamic and unpredictable factor affecting market conditions and the business environment. Therefore, managers must be vigilant and carefully assess whether the strategic direction of the company aligns with the increased external uncertainty arising from the regulatory changes.

Drawing on the findings of uncertainties highlighted by Ipsmiller *et al.* (2019) and the potential upside for share prices following deregulation, it becomes apparent that the uncertainty stemming from the deregulation of margin trading can serve as an opportunity to create value

through the application of real call options in increasing corporate strategic aggressiveness. As discussed earlier, increasing strategic aggressiveness holds inherent value for firms in driving growth and maintaining competitiveness. The deregulation of margin trading, in this context, has the potential to amplify the value of increasing strategic aggressiveness. Specifically, firms can leverage the deregulation as an opportunity to unlock additional value and strengthen their competitive position by improving strategic aggressiveness.

Similarly, Trigeorgis and Reuer (2017) indicated that firms should adopt dynamic and pioneering strategies to effectively navigate the risks and opportunities posed by changing market conditions in an environment fraught with uncertainty. The uncertainty presents an opportunity for companies to embrace exploratory strategies, characterized by calculated risks, investments in innovative projects, and the pursuit of emerging market opportunities. Therefore, the deregulation of margin trading serves as a catalyst for pilot firms to reevaluate and enhance their strategic aggressiveness, leveraging the benefits of real options. This perspective aligns with the notion that uncertainty can add value to real options within corporate strategy.

Additionally, to fully harness the benefits of the deregulation of margin trading, companies need to consider the strategy preferences of potential stock buyers and align their decisions accordingly. Investors who use margin trading to buy shares are typically risk enthusiasts seeking high returns on their investments (Chang *et al.*, 2014). These investors are unlikely to invest in companies with less potential for future value increase, such as firms employing defender strategies. Defensive firms prioritize stability and resource preservation over future development, which can result in being priced out of the market (Rajagopalan, 1997; Bentley *et al.*, 2013). For example, defenders tend to enter established product marketplaces and avoid risk and uncertainty (Galbraith and Merrill, 1991). This approach limits their ability to capitalize on new market opportunities and does not appeal to risk enthusiasts looking for companies willing to take calculated risks to grow and expand.

Conversely, a prospector strategy, which has a high tolerance for risk, focuses on launching

new products and entering new markets quickly. This strategy requires companies to develop flexible and unified communication channels and establish adaptable production lines to respond swiftly to market changes and opportunities (Miles *et al.*, 1978; Miles and Snow, 2003). This strategy aligns with the preferences of risk enthusiasts following the deregulation of margin trading. In summary, companies that align their decisions with the preferences of risk enthusiasts by adopting a prospector strategy can enhance their market value and capitalize on the opportunities presented by the deregulation of margin trading.

Drawing on the theory of real options and the strategic preferences of potential margin trading users, the deregulation of margin trading has the potential to influence the value of strategic aggressiveness. This deregulation would amplify the value of the real option of increasing strategic aggressiveness, aligning with the expectations of margin trading users who favor exploratory strategies. Taking these factors into account, this study puts forth the following hypothesis:

Hypothesis 1: There is a positive correlation between the deregulation of margin trading and corporate strategy aggressiveness, while holding other factors constant.

4.3.3 The Moderating Role of Product Market Competition in the Deregulation of Margin Trading and Corporate Strategy

Extensive research indicates that product market competition is a critical determinant of a firm's development (Giroud and Mueller, 2010; Cheng *et al.*, 2013; Jiang *et al.*, 2015). For instance, product market competition significantly affects financial reporting quality (Cheng *et al.*, 2013), corporate governance (Giroud and Mueller, 2010), and firms' investment decisions (Jiang *et al.*, 2015). Consequently, firms must consider the state of product market competitiveness when developing their corporate strategies. Neglecting this vital factor can lead to suboptimal outcomes.

According to Porter's (1997) early market competition theory, the presence of competitors can enhance a company's competitiveness. Competitors can serve as a cushion for a firm's capacity utilization, particularly in the face of volatile or seasonal demand, and provide a benchmark for differentiation. Additionally, competitors may cater to segments that a firm prefers not to serve, thereby contributing to strong industry structures, market development, and barriers to entry for potential challengers. Porter argues that the intensity of competitive rivalry is a critical factor in determining industry competitiveness, identified through five aspects: the entry of new competitors, the threat of substitute products or services, the bargaining power of buyers, the bargaining power of suppliers, and rivalry among existing competitors. Integrating these five forces into strategy adjustment allows companies to effectively navigate market dynamics, differentiate their offerings, and optimize pricing, costs, and investments, ultimately enhancing their overall competitiveness in the industry.

In Porter's (1985) work on market competition, competitive advantage is broadly classified into two fundamental types: cost leadership and differentiation. A cost leadership strategy aims to attract consumers by offering products or services at lower prices than competitors. Xiaomi exemplifies a company that has successfully implemented this strategy, capturing significant market share in many developing countries. Xiaomi, a Chinese smartphone manufacturer, is widely recognized for its competitive pricing and value-for-money offerings, targeting price-sensitive consumers who prioritize affordability without compromising on product quality and features.

Conversely, firms can pursue differentiation to establish a competitive advantage. Differentiation involves creating unique characteristics or features in products or services that set them apart from competitors. Nelson (1970, 1974) highlighted the pivotal role of advertising in product differentiation, as it provides consumers with information to distinguish among various products, especially in highly competitive environments. Nelson further argued that product differentiation tactics aim to increase the perceived distance between a particular product and its competitors in the "product space," making it a less attractive substitute for

consumers.

Scholars such as Hill (1988) and Sharp and Dawes (2001) emphasize the importance of consumer variety in establishing distinctiveness. They argue that as products become more unique, they become increasingly challenging to categorize and compare with rivals. For instance, Apple continuously introduces new technological innovations in its products, serving as a key avenue for differentiation. By consistently offering innovative features, Apple distinguishes itself from competitors in the market. Similarly, Nickell (1996) finds that firms in competitive contexts gain an advantage through aggressive strategies, involving new product development or innovative projects. These findings collectively suggest that companies operating in highly competitive industries are more likely to employ differentiated strategies to distinguish themselves from competitors and establish a unique market position.

However, recent developments highlight the significance of aligning market competition strategy with the social environment (Li and Li, 2008). In certain cases, an emphasis on cost leadership yields superior financial performance for firms operating in emerging economies. This is primarily due to these firms gaining a comparative advantage from their low labor and production costs. Moreover, lower-priced offerings tend to resonate with consumers who have limited disposable income in such economies. In China, previous studies suggest that many firms historically adopted a cost-leadership strategy due to the low value of differentiation and low disposable income (Aulakh *et al.*, 2000; Murray *et al.*, 2005). This preference was driven by consumers' emphasis on price and functionality, rather than production conditions (Lin, 2010). However, as the economy has developed, there has been a growing diversification of consumers based on income, education, aesthetic taste, and social preferences. This diversification has created opportunities for product differentiation, even within relatively homogeneous markets (Foellmi and Zweimüller, 2004). Van de Ven and Jeurissen (2005) argue that competition among existing firms is influenced by product distinctions and brand identity instead of cost reduction.

The study by Duanmu *et al.* (2018) supports the notion that Chinese firms are increasingly recognizing the importance of differentiation in highly competitive markets. With China's rise as a global economic powerhouse, Chinese firms face intensified competition both domestically and internationally. Consequently, firms in highly competitive environments are more likely to transition from a cost leadership strategy to a differentiation leadership strategy as the economy develops. Conversely, in industries characterized by high market concentration and limited competition, firms have less incentive to invest in innovation and differentiation. Market leaders in such industries enjoy a dominant position and greater pricing power.

Based on this understanding, this study argues that heightened market competition positively affects corporate strategy aggressiveness for Chinese firms. In highly competitive industries, firms face intense pressure to differentiate themselves from their rivals and gain a competitive edge by offering innovative products or services or delivering superior customer experiences. In the previous hypothesis, this study assumed that the deregulation would lead to an increase in strategic aggressiveness. This section further hypothesizes that market product competition potentially moderates the positive relationship between the deregulation of margin trading and strategic aggressiveness. The presence of deregulation allows risk lovers to buy shares, and these stock buyers often have a higher tolerance for risk and expect companies to display a proactive and inventive approach, especially in highly competitive industries. Therefore, after deregulation, companies operating in highly competitive industries are further incentivized to embrace more pioneering and forward-thinking strategies to increase their market value. Accordingly, this study hypothesizes that:

Hypothesis 2: An increase in market competition will strengthen the positive influence of the deregulation of margin trading on corporate strategy aggressiveness.

4.3.4 The Moderating Role of Management Shareholding in the Deregulation of Margin Trading and Corporate Strategy

From a game-theoretic standpoint, corporate strategy is ultimately determined by managers' intellectual ability to "play the game" (Teece *et al.*, 1997). In an uncertain economic environment, managers' decision-making processes are influenced by their personality traits and degree of risk aversion. According to Courtney *et al.* (1997), managers with different personality traits have varying responses to uncertainty and risk, which can influence their strategic decision-making. Additionally, top managers' assessments of market structure and the firm's strengths and weaknesses also impact their strategy formulation (Barney, 1986).

Steensma and Corley (2001) suggest that managers' attitudes toward risk can influence firms' strategic choices. According to agency theory, proposed by Jensen and Meckling (1976), shareholders hire managers to run the firm and transfer decision-making power to them. However, agents may not always make decisions based on maximizing shareholders' interests and instead may pursue their own interests. Agency theory provides insights into the use of equity-based compensation plans by firms to align the interests of managers and owners. Firms create incentives for managers to act in shareholders' best interests by offering equity in the form of stock-based compensation. This approach links managers' financial rewards to the firm's long-term performance, as they benefit directly from the increase in stock price (Jensen and Meckling, 1976). Consequently, equity-based compensation leads managers to prioritize the company's long-term interests.

Similarly, research by Oyer (2004) and Oyer and Schaefer (2005) suggests that offering stock-based incentives can be an effective strategy for attracting high-quality employees. Talented individuals are often motivated by the potential financial gains associated with equity ownership in the company. Furthermore, studies by Carter and Lynch (2001) and Subramanian *et al.* (2007) have shown that employees who receive stock-based incentives are more likely to stay with the firm for an extended period. In other words, the wealth of managers becomes more tied to the firm's decision-making when they have substantial ownership (Agrawal and

Knoeber, 1996). It is suggested that managers holding their firm's stock can drive managerial oversight and improve firm performance (Short and Keasey, 1999; Li *et al.*, 2007).

Miles and Snow (2003) propose that a pioneering strategy, which emphasizes development and innovation, encourages firms to adopt a forward-looking approach to business investment. This strategic orientation aligns with stock-based reward systems, where employees are incentivized and rewarded based on their long-term contributions to the organization. Evolutionary growth strategies, characterized by their dynamic and flexible nature, emphasize creativity, risk-taking, and the cultivation of an innovative culture within the firm. Such strategies are well-suited to organizations that prioritize long-term value creation and sustainable competitive advantage. Stock-based reward systems can further reinforce the link between corporate strategy and long-term performance, as rewards are tied to the achievement of strategic objectives and milestones.

Considering the relationship between managerial ownership and strategic aggressiveness adjustments following the deregulation of margin trading, managers with higher ownership stakes in the company are anticipated to exhibit greater responsiveness to changes in the external environment. These managers, driven by their long-term aims and vested interests in the firm's success, are more inclined to adopt a risk-taking perspective. Managers who have stock ownership and a high-risk attitude often exhibit a strong inclination to embrace uncertainty and perceive it as an opportunity rather than a hindrance. Their ownership stake in the company aligns their interests with those of the shareholders, motivating them to take bold actions and pursue strategies that can potentially yield high returns (Jones and Butler, 1992; Courtney *et al.*, 1997). These managers, being shareholders themselves, are more likely to have a long-term perspective and a vested interest in the company's success. Therefore, they perceive uncertainties resulting from factors like the deregulation of margin trading as opportunities to expand their businesses and improve strategic aggressiveness.

In contrast, managers with limited stock ownership do not have the same personal financial stake in the company's performance as those with significant ownership. As a result, they

prioritize risk mitigation and the preservation of the current status over taking bold actions that could potentially generate higher returns. Their risk aversion leads them to be more hesitant to embrace uncertainties resulting from factors like the deregulation of margin trading (Courtney *et al.*, 1997). Their focus on risk mitigation and short-term stability hinders their willingness to pursue aggressive strategies in response to deregulation. Accordingly, this study hypothesizes that:

Hypothesis 3: An increase in management shareholding will strengthen the positive influence of the deregulation of margin trading on corporate strategy aggressiveness.

4.3.5 The Moderating Role of Institutional Shareholding in the Deregulation of Margin Trading and Corporate Strategy

Hirschman (1970) suggested that institutional investors play a significant role in shaping corporate management decisions, albeit indirectly. The actions and preferences of institutional investors can influence corporate managers by aligning interests, influencing governance practices, guiding strategic choices, and impacting a company's reputation and access to capital. While they do not engage directly in the day-to-day operations of a company, their ability to sway market perceptions can significantly impact a company's operations and strategic direction. Institutional investors exert their influence is through collective action. By joining forces and coordinating their investment strategies, institutional investors can avoid investing in specific projects or companies, thereby raising the cost of capital for those entities. This collective action sends a strong signal to company management, compelling them to consider the concerns and preferences of institutional investors. These actions can be particularly impactful when undertaken by long-term institutional investors who prioritize the company's long-term performance and are less concerned with short-term stock liquidity (McCahery *et al.*, 2016).

The role of institutional investors in corporate decision-making is indeed subject to debate, as different studies present contrasting perspectives. McCahery *et al.* (2016) argue that institutional investors who actively participate in company decisions do so with a long-term focus, prioritizing the company's overall development rather than short-term gains. These institutions adopt a risk-taker perspective and are not driven by short-term, myopic goals. Instead, they are willing to hold their investments for an extended period, even during challenging times when long-term projects can temporarily impact the stock price. In such cases, these institutions support the company in enhancing the aggressiveness of its strategy.

However, an alternative viewpoint is presented by Graves and Waddock (1990), who suggest that institutional owners operate with an even shorter time horizon due to external pressures. These pressures can stem from the need to deliver periodic outcomes to customers or stakeholders. Consequently, institutions tend to adopt a risk-averse perspective and prioritize short-term performance. During difficult periods when a company faces large and uncertain expenses such as innovation spending or investments, institutional pressure for immediate results can influence company management. As a result, firms are less inclined to pursue an aggressive strategy and instead opt for a more conservative approach.

The contrasting perspectives on the role of institutional investors in corporate strategy highlight the diverse nature and motivations of these institutions. Some institutions prioritize long-term growth and are willing to endure short-term challenges, while others face external pressures that drive them toward short-term performance goals. Based on these differing viewpoints, two competing scenarios emerge regarding the relationship between institutional ownership, the deregulation of margin trading, and the aggressiveness of corporate strategy. These scenarios reflect different expectations and outcomes based on the underlying assumptions about institutional behavior and its impact on strategic decision-making.

In the first scenario, institutional ownership could strengthen the relationship between deregulation and strategic aggressiveness. Institutions with higher ownership stakes are more

likely to support and advocate for a more aggressive strategic approach following the deregulation of margin trading. Driven by long-term perspectives and a willingness to bear risks, these institutions perceive deregulation as an opportunity to pursue growth and innovation. Consequently, the relationship between the deregulation of margin trading and strategic aggressiveness is reinforced, with institutional ownership acting as an amplifying factor.

In the second scenario, if institutional ownership is negatively correlated with the aggressiveness of corporate strategy, as suggested by Graves and Waddock (1990), then institutional ownership could weaken the positive relationship between deregulation and strategic aggressiveness. Institutions with a shorter time horizon and a risk-averse perspective exert pressure on companies to prioritize short-term performance and stability over aggressive strategic moves. In this scenario, these institutional investors prefer more conservative approaches and are cautious about embracing the uncertainty resulting from the deregulation of margin trading. They favor companies that prioritize profitability, cash flow generation, and risk mitigation rather than pursuing aggressive and potentially volatile strategies. Consequently, the positive relationship between the deregulation of margin trading and strategic aggressiveness is attenuated, with institutional ownership acting as a moderating factor.

Based on the controversial nature of the role of institutional investors in the strategic aggressiveness of companies, this study proposes two competing hypotheses to explore the potential relationship:

Hypothesis 4a: An increase in institutional shareholding will strengthen the positive influence of the deregulation of margin trading on corporate strategy aggressiveness.

Hypothesis 4b: An increase in institutional shareholding will weaken the positive influence of the deregulation of margin trading on corporate strategy aggressiveness.

4.3.6 The Moderating Role of Management Risk Preference in the Deregulation of Margin Trading and Corporate Strategy

Hambrick and Mason (1984) provide a comprehensive discussion of “Upper Echelons Theory”, which posits that a manager’s background characteristics, including their values and cognitive abilities, not only influence their decision-making but also affect the formulation of corporate strategies and operational efficiencies. This theory emphasizes that managerial risk preferences are key to shaping investment decisions and strategic planning, with managers’ personal inclinations towards risk influencing the strategic paths their companies pursue.

Building on this foundation, Bertrand and Schoar (2003) highlight the pivotal influence of managerial roles in shaping the decision-making processes within corporations. They argue that the individual characteristics and decision-making styles of managers are not just peripheral influences but central determinants of corporate strategy and performance. Their research demonstrates that different managers bring distinct approaches to risk, innovation, and problem-solving, which in turn can significantly affect the strategic choices a company makes. This variation can lead to markedly different outcomes in terms of company growth, adaptability to market changes, and financial performance.

Moreover, Panousi and Papanikolaou (2012) demonstrate that when managers are compelled to bear firm-specific risks, it can lead to divergent assessments of investment opportunities between managers and shareholders. This discrepancy often results in suboptimal investment decisions and consequently, heightened agency costs, particularly in settings where investment returns are uncertain and not directly proportional to the expected outcomes.

Graham *et al.* (2013) delve deeper into the psychological dimensions of managerial behavior. They examine a spectrum of psychological traits, including risk aversion, impatience, and optimism, to understand how these personal attributes directly impact strategic choices within corporations. Their study reveals that these traits influence not only routine managerial decisions but also significantly affect critical areas such as financial planning, investment in

innovation, and risk management. This research underscores the idea that managers' personal characteristics can profoundly shape a firm's strategic direction and resilience in navigating market uncertainties.

Opper *et al.* (2017) explore the critical impact of managerial risk preferences on strategic choices and their subsequent effects on organizational performance by examining Chinese firms. Their research confirms that managers' individual risk tolerances are not merely personal traits but are instrumental in shaping the strategic directions of the companies they lead. The study systematically examines how these risk preferences influence key strategic decisions and firms' performance.

Engaging in strategies that significantly alter a company's trajectory—referred to as "strategic aggressiveness"—often requires substantial resource commitment. These investments are typically characterized by high uncertainty, long-term horizons, and asymmetrical cost-benefit analyses. The inclination to invest in such strategies largely depends on a manager's expectations and strategic priorities.

In environments where strategic aggressiveness is encouraged following the deregulation of margin trading, a manager's personal risk tolerance plays a crucial role. Managers with high-risk tolerance are generally more inclined towards innovation, willing to allocate substantial resources towards R&D, and pursue novel product development to secure lasting competitive advantages and foster corporate growth. Conversely, risk-averse managers tend to demonstrate reluctance or opposition towards innovative undertakings, perceiving the risks associated with strategic radicalness as surpassing their threshold of acceptance. Such managers tend to conserve resources, favoring safer investment avenues.

Given the complex and multifaceted nature of strategic decision-making, which often involves navigating vast amounts of information and making critical trade-offs, managerial risk preferences can significantly influence a company's strategic direction. Therefore, this section

hypothesizes that a manager's risk preference can act as a moderating variable in the relationship between the deregulation of margin trading and strategic aggressiveness. In scenarios where the deregulation of margin trading is allowed, firms' propensity to engage in riskier, more aggressive strategic actions varies significantly based on management's inherent risk tolerance. Accordingly, this study proposes the following hypothesis to explore the potential relationship:

Hypothesis 5: An increase in managements' risk preference will strengthen the positive influence of the deregulation of margin trading on corporate strategy aggressiveness.

4.4 Methodology

4.4.1 Data

This study utilizes financial data for firms from the China Stock Market & Accounting Research (CSMAR) database. To ensure the reliability and validity of the findings, several steps were taken to ensure data quality. Firstly, the sample period was carefully selected to avoid the potential impact of other significant policy changes in the Chinese equity market. Specifically, between 2005 and 2006, the Shanghai and Shenzhen Stock Exchanges implemented a mandatory stock share split reform for pilot firms. This reform aimed to address various concerns related to the pricing and trading of stocks in the Chinese market by enhancing liquidity, increasing market participation, and promoting a more efficient and transparent environment. The reform required firms to split their stocks into smaller units, lowering the share price and increasing the number of shares outstanding. This initiative fostered the growth and stability of the stock market and attracted both domestic and foreign investors. Given its potential impact on financial ratios and the study's results, the sample period was adjusted to start from 2006 onwards, thereby excluding the stock split period between 2005 and 2006. This adjustment was crucial to avoid potential bias and ensure the accuracy of the analysis.

In addition, the introduction of new accounting standards in 2007 marked a significant change in the financial reporting landscape. These standards aimed to align China's accounting practices with international norms and had a profound impact on financial reporting for listed firms. To ensure the reliability and comparability of financial data, this study has chosen 2007 as the starting point for the sample period. This choice allows the research to capture the impact of the new accounting standards on the financial performance of firms over time and avoids potential bias caused by differences in variable classification between the old and new accounting standards. Consequently, the sample period for this study extends from 2007 to 2020, effectively avoiding the influence of both the share split reform and the introduction of new accounting standards.

Additionally, the data has been pre-processed to ensure its quality. Firstly, financial firms have been excluded from the sample, a common practice in finance research to avoid industry-specific anomalies. Secondly, samples with missing and abnormal data have also been excluded. Finally, all data have been winsorized at the 1% and 99% levels to address any outliers. After these data pre-processing steps, the initial sample size is 20,582, comprising 7,693 treatment observations and 12,889 control observations.

4.4.2 Key Variables Measurement

4.4.2.1 Measuring Corporate Strategic Aggressiveness.

The measurement of corporate strategic aggressiveness has significantly evolved over the years, with various research contributing to improved methodologies for more accurate assessment (Hambrick, 1983; Ittner *et al.*, 1997; Miles *et al.*, 1978; Porter, 1980; Miles and Snow, 2003; Bentley *et al.*, 2013). In the early stages, Hambrick (1983) made a valuable contribution by identifying the ratio of marketing to sales as a variable differentiating prospectors from defenders. Subsequently, Ittner *et al.* (1997) introduced a business strategy index to evaluate competitive strategy by assigning higher scores to organizations aligning closely with the prospector end of the strategy continuum. This index was constructed using four variables: (1) the ratio of research and development to sales, (2) the market-to-book ratio, (3) the ratio of employees to sales, and (4) the number of new product or service introductions. However, this method did not account for Hambrick's contribution, which emphasized the marketing-to-sales ratio. Incorporating this ratio is crucial for a nuanced understanding of corporate strategy, particularly in industries where marketing efforts significantly contribute to competitive advantage.

Porter's (1980) approach to measuring corporate strategy differs from Ittner *et al.*'s (1997) methodology in that it relies on subjective measures, such as personal interviews and management surveys. While this approach can provide a more nuanced understanding of a firm's strategic direction, it may not capture recent changes in strategy in a timely manner

(Bentley *et al.*, 2013; Chen *et al.*, 2017). In contrast, Ittner *et al.* use objective data over time to construct composite measures of corporate strategy. Additionally, Miles *et al.* (1978) and Miles and Snow (2003) emphasize the importance of organizational characteristics in shaping a firm's strategic orientation, differentiating prospectors from defenders. They identified two crucial characteristics: organizational stability and operational effectiveness. Organizational stability, indicated by average staff tenure, reflects the degree of stability and continuity in a firm's workforce. Operational effectiveness, measured by total capital intensity, reflects the degree of automation and efficiency in a firm's operations. Overall, the contributions of Miles and Snow highlight the importance of considering a broad range of organizational characteristics when assessing corporate strategy.

Building upon the work of Ittner *et al.* (1997), Hambrick (1983), and Miles and Snow (1978, 2003), Bentley *et al.* (2013) developed a comprehensive measurement index that integrates six significant aspects of strategy to represent a firm's overall strategic orientation. This index aims to evaluate the competitive strategy of an organization by assigning higher scores to businesses that align more closely with the prospector end of the strategy continuum. It specifies a company's strategic orientations and considers the appropriate structures, procedures, and human resource practices associated with each strategy. Consequently, this measurement approach has gained popularity as a proxy for assessing business strategy, leading to its adoption in recent years (Heinicke *et al.*, 2016; Kim *et al.*, 2016; Lim *et al.*, 2018; Maniora, 2018; Kong *et al.*, 2020; Teirlinck, 2020; Ji *et al.*, 2021; Cao *et al.*, 2022; Kong *et al.*, 2022).

Drawing on the framework established by Bentley *et al.* (2013), subsequent studies have utilized two variables to measure corporate strategy: a discrete strategy index composite measure and a categorical variable representing the type of corporate strategy. The specific measurements employed in these studies are as follows:

$$\text{Corporate strategy index}_{i,t} = \sum_{j=1}^6 \text{Indicators}_j$$

The strategy index is constructed by summing the scores of six indicators for each firm year. These indicators include the ratio of R&D expenditure to sales, the ratio of employees to sales, changes in total revenue, the ratio of selling, general, and administrative expenses to sales, employee fluctuations, and capital intensity. A detailed explanation and measurement of each indicator are provided in Appendix E. A higher score on the overall strategy index indicates a more pioneering strategy. According to Bentley *et al.* (2013), companies with scores ranging from 6 to 12 are classified as defenders, those with scores ranging from 13 to 23 are classified as analyzers, and those with scores ranging from 24 to 30 are classified as prospectors. The category variable (Strategy Position) classifies companies according to these definitions and the value of the strategy index. Thus, the Strategy_{Position} takes on three values: 1 for defenders, 2 for analyzers, and 3 for prospectors.

4.4.2.2 Measuring the Deregulation of Margin Trading.

In estimating the impact of the deregulation of margin trading on corporate strategy, this study adopts the Difference-in-Differences (DID) method. DID is a widely used approach in econometrics and social sciences for estimating causal effects by comparing changes in the outcome variable of interest between treatment and control groups before and after a treatment. In this study, we utilize three dummy variables: LIST, POST, and POSTLIST.

- **LIST:** This variable indicates whether a firm is in the treatment group. LIST equals 1 if a firm is in the treatment group and 0 if it is in the control group.
- **POST:** This variable equals 1 if a firm is in the post-regulation period (after the deregulation of margin trading) and 0 if it is in the pre-regulation period.
- **POSTLIST:** This variable is the interaction term of LIST and POST, measuring the impact of the deregulation of margin trading on firms in the pilot group.

The DID method can estimate the average treatment effect on the treated (ATT) by comparing the changes in outcome variables between firms in the treatment and control groups before and after the deregulation of margin trading.

4.4.3 Endogeneity Concerns

Endogeneity poses a significant challenge in empirical research, particularly when the sample selection is non-random. This issue is prevalent in this chapter, which explores the impact of margin trading deregulation on corporate strategic aggressiveness. Specifically, the firms permitted to engage in margin trading—termed the experimental group—are selected based on specific criteria, not at random. The non-random selection of these companies by the China Securities Regulatory Commission (CSRC) introduces potential biases, making the direct application of Difference-in-Differences (DID) analysis susceptible to endogeneity.

The non-random selection is evidenced by the characteristics of these firms. As outlined in Table 4.2, firms allowed to engage in margin trading tend to be larger in size and have a longer history of being listed, suggesting that the CSRC prefers firms with a certain level of financial stability and market presence for the margin trading program. Additionally, the selected firms demonstrate stronger profit margins, indicating their ability to generate higher profitability compared to non-selected firms. Moreover, the selected firms exhibit higher returns on capital, reflecting efficient resource utilization, and possess greater cash capacity, implying better financial flexibility. Furthermore, the stock-level comparison reveals that the selected firms' stocks exhibit lower volatility and lower trading volume compared to non-pilot firms. This suggests that pilot firms' stocks are perceived as relatively stable investments with lower market risk, which might have influenced the CSRC's decision to include them in the margin trading program.

PSM is a statistical technique that attempts to estimate the effect of a treatment, policy, or other intervention by accounting for the covariates that predict receiving the treatment (Chen *et al.*, 2018; Meng *et al.*, 2020). In the context of this study, PSM helps create a control group statistically similar to the treatment group in terms of observed characteristics. This method reduces selection bias by matching firms allowed to engage in margin trading with those that are not, based on a similar propensity score calculated from the observed covariates.

By using PSM, this study can approximate a random experimental design, ensuring the only difference between the groups is their exposure to the deregulation policy. This approach significantly enhances the credibility of the causal inferences by ensuring that differences in corporate strategic aggressiveness between the groups are attributable to the policy change rather than pre-existing differences between the firms.

This study treats panel data as cross-sectional for propensity score matching, a method widely endorsed in the literature. It consolidates data from all time points into one dataset, defining treatment and control groups. The treatment group includes firms permitted to engage in margin trading during the study period, while the control group consists of those not allowed. A logistic regression model estimates the probability of each unit receiving treatment based on relevant covariates (X_n), which capture the stock trading and firm characteristics required by the Shanghai and Shenzhen stock exchanges to determine whether a firm is eligible for margin trading. Specifically, X_n comprises all the variables presented in Table 4.2, and the definitions of those variables can be found in Table 4.1.

Choosing to treat panel data as cross-sectional simplifies the matching process by requiring only one match per unit, thereby stabilizing the sample and preventing annual fluctuations in sample size. Treating observations at each time point as independent increases the potential for matches and, by extension, the quality of the matching and statistical power.

The study also considered a year-by-year matching method to capture temporal changes in policy or treatment effects. However, this approach has limitations, such as potential sample size reduction if suitable matches are not found annually, which could weaken statistical power. While per-year matching offers insights into dynamic changes, it also poses challenges such as potential sample reduction and inconsistency in matching quality across years.

After implementing PSM, the matched sample, as observed in Table 4.2, reveals no significant differences between the two groups regarding factors that could influence their eligibility for

margin trading. Therefore, this matching helps ensure that the subsequent analysis is more robust and that the results are not driven by pre-selection biases but rather by the deregulation event itself.

Table 4. 1: Variable Definition for the Study of Corporate Strategy Decision After the Deregulation of Margin Trading

Variable name	Definitions	Original data source
STRATEGY (STR)	Following Bentley <i>et al.</i> (2013), see Appendix E for details. The overall corporate strategy index is a summation of six dimensions for each company year, with the highest score being 30 and the lowest score being 6. Higher indices indicate greater strategic aggressiveness for the company.	CSMAR Database
LIST	Equals 1 for treatment firms and 0 otherwise.	CSMAR Database
POST	Equals 1 if a firm is in the post-regulation period and 0 otherwise.	CSMAR Database
POSTLIST	Equals 1 if the firms in the list in the current period while 0 otherwise.	CSMAR Database
SIZE	Natural logarithm of total assets.	CSMAR Database
ROA	Net earnings / Total assets	CSMAR Database
AGE	Natural logarithm of the number of years listed.	CSMAR Database
PROFIT	Earnings before interest and tax / Total sales	CSMAR Database
LIQUIDITY	Current asset / Current liabilities	CSMAR Database
CF	Net cash flows from operating activities/total assets.	CSMAR Database
LEV	Total liabilities / Total assets	CSMAR Database
SOE	Equal to 1 if the company is a state-owned enterprise while 0 otherwise.	CSMAR Database
TOP10	Total shareholding of top ten shareholders as a percentage of total number of shares.	CSMAR Database
RETURN	The average of the daily stock returns in a year.	CSMAR Database
VOLATILITY	The standard deviation of the daily stock returns in a year.	CSMAR Database
TURNOVER	The average of the daily stock turnover rate in a year.	CSMAR Database
STRATEGY _{Position} (STR _{Position})	The variable takes values from 1 to 3. The value of the indicator equals 1 if the overall strategy score is 6–12 (defenders); 2 if the overall strategy score is 13–23 (analyzers); and 3 if the overall strategy score is	CSMAR Database

	24-30 (prospectors).	
Herfindahl-Hirschman Index	$HHI = \sum_{i=1}^N (X_i / X)^2$ Where X_i represents the total revenue of a single company and X denotes the total revenue of the industry. The Herfindahl-Hirschman Index (HHI) sums the squared market share ratios for all companies in the industry. A higher value of the HHI indicates a higher level of market concentration and less competition within the industry.	CSMAR Database
Management shareholding	Total shareholding of management / Total number of shares	CSMAR Database
Institutional shareholding	Total shareholding of institutions / Total number of shares	CSMAR Database
Managements' risk preference (MRP)	Market value of management shareholding / (Market value of management shareholding + Management remuneration)	CSMAR Database
Patent	Natural logarithm of the number of patents.	CSMAR Database
Economic policy uncertainty (EPU)	Huang and Luk (2020) provide a valuable resource by presenting a monthly economic policy uncertainty index on a publicly accessible webpage. This study utilizes this data source and employs an annual averaging methodology to compute the economic uncertainty index for each year.	CSMAR Database (https://economicpolicyuncertaintyinchina.weebly.com/)
China Comprehensive Investor Sentiment Index (CICSI)	The CSMAR database offers a monthly CICSI index. This study utilizes this data source and employs an annual averaging methodology to compute the CICSI index for each year.	CSMAR Database
ZSCORE	Following Altman (1968), a higher Z-score indicates better financial performance and a lower probability of bankruptcy.	CSMAR Database

Table 4. 2: Comparison of Firm Characteristics between Treatment and Control Groups Using T-Test

Variable	Before PSM (Mean)				After PSM (Mean)			
	Treatment	Control	Difference	T-value	Treatment	Control	Difference	T-value
SIZE	22.822	21.659	1.163***	39.005	21.998	21.847	0.151	1.021
TOBIN	1.988	2.088	-0.100***	5.094	2.063	2.059	0.004	0.182
AGE	2.495	2.399	0.096***	13.997	2.428	2.411	0.017	1.307
LEV	0.493	0.457	0.036***	12.622	0.465	0.462	0.003	0.671
PROFIT	0.114	0.061	0.053***	19.305	0.091	0.075	0.016	1.229
ROA	0.038	0.015	0.023***	23.929	0.028	0.021	0.007	1.299
LIQUI	1.798	2.030	-0.232***	9.026	1.945	1.962	-0.017	0.478
CF	0.003	-0.004	0.007***	4.725	0.001	-0.002	0.003	0.886
SOE	0.602	0.486	0.116***	16.322	0.524	0.506	0.018	1.525
TOP10	55.435	52.105	3.330***	15.366	52.180	52.237	-0.057	0.204
INDEP	37.319	37.192	0.127	1.564	37.063	37.080	-0.017	-0.161
RETURN	0.001	0.001	0.000	0.700	0.001	0.001	0.000	0.005
VOLA	0.030	0.031	-0.001***	4.392	0.031	0.031	0.000	0.452
TURN	0.017	0.020	-0.002***	12.732	0.020	0.020	0.000	0.309
Observation	7693	12889			5476	5359		

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.4.4 Model Constriction

4.4.4.1 Baseline Model

To investigate the impact of the deregulation of margin trading on corporate strategy, this paper employs a time-varying Difference-in-Differences (DID) model. This model is preferred because securities were added to the list of margin trading in batches, and the deregulation was implemented gradually rather than all at once. Following the methodology of Beck *et al.* (2010) and Meng *et al.* (2020), the time-varying DID model is expressed as follows:

$$Strategy_{i,t} = \alpha + \beta * POSTLIST_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t} \quad (1)$$

In model (1), the dependent variable $Strategy_{i,t}$ represents the strategy score and strategy ranking in firm i in year t . Year and industry dummy variables account for year and industry fixed effects, $Controls_{i,t}$ is a set of firm-level variables, and $\varepsilon_{i,t}$ is the error term. The variable of interest is $POSTLIST_{i,t}$, a dummy variable that equals one in the years after firm i deregulates and zero otherwise, which captures the differential effect of the policy change on the treatment group. Therefore, this paper focuses on β . If the coefficient of β is significant, it indicates that margin trading affects business strategy. Specifically, a positive coefficient indicates that deregulation of margin trading has encouraged firms to improve their corporate strategic aggressiveness and vice versa. In addition to the aforementioned variables, this study incorporates several control variables to account for potential factors impacting corporate strategy (refer to Table 4.1 for details).

The baseline model allows the study to estimate the causal impact of the deregulation of margin trading on corporate strategy by comparing the changes in strategic aggressiveness between the treatment group and the control group before and after the deregulation, controlling for other relevant factors. This model accounts for any unobserved time-varying factors that can affect corporate strategy orientation by including industry and year fixed effects.

4.4.4.2 The Moderating Effects Model: Market Product Competition

Various previous literature argues that heightened market competition positively affects corporate strategy aggressiveness (Giroud and Mueller, 2010; Cheng *et al.*, 2013; Jiang *et al.*, 2015). In highly competitive industries, firms face intense pressure to differentiate themselves from their rivals and gain a competitive edge by offering innovative products or services or delivering superior customer experiences. As in previous studies, this study uses the Herfindahl index, widely used in research (Ali *et al.*, 2008; Fernández-Kranz and Santaló, 2010; Babar and Habib, 2021). A higher Herfindahl index value indicates a lower degree of competition, suggesting that a few dominant firms have a larger market share while smaller firms have limited market presence (refer to Table 4.1 for the calculation of the Herfindahl index). This model also accounts for identical control variables included in the base model, incorporating time and industry fixed effects.

$$\begin{aligned} Strategy_{i,t} = & \alpha + \beta * POSTLIST_{i,t} + \gamma * HHI_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t \\ & + \varepsilon_{i,t} \end{aligned} \quad (2)$$

$$\begin{aligned} Strategy_{i,t} = & \alpha + \beta * POSTLIST_{i,t} + \gamma * HHI_{i,t} + \phi * (HHI_{i,t} * POSTLIST_{i,t}) + \theta \\ & * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t} \end{aligned} \quad (3)$$

In model (2), $HHI_{i,t}$ is a measure of market concentration, is a measure of market competition, quantified by the Herfindahl index. The coefficient of $HHI_{i,t}$ will be negative if higher competition leads to a more pioneering corporate strategy, as a higher Herfindahl index value indicates a lower degree of competition. Then, the variable of interest is $HHI_{i,t} * POSTLIST_{i,t}$ in model (3), which examines the moderating effect of market competition on the relationship between the deregulation and corporate strategy. If the coefficient of the interaction term (ϕ) is negative, it indicates that after the margin trading deregulation, firms will adopt more aggressive strategies in environments with higher market competition.

4.4.4.3 The Moderating Effects Model: Managerial Shareholding

In accordance with agency theory (Jensen and Meckling, 1976), there exists a fundamental divergence of interests between managers and shareholders, with shareholders focused on maximizing long-term wealth while managers prioritize short-term profits to secure their own positions. Jensen and Meckling suggest that equity-based compensation plans align the interests of managers and owners. Considering the relationship between managerial ownership and strategic adjustments following the deregulation of margin trading, managers with more shareholdings, driven by long-term aims and vested interests in the firm's success, are more inclined to adopt a risk-taker perspective. These managers view uncertainties as opportunities to expand their businesses (Jones and Butler, 1992; Courtney *et al.*, 1997). In contrast, managers without shareholdings tend to exhibit caution and conservatism when approaching new product development or venturing into unexplored markets (Courtney *et al.*, 1997).

Building upon this theoretical foundation, Hypothesis 3 proposes that managers with higher ownership stakes exhibit greater responsiveness to changes in corporate strategy following the deregulation of margin trading, leading them to prefer more pioneering strategies that generate long-term value for the firm. Additionally, the following models account for the same control variables as those included in the base model, along with incorporating time and industry fixed effects.

$$\begin{aligned} Strategy_{i,t} = & \alpha + \beta * POSTLIST_{i,t} + \varphi * MS_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t \\ & + \varepsilon_{i,t} \end{aligned} \quad (4)$$

$$\begin{aligned} Strategy_{i,t} = & \alpha + \beta * POSTLIST_{i,t} + \varphi * MS_{i,t} + \lambda * (MS_{i,t} * PIPOSTLIST_{i,t}) + \theta \\ & * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t} \end{aligned} \quad (5)$$

In model (4), $MS_{i,t}$ indicates management shareholding. The coefficient of $MS_{i,t}$ will be positive if higher managerial ownership leads to a more pioneering corporate strategy and negative if it leads to a less aggressive or defensive strategy. Then, the variable of interest is

$MS_{i,t} * POSTLIST_{i,t}$ in model (5), which examines the moderating effect of managerial shareholding on the relationship between the deregulation and corporate strategy. A significant coefficient for the interaction term (λ) would indicate that managerial shareholding moderates the effect of the deregulation on strategy choice. Specifically, if the coefficient of the interaction term (λ) is positive, it indicates that there will be stronger positive relationships between the deregulation of margin trading and the aggressiveness of corporate strategy when managerial stockholdings are high and vice versa.

4.4.4.4 The Moderating Effects Model: Institutional Shareholding

McCahery *et al.* (2016) suggest that institutional investors who choose to participate in companies tend to do so due to concerns about the long-term development of the company, rather than short-term challenges. These institutional shareholders are not driven by short-term, myopic interests but rather hold stocks for longer periods when they anticipate long-term pioneering projects. Therefore, they tend to support companies in upgrading their strategy to gain more benefits in the future. However, Graves and Waddock (1990) argue that institutional owners have even shorter time horizons than individual owners, as they are under immense pressure to deliver outcomes to their customers periodically. In such cases, institutions tend to adopt a risk-averse perspective and employ more defensive strategies.

Given these competing arguments, this study proposes two competing hypotheses to investigate the moderating effect of institutional shareholding. The first hypothesis is that institutional ownership could strengthen the positive relationship between the deregulation of margin trading and the aggressiveness of corporate strategy. Conversely, the second hypothesis is that institutional ownership could weaken the positive relationship between the deregulation of margin trading and the aggressiveness of corporate strategy. This hypothesis suggests that institutional shareholders, with their short-term focus, prefer more conservative strategies, which could be detrimental to the long-term growth of the company. This study designs the following models to investigate these two competing hypotheses.

$$Strategy_{i,t} = \alpha + \beta * POSTLIST_{i,t} + \vartheta * INS_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t} \quad (6)$$

$$Strategy_{i,t} = \alpha + \beta * POSTLIST_{i,t} + \vartheta * INS_{i,t} + \varpi * (INS_{i,t} * POSTLIST_{i,t}) + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t} \quad (7)$$

In model (6), $INS_{i,t}$ indicates institutional shareholding. The coefficient of $INS_{i,t}$ will be positive if higher institutional ownership leads to a more pioneering corporate strategy, and negative if it leads to a less aggressive strategy. Model (7) examines the moderating effect of institutional shareholding on the relationship between the deregulation of margin trading and corporate strategy. The variable of interest is the interaction term of institutional ownership (INS) and the deregulation dummy variable (POSTLIST). This model predicts that if institutional ownership strengthens the relationship between the deregulation of margin trading and the aggressiveness of corporate strategy, the coefficient of the interaction term (ϖ) will be positive. Conversely, if institutional ownership weakens this relationship, this study predicts a negative sign for (ϖ).

4.4.4.5 The Moderating Effects Model: Managements' Risk Preference

Hambrick and Mason (1984) emphasize that managerial risk preferences are key to shaping investment decisions and strategic planning, with managers' personal inclinations towards risk influencing the strategic paths their companies pursue. Similarly, Bertrand and Schoar (2003) highlight the pivotal influence of managerial roles in shaping the decision-making processes within corporations. They argue that the individual characteristics and decision-making styles of managers are not just peripheral influences but central determinants of corporate strategy and performance.

In the literature review, this study hypothesizes that a manager's risk preference acts as a

moderating variable in the relationship between the deregulation of margin trading and strategic aggressiveness. In scenarios where the deregulation of margin trading is allowed, firms' propensity to engage in riskier, more aggressive strategic actions varies significantly based on managements' inherent risk tolerance. Therefore, this study designs the following models to investigate the proposed hypotheses:

$$Strategy_{i,t} = \alpha + \beta * POSTLIST_{i,t} + \pi * MRP_{i,t} + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t} \quad (8)$$

$$Strategy_{i,t} = \alpha + \beta * POSTLIST_{i,t} + \pi * MRP_{i,t} + \chi * (MRP_{i,t} * POSTLIST_{i,t}) + \theta * Controls_{i,t} + Industry_i + Year_t + \varepsilon_{i,t} \quad (9)$$

In model (8), $MRP_{i,t}$ represents managements' risk preference. According to Zhuang and Hou (2014) and Li et. al (2020), the larger the value, the higher the manager's risk appetite. and its formula is the following:

$$MRP_{i,t} = \frac{Market\ Value\ of\ Management\ Shareholding_{i,t}}{Market\ Value\ of\ Management\ Shareholding_{i,t} + Management\ Remuneration_{i,t}}$$

In model (8), the coefficient of $MRP_{i,t}$ (π) will be positive if higher managements' risk preference leads to a more pioneering corporate strategy, and negative if it leads to a less aggressive or defensive strategy. Model (9) examines the moderating effect of managements' risk preference on the relationship between the deregulation of margin trading and corporate strategy. The variable of interest is the interaction term of managements' risk preference ($MRP_{i,t}$) and the deregulation dummy variable ($POSTLIST_{i,t}$). This model predicts that if managements' risk preference strengthens the relationship between the deregulation of margin trading and the aggressiveness of corporate strategy, the coefficient of the interaction term will be positive. Conversely, if managements' risk preference weakens this relationship, this study predicts a negative sign for the interaction term.

4.4.5 Method for Robustness Testing

To enhance the validity and reliability of the findings obtained from the basic models, this study conducted several robustness tests. The aim was to identify any potential biases or limitations in the initial analysis and assess the robustness of the results.

4.4.5.1 Testing the Dynamic Impact of the deregulation of Margin Trading on Corporate Strategy.

Companies were permitted to begin margin trading in different years after 2010, meaning the “post” period varies by company. This staggered implementation implies that the “post” period is not a uniform exogenous event across the sample. Firms that started margin trading later might have observed the outcomes and responses of early adopters, potentially influencing their strategies and reactions to deregulation. This scenario introduces a potential endogeneity issue, where later firms’ strategies could be responses to observed outcomes rather than solely the result of deregulation itself.

To address this, this chapter employs a Difference-in-Differences (DID) approach. However, if later firms base their decisions on the observed impacts on early adopters, this could challenge the parallel trends assumption necessary for DID analysis. The parallel trends assumption means that, in the absence of an intervention (the deregulation of margin trading), outcome variables (strategy aggressiveness) for the treatment and control groups would change along the same trend. In other words, if the trends between the control and treatment groups before the intervention are parallel, then any differences that emerge after the intervention can be attributed to the intervention itself rather than to other unobserved factors.

The validity of the DID estimation relies on the parallel trends assumption, which assumes that in the absence of the policy intervention, the treatment and control groups would have followed the same time trend. According to Beck *et al.* (2010), this study examines changes in strategic aggressiveness three years before and three years after firms’ margin trading deregulation. Six

deregulation dummy variables are defined as “POSTLIST’s”, where “POSTLIST’s” equals zero, except as follows: POSTLIST_{-j} equals one for firms in the jth year before deregulation, while POSTLIST_{+j} equals one for firms in the jth year after deregulation.

4.4.5.2 Controlling the Impact of Provincial Development.

To further enhance the robustness and generalizability of the findings, the analysis includes controls for province effects. This consideration is crucial given the uneven development and varying economic conditions across China’s provinces. By including province effects as a control variable, the study can account for any potential confounding factors that vary across provinces and could affect the results.

4.4.5.3 Controlling the Impact of Economic Policy Uncertainty.

Given the importance of economic uncertainty in shaping firms’ strategic decisions (Hoffmann *et al.*, 2009; Chen and Kettunen, 2017; Cheng and Krumwiede, 2017), this study aims to investigate the robustness of the relationship between the deregulation of margin trading and corporate strategy in the presence of economic policy uncertainty. The objective is to conduct a thorough examination by incorporating economic policy uncertainty as a macro factor into the basic model and assessing whether the association remains valid under varying economic conditions.

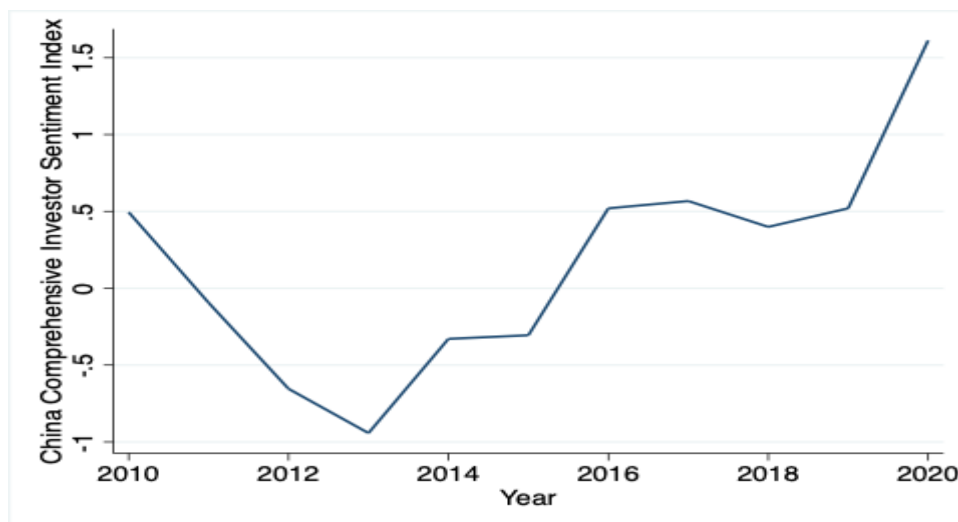
Huang and Luk (2020) construct a new China economic policy uncertainty (EPU) index using information sourced from mainland Chinese newspapers. The methodology employed follows the approach outlined by Baker *et al.* (2016). The EPU index data is regularly updated on the provided website each month (<https://economicpolicyuncertaintyinchina.weebly.com/>). The EPU index serves as a reliable measure of economic policy uncertainty, with higher values indicating greater levels of uncertainty within the economic environment. By incorporating the EPU index into the analysis as a robustness test, this research aims to determine the extent to

which the deregulation of margin trading influences firms' strategic decisions, regardless of the prevailing economic circumstances.

4.4.5.4 Controlling the Impact of Investors' Sentiment

In the literature review of this study, we discussed how the deregulation of margin trading prompts companies to adopt more strategically aggressive behaviors in anticipation of potential rises in stock prices. Since market fluctuations are intricately linked to shifts in market sentiment, it is essential to include investor sentiment in our models as a robustness check. Behavioral finance theories suggest that investors are not always rational, and their decisions are often influenced by diverse beliefs and preferences. According to De Long *et al.* (1990), these choices are shaped by non-market factors such as emotional contagion and imitation learning, further constrained by limited arbitrage opportunities. Consequently, asset prices frequently deviate from their fundamental values.

Figure 4. 4: The Trend Analysis on Chinese Investor Comprehensive Sentiment Index (CICSI) from 2010 to 2020



Note: Data from CSMAR

Investor sentiment, as defined by Baker and Wurgler (2006), reflects investors' expectations about future cash flows and the risks associated with different assets. Extensive research,

including studies by Lee *et al.* (1991), Fisher and Statman (2000), and Schmeling (2009), supports the view that investor sentiment plays a crucial role in influencing stock market returns. Figure 4.4 illustrates the volatility of the Chinese Investor Comprehensive Sentiment Index (CICSI) from 2010 to 2020. According to Yi *et al.* (2022) and Gong *et al.* (2022), the CICSI can be used to measure investors' sentiment in China, which is a comprehensive monthly index for the whole Chinese market. Specifically, CICSI uses principal component analysis on six variables³ and dual construction of macroeconomic factors to better capture the characteristics of the Chinese market (Wang *et al.*, 2021).

This index, fluctuating around a neutral sentiment baseline represented by the zero line, captures the shifts in investor moods over the decade. Values above zero indicate prevailing optimism among investors, whereas values below signify pessimism. These fluctuations highlight the dynamic nature of investor sentiment and underscore its relevance in analyzing market behaviors and the strategic responses of corporations to margin trading deregulations in China.

Firstly, the downturn in investor sentiment during 2011-2013 correlates with both external and internal economic pressures. Internationally, the European debt crisis likely dampened global market confidence, which in turn affected Chinese investors. Domestically, China's central bank enacted stricter monetary policies to curb inflation and prevent economic overheating, contracting market liquidity and contributing to the observed dip in sentiment.

Subsequently, the introduction of the Hong Kong-Shanghai Stock Connect in late 2014 marked a pivotal change by granting foreign investors more direct access to Mainland China's stock

³ (1) Close-end Fund Discount Rate: This is the average difference between the net asset value of closed-end stock fund shares and their market price.

(2) First-day Returns of IPOs: This represents the monthly average first-day returns of initial public offerings.

(3) The Number of IPOs: This is the number of initial public offerings in a given month.

(4) Share Turnover: This is the natural log of the raw turnover ratio, detrended by the 5-year moving average.

(5) The Number of Newly Opened Individual Investor Accounts: This measures the number of accounts newly opened by investors in the previous month.

(6) Consumer Confidence Index: This is a survey-based index constructed by the China National Bureau of Statistics.

market, fostering a more favorable investment climate. The ensuing significant rise in the Shanghai Composite Index in 2015 likely reflected heightened investor sentiment, spurred by the prospects of capital gains and a revitalized economic outlook. In 2020, governments and central banks worldwide, including China, implemented extensive stimulus measures to counteract the economic downturn caused by the COVID-19 pandemic. These measures likely injected liquidity into the markets, boosting investor confidence.

This index can be obtained directly from CSMAR, which updates data monthly in real-time. When monthly data is obtained, this study adopts the method of finding annual averages to determine CICI for each year. It is important to note that this index reflects sentiment changes across the entire Chinese market, meaning it captures the mood common to all companies at a specific point in time. Consequently, the values of CICI are uniform across all firms at any given moment, making it unsuitable as a moderating variable because it does not vary between observations within the same time period. Recognizing this limitation, market sentiment is more suitable as an additional control variable in the robustness test to account for overarching market influences that might affect the outcomes being analyzed. By incorporating the CICI index into the analysis as a robustness test, this research aims to shed light on the extent to which the deregulation of margin trading influences firms' strategic decisions, regardless of market sentiment.

4.4.5.5 Placebo Test

Finally, to further strengthen the rigor of the findings, this study incorporates a placebo test as a valuable tool in validating the robustness of the results. The placebo test involves the random selection of individuals as the treatment group to examine whether the fictitious treatment firms demonstrate a significant impact on the firm's corporate strategy. Specifically, the key variable (POSTLIST) is randomly sampled 500 times to construct a placebo group that is not granted the privilege of engaging in margin trading.

By conducting the placebo test, this study aims to mitigate the potential influence of spurious correlations or random chance on the observed effects. This approach ensures that the identified relationships between the deregulation of margin trading and corporate strategy are not merely coincidental but possess causal validity. Therefore, this robustness test can effectively determine whether the observed effects on corporate strategy can be attributed to the actual deregulation of margin trading or are the result of other confounding factors.

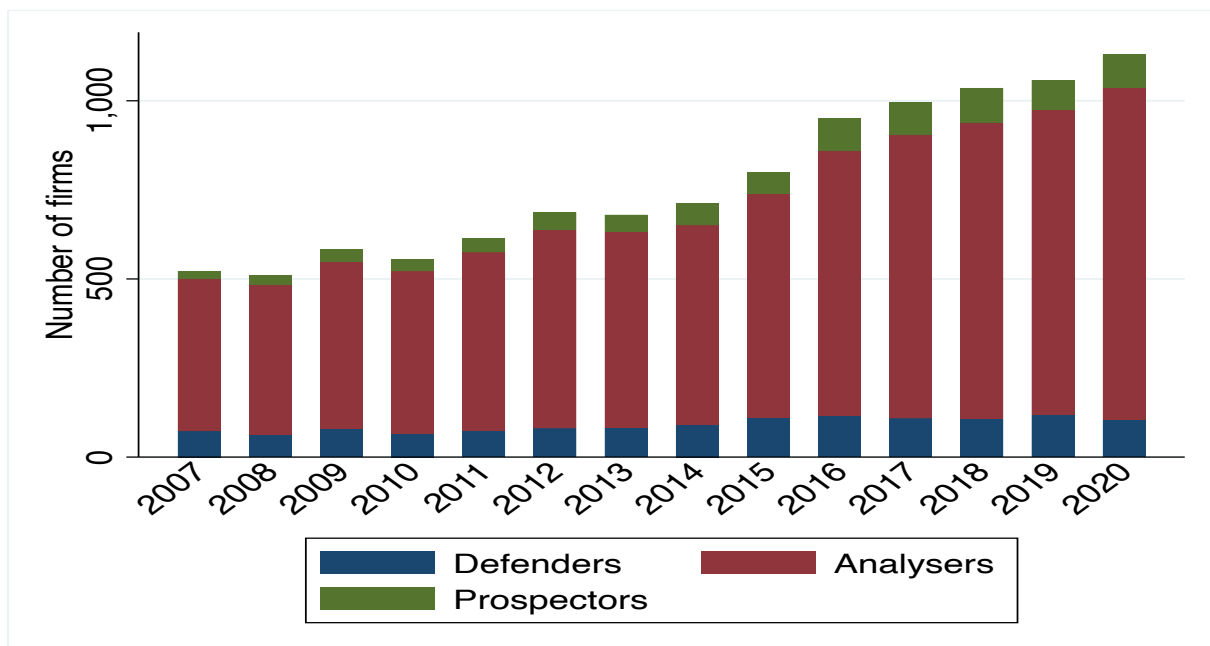
Overall, these robustness tests are performed to ensure the validity and reliability of the findings obtained from the initial analysis. By addressing potential biases and limitations discussed above, this study can strengthen confidence in the results and provide more robust empirical evidence.

4.5 Results and Discussion

4.5.1 Descriptive Statistics

Firstly, Figure 4.5 presents the number of firms by strategy type and illustrates that the most prevalent strategy across the years in China was the analyzer strategy. This finding indicates that a significant number of Chinese companies adopted an approach focused on thorough analysis and careful decision-making in their strategic activities. In contrast, the number of companies employing the defender strategy remained relatively stable over time, suggesting a consistent preference for a defensive and risk-averse approach. On the other hand, there is a slight upward trend in the number of companies adopting the prospector strategy. This observation implies that an increasing number of companies are embracing a more proactive and exploratory approach, seeking new opportunities, and taking calculated risks to drive growth and innovation.

Figure 4. 5: The Number of Firms by Strategy Type in China

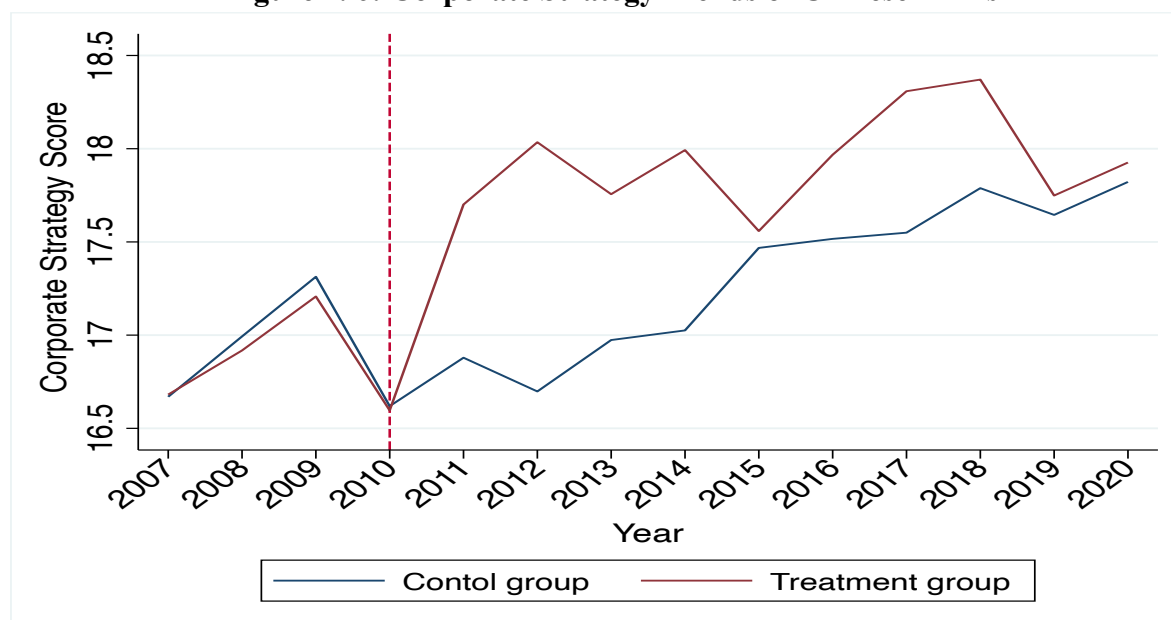


Source: PSM sample of this study.

Secondly, Figure 4.6 displays the corporate strategy trends from 2007 to 2020, showing an average upward trend in the overall strategic aggressiveness of Chinese companies based on

the calculated strategy index. Specifically, until 2010, there is no significant difference in the mean corporate strategy scores between the treatment and control groups. However, following the deregulation of margin trading in 2010, a distinct divergence in corporate strategy aggressiveness becomes apparent between the two groups. According to Bentley *et al.* (2013), higher scores indicate a greater degree of aggressiveness in a company's strategy. Therefore, it can be inferred that the treatment group exhibits a higher level of pioneering corporate strategy compared to the control group after 2010. This observation aligns with the earlier hypothesis that the deregulation of margin trading leads to increased strategic aggressiveness.

Figure 4. 6: Corporate Strategy Trends of Chinese Firms



Source: PSM sample of this study.

Table 4.3 presents various descriptive statistics for the dependent, independent, and control variables, including the number of observations, mean, median, standard deviation, minimum, and maximum values. The mean value of the strategy index is reported as 17.515, consistent with the findings depicted in Figure 4.5. This mean value indicates that, on average, Chinese listed firms tend to adopt an analyzer strategy, which emphasizes thorough analysis and careful decision-making. Additionally, the mean value of the LIST variable is 0.505, suggesting that more than half of the firms included in the study were part of the pilot list by the end of 2020. This indicates that a substantial portion of Chinese listed firms have obtained permission for

margin trading. Table 4.4 presents the correlation matrix, indicating the relationships between the dependent variable and the control variables. The correlation coefficients between the dependent variable and the control variables are reported to be less than 0.5, suggesting no significant issues of multicollinearity and indicating that the variables are not highly correlated with each other.

Table 4. 3: Descriptive statistics for Corporate Strategy, the Deregulation of Margin Trading and Firm Characteristics

Variable	Mean	Min	Median	Max	SD	Obs
STRATEGY	17.515	6.000	18.000	30.000	4.106	10835
STRATEFY _{Position}	1.958	1.000	2.000	3.000	0.438	10835
POSTLIST	0.151	0.000	0.000	1.000	0.358	10835
LIST	0.505	0.000	1.000	1.000	0.500	10835
SIZE	21.923	19.135	21.917	25.927	0.874	10835
TOBIN	2.061	0.809	1.650	13.527	1.309	10835
AGE	2.420	1.386	2.485	3.296	0.484	10835
LEV	0.464	0.026	0.462	0.900	0.200	10835
PROFIT	0.025	-0.473	0.028	0.220	0.065	10835
ROA	0.083	-1.415	0.080	0.968	0.194	10835
LIQUI	1.954	0.209	1.448	29.713	1.825	10835
CF	-0.001	-0.523	0.013	0.341	0.109	10835
SOE	0.515	0.000	1.000	1.000	0.500	10835
TOP10	52.208	3.588	52.370	97.070	14.397	10835
INDEP	37.072	14.290	33.330	71.430	5.389	10835
RETURN	0.001	-0.047	0.000	0.685	0.007	10835
VOL	0.031	0.010	0.029	2.353	0.030	10835
TURN	0.020	0.001	0.016	0.165	0.013	10835
INS	44.912	0.000	45.870	157.098	22.574	10825
MANS	7.127	0.000	0.021	83.002	13.953	10450
HHI	0.247	0.015	0.143	1.000	0.262	10444
MRP	0.386	0.00	0.110	0.999	0.431	10332
PATENT	0.250	0.000	0.000	8.286	0.936	10835
EPU	139.786	91.598	140.305	165.743	16.340	10835
CICSI	0.409	-0.943	0.470	1.523	0.720	10835
ZSCORE	4.334	-1.236	2.834	53.228	5.154	10835
EDF _{Bhsh}	0.001	0.000	0.000	0.045	0.001	10835
MISMATCH	-0.024	-7.255	-0.020	8.977	0.159	9541
DM	0.391	0.000	0.000	1.000	0.488	9541

Table 4. 4: Correlation Matrix for Corporate Strategy, the Deregulation of Margin Trading and Firm Characteristics

	STR	STR _p	POST	LIST	SIZE	TOBIN	ROA	AGE	LEV	PROFIT	LIQUI	CF	SOE	TOP10	INDEP	RETURN	VOL
STR	1																
STR _p	0.76*	1															
POST	0.05*	0.03*	1														
LIST	0.06*	0.05*	0.50*	1													
SIZE	0.01*	0.02*	0.51*	0.43*	1												
TOBIN	0.11*	0.06*	-0.05*	-0.04*	-0.45*	1											
AGE	-0.15*	-0.12*	0.22*	0.10*	0.21*	-0.08*	1										
LEV	-0.10*	-0.06*	0.03*	0.09*	0.38*	-0.28*	0.19*	1									
PROFIT	0.08*	0.06*	0.07*	0.16*	0.09*	0.14*	-0.03*	-0.28*	1								
ROA	0.03*	0.04*	0.06*	0.13*	0.13*	0.04*	0.02*	-0.16*	0.78*	1							
LIQUI	0.09*	0.06*	-0.01	-0.06*	-0.23*	0.24*	-0.12*	-0.61*	0.16*	0.12*	1						
CF	-0.04*	-0.03*	0.06*	0.03*	0.06*	-0.02*	0.03*	0.01	0.24*	0.18*	-0.12*	1					
SOE	-0.19*	-0.13*	0.08*	0.11*	0.20*	-0.14*	0.34*	0.21*	-0.01	0.02*	-0.16*	0.02*	1				
TOP10	0.04*	0.04*	0.08*	0.11*	0.35*	-0.12*	-0.10*	0.02*	0.17*	0.13*	-0.00	0.02*	0.08*	1			
INDEP	0.02*	0.02*	0.07*	0.01	0.06*	0.03*	-0.01	-0.01	-0.04*	-0.01*	0.01*	-0.01	-0.06*	0.01*	1		
RETURN	0.01	0.00	-0.03*	0.01	-0.06*	0.21*	-0.02*	0.00	0.08*	0.06*	-0.00	-0.02*	-0.01	-0.00	-0.01	1	
VOL	0.01*	0.01	-0.07*	-0.03*	-0.13*	0.16*	-0.05*	0.01	-0.01	-0.01*	-0.00	-0.05*	-0.03*	-0.03*	-0.01*	0.81*	1

*Denotes the coefficient at the significance level.

4.5.2 Baseline Model Regression Analysis

Table 4.5 presents the baseline results of the study. Whether using a model that measures strategic aggressiveness through a strategy index or a strategy position, the coefficients on the variable POSTLIST, which captures the effect of the deregulation of margin trading, are found to be positive and statistically significant at the 1% or 5% level, both with and without control variables. These findings align with the theory of real options, suggesting that the presence of uncertainty stemming from the deregulation of margin trading can enhance the value of increasing a company's strategic aggressiveness. The deregulation provides new opportunities and options for companies, and the adoption of a more exploratory strategy aligns with the expectations of those utilizing margin trading. This implies that the deregulation has had a discernible impact on the strategic behavior of Chinese companies, encouraging them to adopt more aggressive and exploratory strategies.

In addition to the significant coefficient on the POSTLIST variable, the study reveals several interesting findings about the coefficients of other control variables. Notably, the coefficients of variables such as SIZE, TOBIN, ROA, LIQUI, TOP10, and VOLATILITY are positive and significant at either the 1% or 5% level. The positive coefficient on SIZE suggests that larger firms are more likely to increase the aggressiveness of their strategy, attributed to their greater industry experience, which enables them to develop effective strategies with reduced concerns about potential failure. The positive coefficient on VOLATILITY indicates that firms experiencing higher share return volatility tend to exhibit a greater level of strategic aggressiveness, likely due to their higher risk appetite and willingness to capitalize on market fluctuations. The positive coefficient on TOBIN, representing the growth opportunities of firms, suggests that those with high growth potential strive to capture market share rapidly, necessitating a more aggressive approach to strategy. The positive coefficients on ROA and LIQUI suggest that firms with sufficient resources and financial stability

are more capable of undertaking innovative and riskier strategies.

In contrast to the positive coefficients of other control variables, the study finds that the coefficient for AGE is negative and statistically significant at the 1% level. This suggests that older firms tend to be more cautious in changing their strategies. These firms are likely accustomed to their existing strategic model, making drastic changes challenging. The inertia of long-established strategies can hinder the adoption of more aggressive approaches.

Similarly, the negative coefficient for firms with high stock returns suggests they avoid overly aggressive strategies. This cautious approach prevents strategy failure and significant stock price declines, protecting market value and shareholder interests. Lastly, the negative coefficient for share turnover rate suggests that firms with higher turnover adopt more conservative strategies. This is due to the need to manage frequent trading and market fluctuations associated with high turnover. A conservative strategy helps mitigate risks and maintain stability in dynamic market conditions.

Table 4. 5: Regression Analysis for the Impact of the Deregulation of Margin Trading on Corporate Strategy

	(1)	(2)	(3)	(4)
	STR	STR	STR _{Position}	STR _{Position}
POSTLIST	0.4136*** (3.75)	0.2990** (2.56)	0.0348*** (2.96)	0.0317** (2.48)
SIZE		0.4909*** (7.36)		0.0340*** (4.67)
TOBIN		0.3413*** (8.29)		0.0143*** (3.31)
AGE		-1.0832*** (-11.11)		-0.0845*** (-7.95)
LEV		-0.3998 (-1.38)		0.0181 (0.57)
ROA		4.6089*** (4.22)		0.3850*** (3.17)
PROFIT		-0.7467** (-2.23)		-0.0589 (-1.63)
LIQUI		0.0714** (2.56)		0.0080*** (2.66)
CF		1.6232*** (4.45)		0.1551*** (3.90)
SOE		-0.9602*** (-10.87)		-0.0848*** (-9.05)
TOP10		0.0076** (2.31)		0.0008** (2.11)
LIQUI		0.0076** (2.31)		0.0008** (2.11)
INDEP		-0.0013 (-0.18)		0.0005 (0.71)
RETURN		-50.1295*** (-3.78)		-2.8462*** (-2.63)
VOL		13.2522*** (3.46)		0.7742*** (2.60)
TURN		-3.257 (-0.81)		-0.249 (-0.58)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Constant	17.2764*** (78.70)	7.6176*** (5.10)	1.9348*** (108.51)	1.2729*** (7.82)
R ²	0.1156	0.1773	0.1009	0.1414
Observation	10835	10835	10835	10835

*, ** and *** indicate 10%, 5% and 1% significant level, respectively. POSTLIST = 1 if a firm in the margin trading list at the post-deregulation period, and zero otherwise.

4.5.3 The Moderating Effect of Market Product Competition

Table 4.6 presents the results regarding the moderating role of market product competition. The coefficient of HHI, which represents the level of competition, is consistently negative and significant across all models, regardless of the specific conditions considered. This negative coefficient on HHI implies that as the intensity of competition decreases (indicated by a higher value of HHI), firms exhibit a more cautious or conservative approach to their corporate strategies. Conversely, in industries with high competition (lower HHI values), firms are more motivated to adopt pioneering strategies to stand out and succeed in the market. This finding aligns with previous arguments that firms operating in highly competitive markets face intense pressure to differentiate themselves from their rivals. In such contexts, firms strive to gain a competitive edge by offering innovative products or services and delivering superior customer experiences (Nelson, 1970; Nelson, 1974; Nickell, 1996; Van de Ven and Jeurissen, 2005; Duanmu *et al.*, 2018).

In addition to the negative coefficients of HHI, the study examines the interaction between POSTLIST (representing the post-deregulation period) and HHI to understand the moderating effect of market competition on the relationship between the deregulation of margin trading and corporate strategy aggressiveness. The coefficients of POSTLIST*HHI exhibit a consistent and statistically significant negative relationship across various models. This indicates that the interaction between the post-deregulation period and the level of market competition significantly moderates corporate strategy aggressiveness. These results support the hypothesis that an increase in market competition strengthens the positive influence of the deregulation of margin trading on corporate strategy aggressiveness.

After the deregulation of margin trading, firms in competitive environments are further incentivized to adopt more pioneering and forward-thinking corporate strategies. This drive is fueled by the need to meet investor expectations, secure market positions, and

effectively respond to the dynamic market landscape. Therefore, the level of competition acts as a catalyst for firms to adopt more aggressive strategies following the deregulation of margin trading.

Table 4. 6: Regression Analysis for the Moderating Role of Make Product Competition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	STR	STR	STR	STR	STR _{Position}	STR _{Position}	STR _{Position}	STR _{Position}
POSTLIST	0.4616*	0.2864**	0.4331***	0.5587***	0.0217*	0.0332**	0.0376**	0.0489***
	(1.72)	(2.41)	(2.83)	(3.72)	(1.71)	(2.54)	(2.33)	(2.99)
HHI	-2.6744***	-2.7261***	-2.6899***	-2.7412***	-0.2311***	-0.2344***	-0.2372***	-0.2405***
	(-12.00)	(-12.55)	(-11.86)	(-12.35)	(-9.52)	(-9.82)	(-9.46)	(-9.73)
POSTLIST*HHI			-1.1302***	-1.1528***			-0.0646*	-0.0657*
			(-2.65)	(-2.82)			(-1.73)	(-1.72)
Control variables	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	17.2579***	8.1487***	16.4034***	7.3673***	1.9635***	1.3358***	1.8895***	1.2663***
	(60.36)	(5.34)	(60.29)	(4.80)	(73.03)	(8.03)	(74.62)	(7.58)
R ²	0.1357	0.1901	0.1234	0.1774	0.1195	0.1496	0.1111	0.1411
Observation	10444	10444	10444	10444	10444	10444	10444	10444

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.4 The Moderating Effect of Management Shareholding

Table 4.7 presents the findings on the moderating role of management ownership in the context of corporate strategy. The coefficient of management shareholding consistently shows a positive and significant relationship across all models examined, regardless of the specific conditions considered. This positive coefficient indicates that as the level of management shareholding increases, firms are more likely to adopt pioneering strategies that differentiate themselves and achieve market success. These results align with previous studies suggesting that managers with higher ownership stakes, driven by their long-term goals and vested interests in the firm's success, are more inclined to take risks and pursue innovative approaches in their strategic decision-making. Conversely, firms with lower levels of management shareholding exhibit a more cautious or conservative approach to their corporate strategies. These managers, with relatively lower ownership stakes, prioritize risk mitigation and short-term stability over pursuing aggressive growth strategies (Jones and Butler, 1992; Agrawal and Knoeber, 1996; Courtney *et al.*, 1997; Agrawal and Knoeber, 2001; Li *et al.*, 2007).

Furthermore, the coefficient of the interaction term between deregulation of margin trading and management ownership (POSTLIST*MANS) consistently shows a positive and significant relationship across different models. These findings indicate that firms with higher management ownership are more likely to adopt a pioneering strategy following the deregulation of margin trading. This supports Hypothesis 3, which posits a stronger positive relationship between the deregulation of margin trading and the adoption of aggressive corporate strategies when managerial stockholdings are high. Managers with substantial ownership stakes view the deregulation of margin trading as a favorable context for capitalizing on new opportunities. Their long-term perspective and risk-taker mindset align with the dynamic and flexible nature of pioneering strategies, making them more responsive to the opportunities presented by deregulation. This underscores the importance of managerial incentives and interests in shaping

strategic decision-making and highlights the role of ownership structure in driving firms to embrace risk-taking and pursue growth opportunities following regulatory changes.

Table 4. 7: Regression Analysis for the Moderating role of Management Shareholding

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	STR	STR	STR	STR	STR _{Position}	STR _{Position}	STR _{Position}	STR _{Position}
POSTLIST	0.4749*** (4.11)	0.3812*** (3.24)	0.3740*** (3.11)	0.2238* (1.77)	0.0461*** (3.68)	0.0401*** (3.09)	0.0342*** (2.67)	0.0272** (1.98)
MANS	0.0613*** (19.50)	0.0399*** (10.77)	0.0597*** (18.72)	0.0368*** (9.85)	0.0051*** (14.11)	0.0033*** (7.88)	0.0048*** (13.39)	0.0030*** (7.11)
POSTLIST*MANS			0.0255*** (3.19)	0.0257*** (3.25)			0.0018* (1.77)	0.0018* (1.77)
Control variables	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	16.2940*** (57.45)	5.4592*** (3.56)	16.9506*** (71.44)	7.9753*** (5.69)	1.8668*** (69.89)	1.1252*** (6.71)	1.9038*** (94.70)	1.3482*** (8.89)
R ²	0.1620	0.1911	0.1594	0.1857	0.1355	0.1492	0.1346	0.1474
Observation	10450	10450	10450	10450	10450	10450	10450	10450

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.5 The Moderating Effect of Institutional Shareholding.

Table 4.8 provides insights into the moderating role of institutional ownership in our study. Notably, the coefficient of institutional shareholding (INS) consistently exhibits a negative and significant relationship across all models, irrespective of the specific conditions considered. This finding suggests that a higher level of institutional shareholding is associated with a reduction in strategic aggressiveness. It implies that institutions in China have a significant influence on strategic decision-making processes (Hirschman, 1970). However, their influence appears to be more focused on stability considerations. This observation aligns with the notion that institutions, driven by their shorter time horizons and risk-averse perspectives, exert pressure on companies to prioritize short-term performance and stability over bold and aggressive strategic moves (Graves and Waddock, 1990).

The second observation on Table 4.8 sheds light on the coefficient of POSTLIST * Institutional shareholding. It is found to be negative and significant, suggesting that higher levels of institutional ownership have a moderating effect, but in a negative direction, on the positive relationship between deregulation and corporate strategy aggressiveness. This finding indicates that companies with a greater proportion of institutional ownership tend to adopt a more cautious approach to their corporate strategies following the deregulation of margin trading. Institutional investors, such as pension funds, mutual funds, and insurance companies, primarily focus on stability and long-term financial performance. They prioritize the preservation of capital and the minimization of risk to meet their fiduciary obligations to their clients and stakeholders. Consequently, when faced with the opportunities and risks associated with deregulation, institutions exhibit a more conservative stance, preferring strategies that align with their risk aversion and stability objectives.

Therefore, the results support Hypothesis 4b, suggesting that higher institutional

ownership negatively moderates the relationship between margin trading deregulation and corporate strategy aggressiveness. This negative moderation effect aligns with the findings of Graves and Waddock (1990), which emphasized that institutional investors operate within a competitive market environment and face pressures to consistently deliver favorable outcomes to their clients.

The results suggesting that institutional investors in China prioritize short-term performance and stability can be attributed to several factors intrinsic to the financial and regulatory landscape of the country. This focus often stems from the pressure to achieve immediate financial results, influenced by market expectations, regulatory requirements, and the broader economic policies that guide investment practices in China.

Firstly, the Chinese market environment is characterized by its dynamic and competitive nature, where rapid economic growth and development have been prioritized. This has fostered an investment culture that heavily values short-term gains, often seen as quick proofs of success and managerial efficacy. Institutional investors, therefore, might lean towards investments that promise immediate returns, aligning with the broader economic goals set by policymakers.

Secondly, the relative immaturity of the financial markets in China compared to those in more developed economies can lead to higher volatility and uncertainty, prompting investors to prefer the apparent safety of short-term investments. This is particularly the case during periods of economic slowdown or market instability, where quick wins become even more significant as indicators of an investor's acumen.

Additionally, regulatory pressures and the performance metrics used to evaluate institutional investors encourage a short-term focus. Many of these investors are evaluated based on quarterly or annual performance reviews. Achieving good

performance in these short intervals can attract more clientele or increase management fees, providing a direct incentive to prioritize short-term financial metrics over long-term strategic growth. Overall, the strategically conservative behavior of institutions is due to the Chinese business environment.

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Table 4. 8: Regression Analysis for the Moderating Role of Institutional Shareholding

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	STR	STR	STR	STR	STR _{Position}	STR _{Position}	STR _{Position}	STR _{Position}
POSTLIST	0.1894 (1.63)	0.3202*** (2.74)	0.8285*** (3.33)	1.0849*** (4.51)	0.0213* (1.70)	0.0337*** (2.63)	0.0599** (2.17)	0.0813*** (2.96)
INS	-0.0061*** (-3.17)	-0.0079*** (-2.84)	-0.0039* (-1.87)	-0.0056* (-1.95)	-0.0005** (-2.31)	-0.0007** (-2.14)	-0.0006*** (-2.82)	-0.0005* (-1.93)
POSTLIST*INS			-0.0150*** (-2.96)	-0.0180*** (-3.67)			-0.0006 (-1.07)	-0.0011* (-1.93)
Control variables	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	16.7061*** (58.08)	6.8070*** (4.49)	16.5748*** (56.85)	6.6035*** (4.35)	1.9094*** (69.38)	1.2114*** (7.35)	1.9629*** (94.90)	1.3474*** (9.06)
R ²	0.1243	0.1781	0.1251	0.1792	0.1101	0.1420	0.1104	0.1408
Observation	10825	10825	10825	10825	10825	10825	10825	10825

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.6 The Moderating Effect of Managers' Risk Preference

Table 4.9 elucidates the significant moderating influence of managers' risk preferences on the relationship between margin trading deregulation and strategic aggressiveness. The consistently positive and significant coefficient for managers' risk preference (MRP) across all models highlights that managers with a higher risk appetite are more inclined to increase strategic aggressiveness. This finding reinforces theories like those posited by Hambrick and Mason (1984), which suggest that managerial risk preferences critically shape investment decisions and strategic directions.

Moreover, the interaction term $POSTLIST * MRP$ in Table 4.9 is positive and significant. This result indicates that managers' risk preferences positively moderate the relationship between the deregulation of margin trading and corporate strategy aggressiveness. Specifically, it shows that managers with a high-risk appetite are likely to adopt more aggressive strategies in response to deregulation. This behavior demonstrates that deregulation acts as a catalyst, empowering managers who are predisposed to taking risks to further intensify their strategic initiatives.

Thus, these findings robustly support Hypothesis 5, showing that managerial risk preferences are a critical determinant in how firms adjust their strategies in light of regulatory changes. The evidence underscores the importance of considering managerial characteristics when assessing the impacts of economic policies on corporate behavior, offering a more nuanced understanding of the dynamics in strategic corporate responses to deregulation.

Table 4. 9: Regression Analysis for the Moderating role of Manager's Risk Preference

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	STR	STR	STR	STR	STR _{Position}	STR _{Position}	STR _{Position}	STR _{Position}
POSTLIST	0.39138*** (3.40)	0.3589*** (3.04)	0.2924* (1.87)	0.2612* (1.76)	0.0390*** (3.14)	0.0383*** (2.96)	0.0274* (1.88)	0.0261* (1.68)
MRP	2.3323*** (22.26)	1.7012*** (13.29)	2.2943*** (20.06)	1.6606*** (12.19)	0.1859*** (16.82)	0.1329*** (9.62)	0.1814*** (14.56)	0.1278*** (8.69)
POSTLIST* MRP			1.5032*** (8.21)	1.0508*** (5.09)			0.1319*** (6.55)	0.0977*** (4.77)
Control variables	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	15.9328*** (56.06)	6.4734*** (4.22)	15.9487*** (55.98)	7.3745*** (4.85)	1.8360*** (67.94)	1.2049*** (7.16)	1.8379*** (67.83)	1.2682*** (7.68)
R ²	0.1731	0.1972	0.1731	0.1834	0.1403	0.1520	0.1404	0.1549
Observation	10332	10332	10332	10332	10332	10332	10332	10332

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.7 Additional Tests

4.5.7.1 The Influence of Corporate Strategy on the Generation of Pattern

The increasing strategic aggressiveness exhibited by companies significantly impacts the generation of intellectual property (IP), particularly for firms operating in the high technology industry. In current rapidly evolving commercial landscape, the ownership and protection of IP have become crucial strategic battlegrounds (Granstrand, 2000). IP rights, such as patents, have long been recognized as vital barriers to imitation (Mahoney and Pandian, 1992). Governments grant patent rights to protect the creative work of inventors, thereby providing incentives for innovation, production, and commercialization of novel discoveries (Mazzoleni and Nelson, 1998). Patents serve a critical purpose as isolating devices that help protect a company's core competitive advantages from being copied (Lippman and Rumelt, 2003). Therefore, generating patents significantly impacts companies by enabling them to protect their innovations, differentiate themselves in the market, generate revenue, foster innovation, build brand reputation, and enforce their rights.

It is worth noting that the appropriability of patents is not automatic or external; rather, it is influenced by a company's internal plans and strategy (Pisano, 2006). Companies with a significant number of patents typically invest substantial resources, including funding and time, in acquiring and maintaining their patent portfolios. This strategic investment in intellectual property reflects their recognition of the value of patents as strategic assets and their potential to provide a competitive edge in the market.

Given the association between corporate strategy and patent generation, and the findings that deregulation of margin trading increases strategic aggressiveness, it is crucial to explore the potential impact of these strategy adjustments on intellectual property generation. Strategic aggressiveness spurs higher levels of investment in R&D, impacting patent generation. This analysis aims to highlight the outcomes of firms

adopting aggressive strategies due to margin trading deregulation and their influence on patent generation.

The results, as depicted in Table 4.10, present several key findings. Firstly, the results from column (1) indicate that the direct impact of the deregulation on the number of patents obtained by firms is not statistically significant. This insignificance suggests that while the deregulation of margin trading has broader implications for firms' strategic decision-making and financial flexibility, its direct influence on patent generation appears to be limited. Factors such as research and development investments, technological advancements, legal requirements, and market conditions have a more substantial influence on the number of patents obtained by firms. Therefore, although deregulation provides a favorable research environment by investing more resources, it is not the sole and significant determinant of patent generation.

In contrast, columns (2) and (3) in Table 4.10 reveal that firms exhibiting higher levels of strategic aggressiveness are more likely to generate a larger number of patents. This finding suggests that strategic decisions can shape a firm's innovative capabilities and contribute to its patent portfolio. Firms that pursue aggressive strategies are more likely to demonstrate higher levels of patent generation.

The interaction terms in columns (4) and (5) highlight a positive and significant relationship: as firms increase their strategic aggressiveness following the deregulation of margin trading, there is a noticeable rise in the number of copyrights they acquire. This correlation suggests that deregulation provides firms with the necessary financial tools to leverage their strategic initiatives more effectively. The deregulation of margin trading aims to invigorate the stock market by allowing investors to borrow money to buy stocks, increasing trading volume and potentially raising stock prices. For corporations, particularly those in creative and technology-oriented sectors, this regulatory change provides enhanced access to capital. It enables these firms to adopt

more aggressive strategies, not merely in terms of market behavior but also in pursuing expansive and innovative projects that can lead to copyrightable works.

Table 4. 10: Regression Analysis for the Influence of Corporate Strategy on the Generation of Patent

	(1)	(2)	(3)	(4)	(5)
	PATENT	PATENT	PATENT	PATENT	PATENT
POSTLIST	-0.0093 (-0.33)			0.0803 (0.84)	0.1483 (1.63)
STR		0.0160*** (7.12)		0.0168*** (6.73)	
STR _{Position}			0.0764*** (3.66)		0.0884*** (3.74)
POSTLIST*STR				0.0192** (2.38)	
POSTLIST *STR _{Position}					0.0806* (1.88)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Constant	1.7397*** (5.28)	1.6611*** (5.19)	1.6783*** (5.24)	1.5993*** (4.86)	1.6183*** (4.93)
R ²	0.0774	0.1819	0.1786	0.1820	0.1788
Observation	10835	10835	10835	10835	10835

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.7.2 The Influence of Corporate Strategy on the Debt Maturity Mismatch

The baseline results indicate that the introduction of margin trading encourages firms to adopt more aggressive investment strategies. Concurrently, the examination of debt maturity mismatch in Chapter 3 highlights its association with increased firm aggressiveness and the potential consequences. Such strategic shifts could impact firms' debt structures, particularly regarding the alignment of debt maturities with investment horizons. This connection aligns with Chapter 3's insights on debt maturity mismatch, creating a more comprehensive narrative around strategic financial decisions in response to regulatory changes.

As companies intensify their strategic initiatives, whether through new market ventures or the introduction of innovative products, there arises a potential need for adjustments in their capital structure. Such adjustments could be crucial, providing the company with enhanced flexibility to align its capital with ambitious goals. The observed level of strategic aggressiveness in firms could act as a catalyst, fostering increased investment in research and development, illustrating a dynamic interplay between strategic decision-making and financial structure.

Notably, as extensively discussed in Chapter 3, the financial landscape in China presents considerable constraints on long-term debt. In the context of bolstering strategic aggressiveness, firms are compelled to opt for short-term funding. This strategic choice is driven by the overarching objective of reinforcing and sustaining advancements in strategic aggressiveness.

The results illustrated in Table 4.11 provide several insights. Initially, the outcomes in columns (1) and (4) do not show a statistically significant direct effect of the deregulation of margin trading on debt maturity mismatch, suggesting that deregulation alone does not decisively influence firms' debt maturity structures.

However, a closer examination of columns (2), (3), (5), and (6) reveals a significant relationship. In these columns, the coefficients of interaction terms associated with either STR or STR_{Position} show statistically significant positive values. This indicates that increased strategic aggressiveness, as measured by STR and STR_{Position} and influenced by the deregulation of margin trading, correlates with a rise in debt maturity mismatch. Thus, while deregulation itself is not a significant driver, the strategic decisions firms make in response to deregulation significantly impact the alignment between debt maturity and corporate strategies. This supports the notion that firms exhibiting greater strategic aggressiveness are more likely to engage in debt maturity mismatches.

Table 4. 11: Regression Analysis for the Influence of Strategic Aggressiveness on the on the Debt Maturity Mismatch

	(1)	(2)	(3)	(4)	(5)	(6)
	Mismatch	Mismatch	Mismatch	DM	DM	DM
POSTLIST	0.0017 (0.50)	-0.0064 (-0.47)	-0.0066 (-0.53)	0.0267 (0.61)	0.0166 (0.95)	0.0544 (0.30)
STR		0.0010** (2.40)			0.0083** (2.29)	
STR _{Position}			0.0059** (2.29)			0.0640** (2.11)
POSTLIST*STR		0.0004* (2.42)			0.0080* (1.82)	
POSTLIST *STR _{Position}			0.0040* (1.93)			0.0150* (1.77)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.0177*** (-2.68)	0.0371*** (-3.22)	-0.0252*** (-2.91)	-0.3320*** (-2.75)	-0.4256* (-3.78)	-0.4196*** (-2.77)
R ² / Pseudo R ²	0.1122	0.1376	0.1425	0.1376	0.1605	0.1604
Observation	9541	9541	9541	9541	9541	9541

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.7.3 The Influence of Corporate Strategy on the Bankruptcy Risk

Increasing strategic aggressiveness, such as investing in emerging markets or developing new products, inherently involves significant risks. While these bold initiatives can potentially offer substantial returns, they also expose a company to heightened uncertainties. For instance, if a company's radical strategies fail, the financial repercussions could significantly elevate the company's overall risk profile and even precipitate bankruptcy. Given these potential outcomes, this study aims to delve deeper into the consequences of margin trading deregulation on corporate risk. Specifically, this section seeks to investigate whether the increase in strategic aggressiveness, facilitated by margin trading deregulation, impacts the bankruptcy risk of enterprises. This exploration is crucial for understanding the broader effects of policy changes on corporate strategy and stability.

Initially, this study employs the Expected Default Frequency (EDF) metric, formulated by Bharath and Shumway (2008), which was previously used in Chapter 3 to measure bankruptcy risk. The EDF metric provides a reliable assessment of bankruptcy risk, with higher values indicating a greater risk of default. Additionally, this section utilizes the Altman Z-score (1968) as a measure of a firm's financial health, where a higher Z-score signifies better financial performance and a lower probability of bankruptcy. The Altman Z-score is a traditional and reliable gauge of a company's solvency.

The results, detailed in Table 4.12, reveal that the deregulation of margin trading does not have a statistically significant impact on either the Z-score or EDF, as shown in columns (1) and (4). This suggests that the initiation of margin trading has not inherently increased the bankruptcy risk for companies.

However, the picture becomes more nuanced when examining the effect of strategic aggressiveness on bankruptcy risk. While strategic aggressiveness shows a significant

negative relationship with the Z-score, indicating that a more aggressive strategy correlates with worse financial health, this relationship does not hold in the model using EDF as the measure of bankruptcy risk (columns (5) and (6)). This divergence implies that the implications of strategic aggressiveness for bankruptcy risk are not straightforward and are unstable.

Nevertheless, in columns (2), (3), (5), and (6), the interaction terms ($\text{POSTLIST} * \text{STR}$, $\text{POSTLIST} * \text{STR}_{\text{Position}}$) are not significant, suggesting that the increase in strategic aggressiveness, spurred by the deregulation of margin trading, does not significantly affect the firms' risk of bankruptcy. These findings are integral as they provide evidence that while firms become more strategically aggressive following margin trading deregulation, this does not necessarily translate into a higher likelihood of financial distress. It is crucial to continue monitoring these dynamics over time to understand the long-term ramifications of such regulatory changes on corporate strategy and financial stability.

Table 4. 12: Regression Analysis for the Influence of Strategic Aggressiveness on the Bankruptcy Risk

	(1)	(2)	(3)	(4)	(5)	(6)
	Z-score	Z-score	Z-score	EDF _{bhsh}	EDF _{bhsh}	EDF _{bhsh}
POSTLIST	-0.1724 (-0.86)	-1.7507 (-1.52)	-0.2231 (-0.47)	-0.0001 (1.59)	0.0001 (1.13)	0.0001 (0.74)
STR		-0.0954*** (-6.16)			0.0007 (0.32)	
STR _{Position}			-0.7280*** (-5.63)			0.0001 (0.83)
POSTLIST*STR		0.0898 (1.24)			0.0001 (-1.52)	
POSTLIST *STR _{Position}			0.0371 (0.17)			-0.0002 (-1.04)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-30.5190*** (-5.85)	-29.5775*** (-5.80)	-29.5883*** (-5.69)	-0.0023* (-1.92)	-0.0023* (-1.98)	-0.0023* (-2.01)
R ²	0.4162	0.4176	0.4173	0.3270	0.3270	0.3271
Observation	10835	10835	10835	10835	10835	10835

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.8 Robustness Testing

4.5.8.1 Testing the Dynamics of the Deregulation of Margin Trading

The validity of the Difference-in-Differences (DID) estimation relies on the parallel trend assumption, which posits that in the absence of the policy intervention, the treatment and control groups would have followed the same time trend. As discussed in the methodology section, and according to Beck *et al.* (2010), the deregulation dummy variables are defined as “POSTLISTs,” where “POSTLISTs” equal zero for all firms, except as follows: POSTLIST_{-j} equals one for firms in the jth year before deregulation, while POSTLIST_{+j} equals one for firms in the jth year after deregulation. By excluding the year of deregulation itself, the study can estimate the dynamic effect of deregulation on the outcome variable relative to the year of deregulation.

Table 4.13 presents an analysis of whether there are any discernible differences in strategic aggressiveness between firms before and after deregulation. The results indicate that prior to deregulation, there were no significant differences in the degree of strategic aggressiveness and strategic position between the control and experimental groups. This is evident from the non-significant coefficients of the dummy variables for deregulation in the pre-deregulation years, which are close to zero. These findings suggest that the level of strategic aggressiveness was relatively consistent among firms before the regulatory change.

However, after deregulation, there is a notable shift in firm strategic aggressiveness. The coefficients of the dummy variables for deregulation are significantly positive, indicating a significant increase in strategic aggressiveness following the deregulation of margin trading. This suggests that the regulatory change had a substantial impact on the strategic behavior of firms, leading to a more aggressive approach in their business strategies. In summary, the analysis reveals no trend of increasing strategic aggressiveness prior to deregulation. Instead, the deregulation itself triggered a

significant increase in the adoption of more aggressive strategies by firms. This suggests that the change in strategic aggressiveness is a result of deregulation rather than a pre-existing trend.

Table 4. 13: Regression Analysis the Dynamics of the Deregulation of Margin Trading on Corporate Strategy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	STR	STR	STR	STR	STR	STR	STR _{Position}	STR _{Position}	STR _{Position}	STR _{Position}	STR _{Position}	STR _{Position}
Pre_3 POSTLIST	-0.1072 (-0.68)						-0.0126 (-0.66)					
Pre_2 POSTLIST		0.0018 (0.02)						-0.0025 (-0.15)				
Pre_1 POSTLIST			0.0528 (0.46)						-0.0014 (-0.08)			
Post_1 POSTLIST				0.3576*** (1.69)						0.0039* (1.67)		
Post_2 POSTLIST					0.5517*** (2.66)						0.0507** (2.18)	
Post_3 POSTLIST						0.1607* (1.70)						0.0249** (2.40)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	6.9144 (1.34)	6.3085 (1.49)	6.2602 (1.47)	6.9862 (4.77)	7.0060 (4.81)	6.5571 (4.50)	1.2080 (0.57)	1.1602 (0.45)	1.1601 (0.45)	1.1995 (7.59)	1.2036 (7.60)	1.3344 (9.25)
R ²	0.1078	0.1056	0.1063	0.1077	0.1076	0.1077	0.1174	0.1056	0.1196	0.1411	0.1413	0.1395
Observation	10835	10835	10835	10835	10835	10835	10835	10835	10835	10835	10835	10835

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.8.2 Controlling the Impact of Provincial Development

To address potential confounding factors that vary across provinces and could influence the results, this study incorporates province effects as a control variable in the robustness tests. The inclusion of province effects helps to isolate the specific impact of margin trading deregulation on corporate strategy. Table 4.14 presents the results of the analysis considering province effects. In columns (1) and (2), the coefficients associated with the deregulation variable remain significant and positive. This implies that even after controlling for province effects, the deregulation of margin trading continues to have a significant and positive influence on corporate strategy, thereby strengthening the validity of the relationship between margin trading deregulation and corporate strategy.

4.5.8.3 Controlling the Impact of Economic Policy Uncertainty

Given the importance of economic uncertainty in shaping firms' strategic decisions (Hoffmann *et al.*, 2009; Chen and Kettunen, 2017; Cheng and Krumwiede, 2017), this robustness test incorporates economic policy uncertainty as a macro factor into the basic model. The objective is to assess whether the relationship between margin trading deregulation and firm strategy holds true even in the presence of economic uncertainty.

Columns (3) and (4) of Table 4.14 support the original hypothesis of this study, even after considering the influence of economic policy uncertainty. The results demonstrate that the relationship between margin trading deregulation and firm strategic aggressiveness remains significant and unchanged when controlling for economic policy uncertainty. Furthermore, the findings indicate that as economic uncertainty increases, firms are more inclined to adopt an open and aggressive strategic approach, consistent with higher levels of economic policy uncertainty (EPU). This aligns with research by Hoffmann *et al.* (2009), which revealed that firms tend to accelerate their investments during periods of heightened economic uncertainty.

From a regulatory standpoint, higher levels of economic uncertainty pose challenges for external regulation and create an environment that fosters the use of self-interested and aggressive corporate strategies, as highlighted by Mirza and Ahsan (2020). Economic uncertainty creates conditions where companies seek to capitalize on potential opportunities through strategic actions aimed at securing their competitive position. Finally, the findings suggest that the current stable and robust macroeconomic growth in China provides a favorable backdrop for companies to pursue high-growth corporate strategies to maximize their growth potential.

4.5.8.4 Controlling the Impact of Investors' Sentiment

This robustness test enhances our analysis by incorporating investor sentiment as a critical macroeconomic factor influencing the Chinese stock market into the basic regression model. The primary aim is to evaluate whether the observed relationship between margin trading deregulation and firms' strategic aggressiveness persists amidst varying levels of investor sentiment.

The results presented in Columns (5) and (6) of Table 4.14 confirm the study's original hypothesis, indicating that the link between margin trading deregulation and increased strategic aggressiveness in firms remains robust even when accounting for fluctuations in investor sentiment. This suggests that deregulation effects are not merely short-term market reactions but reflect deeper strategic shifts within firms that are consistent across different market sentiment conditions.

Moreover, the analysis reveals a nuanced interaction between investor sentiment and firm strategy. As investor sentiment becomes more positive, firms tend to adopt more open and aggressive strategic approaches. This tendency is likely driven by the associated higher stock liquidity and potential for increased share prices that positive sentiment typically brings. Essentially, positive investor sentiment can amplify the

strategic responses of firms to deregulation by providing a more favorable market environment that supports bold, innovative actions.

These findings underscore the importance of considering broader market dynamics, such as investor sentiment, when assessing the strategic impacts of regulatory changes. They suggest that while deregulation acts as a direct catalyst for changes in corporate strategy, these effects are also modulated by the market's psychological climate. Thus, firms are not only responding to the mechanical aspects of deregulation but are also strategically positioning themselves within the context of prevailing market sentiments.

Table 4. 14: Robustness Tests for Controlling Provincial Effects, Economic Policy Uncertainty, and Investors' Sentiment

	(1)	(2)	(3)	(4)	(5)	(6)
	STR	STR _{Position}	STR	STR _{Position}	STR	STR _{Position}
POSTLIIST	0.2302** (2.00)	0.0261** (2.06)	0.2990** (2.56)	0.0321** (2.50)	0.2990** (2.56)	0.0317** (2.48)
EPU			0.0171*** (4.56)	0.0011*** (2.77)		
CICSI					2.4485*** (4.56)	0.1534*** (2.60)
Province effect	Yes	Yes	No	No	No	No
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	8.6500*** (5.76)	1.4050*** (8.55)	6.0529*** (4.02)	1.1836*** (7.22)	4.6508*** (2.95)	1.0870*** (6.32)
R ²	0.2145	0.1625	0.1773	0.1412	0.1773	0.1414
Observation	10835	10835	10835	10835	10835	10835

*, ** and *** indicate 10%, 5% and 1% significant level, respectively.

4.5.8.5 Placebo Test

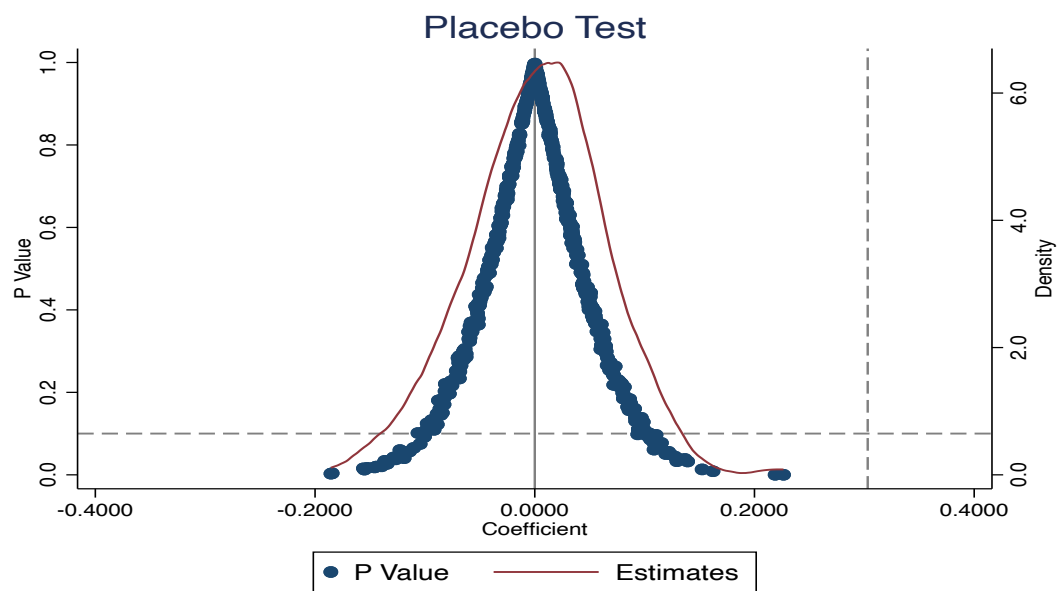
To enhance the robustness and credibility of the findings, this study incorporates a placebo test, which serves as a valuable tool in validating the results. The placebo test involves creating a fictitious treatment group by randomly selecting firms that did not receive the privilege of engaging in margin trading, thus serving as a control group. This allows for an examination of whether the absence of the treatment (i.e., the privilege of engaging in margin trading) demonstrates a significant impact on the firm's corporate strategy. To conduct the placebo test, the key variable (POSTLIST) is randomly sampled 500 times to construct 500 "pseudo-POSTLIST dummy variables" for the placebo group. Figure 4.7 presents the distribution of the estimated coefficients and corresponding p-values for these placebo variables.

In Figure 4.7, the x-axis represents the magnitude of the estimated coefficients for the "pseudo-POSTLIST dummy variables," while the y-axis represents the density and p-values. The red curve represents the kernel density distribution of the estimated coefficients, while the blue dots represent the p-values corresponding to the estimated coefficients. Additionally, a vertical dashed line indicates the true DID estimate in the baseline model, which is 0.2990, and a horizontal dashed line represents the significance level of 0.1.

The graph clearly illustrates that the estimated coefficients for the placebo group are primarily concentrated around zero and deviate significantly from the true estimate of the DID model (0.2990). Furthermore, a substantial majority of the estimated coefficients have p-values greater than 0.1, indicating that they are insignificant at the 10% significance level. This suggests that the observed estimates are unlikely to have been obtained by chance. By conducting the placebo test and observing the distribution of the estimated coefficients and p-values, the study provides strong evidence that the significant impact on the firm's corporate strategy observed in the treatment group (firms granted the privilege of engaging in margin trading) is not an artifact of random

variation or chance.

Figure 4. 7: Coefficient and P-Value Distributions for Random Sampling for the Deregulation of Margin Trading



4.6 Conclusion

This chapter has investigated the relationship between the 2010 deregulation of margin trading and firms' corporate strategic aggressiveness in China. By incorporating a real options perspective and employing robust empirical analysis methods such as PSM and DID, this study has provided valuable insights into the impact of regulatory changes on firms' strategic decisions. The findings support a positive correlation between the deregulation of margin trading and firms' strategic behavior.

Moreover, this study has examined the moderating effects of contextual factors on the relationship between margin trading deregulation and corporate strategic aggressiveness. Firstly, the study reveals that the positive relationship is stronger in highly competitive markets. Faced with intense competition, firms are driven to adopt more aggressive strategic approaches. The deregulation of margin trading acts as a catalyst that enhances the value of the real call option, prompting firms to intensify their strategic efforts to gain a competitive edge. Secondly, the study demonstrates that the link between margin trading deregulation and corporate strategic aggressiveness is stronger when managerial stockholdings are high. Managers with substantial ownership stakes have a stronger incentive to maximize firm value and pursue more aggressive strategies. The deregulation of margin trading provides them with an opportunity to capitalize on potential market opportunities and generate higher returns, aligning with their interests as significant shareholders.

Furthermore, this study conducts additional analysis to examine the consequences of increased strategic aggressiveness. The results indicate that firms with higher levels of strategic aggressiveness are more likely to generate more patents. Additionally, the findings suggest that firms with higher levels of strategic aggressiveness are more likely to engage in debt maturity mismatches.

The first contribution of this study lies in its novelty in investigating the impact of the

deregulation of margin trading on corporate strategic aggressiveness. It fills a gap in the literature by exploring the effects of this stock market regulatory change on firms' strategic decisions, offering new insights into the relationship between margin trading deregulation and corporate strategy.

Secondly, this study contributes to the existing literature on the application of real options theory. As far as I know, this study is the first to investigate how firms respond to the deregulation of margin trading using a real options theory framework. Drawing on real options theory, the study highlights how increasing corporate strategic aggressiveness creates a real call option for firms. This option allows them to capture potential upside profits and mitigate the risk of being outperformed by competitors in the future (Trigeorgis and Reuer, 2017). This understanding of converting enterprise choices into options can provide a reference for similar research on corporate strategy or decision-making in the future.

Thirdly, this chapter contributes to the literature by offering new empirical data on a factor that can influence firms' business strategy choices. Existing studies have documented that the external business environment and internal resource availability are important factors for corporate strategic choices (Meyer and Rowan, 1977; Porter, 1980; Miles and Snow, 2003; Bentley *et al.*, 2013; Trigeorgis and Reuer, 2017; Ipsmiller *et al.*, 2019). However, there is no research on the impact of margin trading deregulation on corporate strategy. This study adds depth and context to the understanding of how changes in the stock market environment can shape firms' strategic behavior and resource allocation.

The fourth contribution pertains to the literature on the Chinese stock market. This chapter goes beyond the existing literature's focus on the effects of deregulation on aspects such as stock volatility (Seguin, 1990), price efficiency (Chang *et al.*, 2014), stock returns (Li *et al.*, 2018), and stock liquidity (Ye *et al.*, 2020). While previous studies have established the influence of margin trading deregulation on the stock

market, this chapter explores the direct impact of margin trading deregulation on corporate strategic decision-making. It highlights the need to consider not only the financial outcomes of deregulation on the stock market but also its significant impact on corporate strategy, thereby advancing the understanding of the multifaceted effects of regulatory changes in the context of margin trading.

Finally, this chapter provides new evidence on the ongoing debate regarding the role of institutional investors in shaping strategic behavior. The role of institutional investors in supporting companies to increase strategic aggressiveness has been a subject of controversy and debate (Graves and Waddock, 1990; Mccahery *et al.*, 2016). Specifically, the study reveals that companies with higher levels of institutional ownership experience a dampening effect on their strategic aggressiveness, as institutional investors in China often focus on short-term goals in China. These findings contribute new evidence to this discussion and shed light on the dynamics between regulatory changes, institutional ownership, and corporate strategy.

Additionally, the findings suggest that companies with higher levels of institutional ownership experience a dampening effect on their strategic aggressiveness in response to margin trading deregulation. Institutional owners in China, unlike those in other nations, usually operate with shorter time horizons and face external pressures, prioritizing short-term results and perceiving highly aggressive strategies as riskier. This underscores the influence of external pressures and the specific institutional environment on firms' strategic decisions.

In conclusion, this study contributes to the existing literature by providing empirical evidence on the impact of margin trading deregulation on firms' corporate strategic aggressiveness. It emphasizes the importance of considering external shocks and financial market dynamics when analyzing firms' strategic decisions. The findings have implications for policymakers, offering insights into how regulatory changes can influence firms' strategic choices and contribute to market competitiveness.

5 CONCLUSIONS

5.1 Findings and Contributions

In summation, this thesis makes significant contributions to understanding the factors that influence the financing and strategic decision-making of Chinese companies through three interrelated research topics. Each topic provides unique insights, collectively enhancing our comprehension of the complex dynamics at play in the corporate landscape of Chinese listed firms.

The first research topic, titled “*Financial Constraints and Political Connections: Empirical Insights from Private Listed Firms in China*,” illuminates the indispensable role played by political connections in alleviating financial constraints for private listed enterprises in China. The results from the empirical analysis reveal that private listed firms with political connections encounter fewer financing constraints compared to their non-politically connected counterparts. Additionally, the study indicates that the negative association between political connections and financial constraints is more pronounced for firms with higher levels of political connections.

To shed light on the underlying mechanisms of this relationship, two possible explanations are explored. Firstly, given that the Chinese banking system is dominated by state-owned banks, prior research indicates that politically connected firms tend to receive more loans from these banks (Allen *et al.*, 2005; Li *et al.*, 2008; Duchin and Sosyura, 2012; Allen *et al.*, 2019). Therefore, political relations facilitate access to more bank loans, effectively alleviating financing constraints. Secondly, most borrowings of Chinese companies come from banks, and government-controlled banks usually offer lower interest rates to politically connected firms, resulting in reduced debt costs for such entities (Sapienza, 2004). Moreover, Chapter 2 uncovers that the impact of political connections on financial constraints is particularly significant for private listed enterprises operating in regions with less developed financial markets. These firms encounter greater challenges in accessing financial resources due to less developed

financial systems and markets, which can be mitigated by the influence of political connections.

The second research topic, titled “*Determinants of Debt Maturity Mismatch: Empirical Insights from Chinese Listed Firms*,” investigates the factors contributing to debt maturity mismatches among companies in the Chinese market. The results reveal a significant positive relationship between financial constraints and debt maturity mismatch. Additionally, firms with a higher risk of bankruptcy tend to exhibit lower levels of maturity mismatches. The analysis also shows a significant relationship between information asymmetry and maturity mismatches and finds that stronger corporate governance practices positively impact the reduction of maturity mismatches.

Notably, this chapter goes beyond examining the determinants of maturity mismatch and explores the consequences of such mismatches on debt costs, considering the distinct costs associated with long-term and short-term debt. The findings indicate that the utilization of short-term debt for long-term investment can lead to a reduction in debt costs. However, the impact differs between non-SOEs and SOEs, with the negative relationship between maturity mismatch and debt cost being significant for non-SOEs but not for SOEs. Moreover, additional tests indicate that there is an association between maturity mismatches and an increased likelihood of stock price collapses, highlighting the vulnerability of firms with such mismatches to sudden and severe declines in share prices.

Chapter 4, titled “*Corporate Strategy Decision after the Deregulation of Margin Trading: Empirical Insights from Chinese Listed Firms*,” delves into the response of Chinese firms to the 2010 deregulation of margin trading. The study employs robust empirical methods to provide compelling evidence of a positive correlation between this deregulation and increased corporate strategy aggressiveness among firms. The chapter identifies key moderating factors that influence this relationship. Firstly, it reveals that the positive relationship between margin trading deregulation and corporate

strategy aggressiveness is stronger in highly competitive markets, underscoring the significance of market context in shaping firms' strategic decisions. Secondly, the study demonstrates that this link is more pronounced when managerial stockholdings are high, highlighting the role of internal governance mechanisms in driving firms' strategic behavior.

Conversely, the chapter suggests that firms with higher levels of institutional ownership experience a dampening effect on their strategic aggressiveness in response to the deregulation of margin trading. In the specific institutional environment of China, institutional owners often operate with shorter time horizons and face external pressures to deliver short-term results, which discourages highly aggressive strategies perceived as riskier. Furthermore, the study illustrates that the correlation between the deregulation of margin trading and the aggressiveness of corporate strategies is more pronounced when managers exhibit high risk preferences. This indicates that managers' attitudes toward risk play a crucial role in how they respond to regulatory changes, influencing the overall aggressiveness of their corporate strategies.

Additionally, Chapter 4 examines the consequences of increased strategic aggressiveness. The results indicate that firms with higher levels of strategic aggressiveness are more likely to generate a larger number of patents, highlighting the positive outcomes associated with proactive strategic decision-making. However, it also finds that greater strategic aggressiveness leads to more debt maturity mismatches, as firms are more likely to structure their debt in a way that creates a mismatch if they cannot secure appropriate maturities. This reveals both the benefits and risks of proactive strategic actions following the deregulation of margin trading.

The specific contributions of each research topic are discussed in the conclusion sections of their respective chapters. This section provides a comprehensive concluding discussion. The contributions of this thesis are multifaceted. Firstly, it highlights the crucial role of political connections in easing financial constraints, offering a deeper

understanding of how political ties can enhance access to financial resources. Secondly, it sheds light on the determinants and consequences of debt maturity mismatches, providing insights into how firms can manage their debt structures to optimize financial performance. Thirdly, it explores how deregulation impacts corporate strategy, revealing how market competition, managerial ownership, managerial risk preferences, and institutional ownership shape strategic aggressiveness.

This thesis also provides comprehensive analyses of three interrelated topics. The research results indicate that political connections affect financing constraints, which are a decisive factor in debt maturity mismatches. Furthermore, increasing strategic aggressiveness raises the likelihood of maturity mismatches. The key variables among these topics influence each other, offering empirical insights into the financial behaviors and strategic management of Chinese listed firms.

These findings are particularly relevant in the context of China's rapidly evolving economic landscape, where regulatory changes and market dynamics continuously influence corporate behavior. The thesis emphasizes the need for firms to adapt their strategies in response to both external economic shifts and internal governance factors. For policymakers, the research offers guidance on designing regulatory frameworks that support corporate stability and growth, ensuring that firms can effectively navigate the complexities of the Chinese market.

Overall, this thesis advances the understanding of corporate finance and strategy in China, providing a foundation for future research and practical applications that can enhance the resilience and competitiveness of Chinese firms in the global economy.

5.2 Limitations

While this dissertation contributes empirical insights to the realm of corporate finance and strategic management within the Chinese context, it is essential to acknowledge certain limitations inherent in the study. These constraints, though noteworthy, do not diminish the significance of the findings but rather offer avenues for further inquiry and exploration.

5.2.1 Sample Period Limitations

A crucial limitation revolves around the nature of the data employed in this study, impacting the generalizability and thoroughness of the conclusions drawn. In Chapter 2, the sample period begins in 2008, while Chapter 3 starts from 2000. This variance in sample periods arises from the intricate manual collection process of the pivotal variable “political connection” in Chapter 2, which required substantial time and effort, resulting in a comparatively abbreviated sample period. Notably, Chapter 2 was the earliest completed section of this thesis, with its data collection occurring in 2020, thereby limiting access to the most recent data.

Conversely, subsequent chapters utilized data from publicly available databases, allowing for a more expansive temporal scope. Despite the shorter sample period in Chapter 2, the robustness of the outcomes was rigorously established through a series of robustness tests. These tests were meticulously conducted to ensure that the findings remain valid despite potential biases introduced by the limited sample size.

5.2.2 Fully Reliance on Quantitative Analysis

An additional constraint inherent in this dissertation is its full reliance on quantitative analysis, a methodology that inadvertently overlooks significant qualitative dimensions capable of enriching depth and comprehension. The inclusion of qualitative

methodologies, such as detailed interviews with key stakeholders or in-depth case studies, could furnish a more intricate understanding of the decision-making processes, underlying motivations, and contextual facets that shape corporate financing strategies and strategic choices in the Chinese business landscape. Integrating these qualitative research methods would imbue the analysis with a multifaceted richness, enabling a more comprehensive exploration of the dynamics and mechanisms within this domain.

This limitation is most pronounced in Chapter 2 and Chapter 4, which delve into the realms of political connections and strategic change. In this context, the incorporation of surveys and in-depth interviews with managerial personnel from the involved companies could yield data of heightened significance, fostering a more refined exploration of the research domain. However, practical limitations, including the exclusivity of the sample—consisting solely of listed companies—pose substantial challenges to soliciting responses from an adequate number of these entities. Consequently, the present study refrains from engaging in qualitative research, even though it is undeniable that integrating qualitative methodologies could have imparted a greater sense of wholeness to the investigation.

5.2.3 Endogeneity Problems

Firstly, Chapter 3 has attempted to address endogeneity concerns through methodological choices. Specifically, a difference model was employed to mitigate the impact of omitted variables, and a lag model was utilized to help control for potential reverse causality. While these approaches contribute to reducing some aspects of endogeneity, they do not entirely eliminate these concerns.

Further methodological refinements or additional controls might be necessary to fully address these complex issues in future research. These efforts illustrate a proactive attempt to enhance the robustness and validity of the findings, though ongoing

evaluation and adaptation of these models are essential as part of the continual improvement of empirical research methods.

In Chapter 4, the Difference-in-Differences (DID) estimation technique is utilized. However, the “post” intervention period may not represent an exogenous event for many companies, which complicates adherence to the parallel trend assumption fundamental to DID analysis. To address potential endogeneity issues that might skew results, this study has implemented tests specifically designed to evaluate the validity of the parallel trend assumption. These tests help determine whether unobserved, pre-existing differences between the treated and control groups could introduce bias into the findings. Despite these efforts, it is essential to recognize that completely eliminating endogeneity concerns is inherently difficult. Factors such as unmeasured variables influencing both the treatment and the outcomes can still affect the estimated effects. Readers should consider this critical limitation when interpreting the results.

Additionally, Chapter 4 applies the Propensity Score Matching (PSM) technique to conduct the empirical study. Although PSM aims to reduce selection bias caused by the non-random nature of treatment allocation and improve the reliability of the estimated causal effects, the limitations of the PSM method itself also impact the research results. PSM relies on observed covariates to estimate the propensity score and therefore cannot address the endogeneity problem caused by unobserved variables. If there are important unobserved variables that affect the acceptance of a treatment and the final outcome, the results can still be biased even if matching is performed. Despite its flaws, PSM remains the primary method for controlling non-random selection of samples when implementing DID.

Moreover, the quality of the matching depends greatly on the accuracy of the propensity score model and the chosen matching algorithm. Improper model setting or matching strategy selection can lead to decreased matching quality, thereby affecting the reliability of research conclusions. While PSM is a powerful tool for improving the

design of observational studies, it cannot completely replace randomized controlled trials, and study results need to be interpreted with recognition of these limitations.

Another endogeneity concern due to omitted variables is a crucial limitation in this study, particularly highlighted in Chapter 4, where we examine corporate strategy. The basic regression model incorporates several commonly used indicators reflecting corporate characteristics. However, even with these controls, the possibility of endogeneity arising from omitted variables remains a complex issue. The decision-making process within a company is shaped by a multitude of factors, ranging from internal management practices to broader external market conditions. These factors are dynamic and multifaceted, making it challenging to capture them comprehensively within a single statistical model.

This limitation is not unique to our study but is a common challenge in empirical research. In acknowledging this, the analysis takes careful steps to mitigate the impact of potential omitted variable bias where possible. However, it is important to recognize that no model can perfectly account for the entirety of influences that affect a firm's strategic choices. Therefore, this section discusses these issues in detail, highlighting the inherent constraints of the methodological approach and the implications for interpreting the results.

5.3 Future Work

Subsequent research endeavors have the potential to transcend the limitations delineated herein and embark on novel trajectories of inquiry. To elucidate, qualitative investigations could delve into the intricate mechanisms by which political connections exert their influence on financing constraints within Chinese private listed firms.

Additionally, while conducting the research for this chapter, the task of collecting data on the political connections of CEOs and chairmen in 2020 proved to be a substantial

undertaking, requiring approximately six months. This was primarily due to the increasing sensitivity and decreased public availability of political data in China in recent years, necessitating extensive manual research. This challenge significantly influenced the decision to narrow the focus to the CEO and chairman when measuring political connections.

Although this approach provided a detailed analysis of the political influences at the highest executive levels, it introduces limitations by not considering the broader spectrum of political connections among other top executives. For future research, there is a valuable opportunity to broaden the scope of investigation to include a wider array of top executives. This would provide a more comprehensive view of the company's political network, enhancing our understanding of how these connections influence corporate strategy and performance. However, the feasibility of such an expansion would heavily depend on the future availability and accessibility of the relevant data. If conditions permit, extending the research to encompass additional executive roles could yield deeper insights into the complex interplay of corporate governance and political connections within private firms in China.

Moreover, engaging in comprehensive discussions with the executives of companies incorporated into the margin trading list could provide invaluable insights into the nuanced impact of this policy alteration on their respective corporate strategies. Furthermore, comparative analyses spanning diverse regions within China could illuminate the heterogeneity characterizing strategic decisions in response to the deregulation of margin trading.

Future research undertakings can corroborate and extend the insights furnished by this thesis by amalgamating diverse data sources and employing multifarious research methodologies. While publicly accessible databases provide a repository of data, their innate limitations and biases necessitate caution. The fusion of quantitative analyses with qualitative methodologies, including dialogues with key industry luminaries,

executives, and regulatory authorities, would undoubtedly yield a trove of insights into the subtleties and contextual nuances steering corporate conduct in the Chinese business landscape.

In summation, this doctoral exposition has not only deepened our comprehension of financing management and strategic decision-making within Chinese listed firms but also provided new empirical evidence. Through its incisive explorations of the impacts of political connections, debt maturity mismatch, and strategic responses to external perturbations, this thesis augments the existing scholarly corpus. Armed with these insights, policymakers, practitioners, and scholars navigating the intricacies of the Chinese business terrain can foster sustainable growth and advancement.

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APPENDIX

Appendix A

The Calculation of WW Index, SA Index and KZ Index

Following by Whited and Wu (2006), the formula for SA index calculating a is as follows:

$$\begin{aligned} WW\ index_{i,t} = & -0.091CF_{i,t} - 0.062DIVPOS_{i,t} + 0.021TLTD_{i,t} - 0.044LNTA_{i,t} \\ & + 0.102ISG_{i,t} - 0.035SG_{i,t} \end{aligned} \quad (A1)$$

Where CF=Net cash flow from operating activities/ Total Asset; DIVPOS=1 if there is a cash dividend, 0 otherwise; TLTD= Book value of long-term debt/ Total asset; LNTA= The natural log of total assets; ISG=The growth rate of sales in the industry in which the firm operates; SG=The growth rate of a firm' sales.

Following by Hadlock and Pierce (2010), the formula for SA index calculating a is as follows:

$$SA_{i,t} = -0.737 * SIZE_{i,t} + 0.043 * SIZE_{i,t}^2 - 0.040 * AGE_{i,t} \quad (A2)$$

Where SIZE is measured by natural logarithm of total assets; AGE is measured by the current accounting year less the year of incorporation of the business. A higher SA index implying a higher degree of financing constraint.

According to Kaplan and Zingales (1997), the formula for KZ Index calculating a is as follows:

$$KZ_{i,t} = KZ1_{i,t} + KZ2_{i,t} + KZ3_{i,t} + KZ4_{i,t} + KZ5_{i,t} \quad (A3)$$

Where $KZ1$ equals to 1 if $\frac{CF_{i,t}}{ASSET_{i,t-1}}$ is below the median and 0 otherwise, $\frac{CF_{i,t}}{ASSET_{i,t-1}}$ is measured by net cash flow from operations divided by total assets in the previous

year; $KZ2$ equals to 1 if $\frac{DIV_{i,t}}{ASSET_{i,t-1}}$ is below the median and 0 otherwise, $\frac{DIV_{i,t}}{ASSET_{i,t-1}}$ is measured by cash dividends divided by total assets in the previous year; $KZ3$ equals to 1 if $\frac{CASH_{i,t}}{ASSET_{i,t-1}}$ is below the median and 0 otherwise, $\frac{CASH_{i,t}}{ASSET_{i,t-1}}$ is measured by cash holding divided by total assets in the previous year; $KZ4$ equals to 1 if $LEV_{i,t}$ is above the median and 0 otherwise; $KZ5$ equals to 1 if $TOBIN'SQ_{i,t}$ is above the median and 0 otherwise.

Using the KZ index as the dependent variable, a ranked logistic regression was applied to model (4). The regression coefficients of each variable can be estimated.

$$KZ_{i,t} = a_1 * \frac{CF_{i,t}}{ASSET_{i,t-1}} + a_2 * LEV_{i,t} + a_3 * \frac{DIV_{i,t}}{ASSET_{i,t-1}} + a_4 * \frac{CASH_{i,t}}{ASSET_{i,t-1}} + a_5 * TOBINQ_{i,t} \quad (A4)$$

Finally, using the results of the above regression model, the KZ index can be calculated for each listed firm for each year, with a higher KZ index implying a higher degree of financing constraint.

Appendix B

The Calculation of Bankruptcy Risk

Following by Bharath and Shumway (2008), the calculation of EDF_{Bhsh} as follow:

Firstly, the model needs to estimate the volatility of each firm's debt ($\sigma D_{i,t}$). Firms on the verge of default have extremely hazardous debt, and the risk of their debt relates to the risk of their equity. The model estimates the volatility of each firm's debt as follows:

$$\sigma D_{i,t} = 0.05 + 0.25 \times \sigma E_{i,t} \quad (B1)$$

In the equation (B1) the model assigns five percentage points to indicate term structure volatility, as well as 25 percent times equity volatility to account for volatility linked with default risk. $\sigma E_{i,t}$ represent the volatility of stock returns, which is obtained by taking the standard deviation of the firm's monthly return data for the previous year.

Then, we need to calculate the overall firms' volatility by using weighed approach.

$$\sigma V_{i,t} = \frac{Equity_{i,t}}{Equity_{i,t} + Debt_{i,t}} \times \sigma E_{i,t} + \frac{Debt_{i,t}}{Equity_{i,t} + Debt_{i,t}} \times \sigma D_{i,t} \quad (B2)$$

In the equation (B2), $Equity_{i,t}$ is the total market value of the firm. $Debt_{i,t}$ is the total face value of the debt. Next, we can calculate the firms' default distance.

$$DD_{Bhsh,i,t} = \frac{\log \left(\frac{Equity_{i,t} + Debt_{i,t}}{Debt_{i,t}} \right) + \left(r_{i,t-1} - \frac{\sigma V_{i,t}^2}{2} \right) \times T_{i,t}}{\sigma V_{i,t} \times \sqrt{T_{i,t}}} \quad (B3)$$

Where $DD_{i,t}$ is the distance to default; $r_{i,t-1}$ is the firm's one-year lagged annual stock returns. T is the forecasting horizon, and $T_{i,t}$ is usually set to 1 year in the formula according to model.

Finally, we can obtain firm's default probability through the standard cumulative normal distribution function, as in equation (B4):

$$EDF_{Bhsh,i,t} = Normal(-DD_{Bhsh,i,t}) \quad (B4)$$

Following by Merton (1974), the calculation of EDF_{Merton} as follow:

The basic idea and principle of the Merton model: the face value of a firm's debt is subtracted from the market value of the firm and divided by the estimated volatility of the firm's value. The model has two key assumptions. The first assumption is that the value of the firm conforms to the standard geometric Brownian motion (GBM). The second assumption is that the firm has only one liability due in period T. Under these two assumptions, the enterprise value of equity is calculated using the option pricing model formula.

$$E = VN(d_1) - Fe^{-rT}N(d_2) \quad (B5)$$

$$d_1 = \frac{\ln\left(\frac{V}{F}\right) + (r + 0.5\sigma_v^2)T}{\sigma_v\sqrt{T}} \quad (B6)$$

$$d_2 = d_1 - \sigma_v\sqrt{T} = \frac{\ln\left(\frac{V}{F}\right) + (r - 0.5\sigma_v^2)T}{\sigma_v\sqrt{T}} \quad (B7)$$

$$\sigma_E = N(d_1)\left(\frac{V}{E}\right)\sigma_v \quad (B8)$$

$$DD_{Merton,i,t} = \frac{\ln\left(\frac{V}{F}\right) + (\mu - 1/2\sigma_v^2)T}{\sigma_v\sqrt{T}} \quad (B9)$$

$$EDF_{Merton,i,t} = Normal(-DD_{Merton,i,t}) \quad (B10)$$

In equation (B5), E is the market value of the company's equity. V is the total enterprise value. N(d) is the cumulative density function of the standard normal distribution. F is the point of default and the threshold of financial distress, equal to the book value of the company's liabilities, and r is the risk-free interest rate. The unknown quantities V and σV are derived by associating equation (B5) and equation (B8). Specifically, the settings of the parameters, including volatility of equity value (σE), expected return on assets (μ), time to maturity of debt (T), market value of equity (E), and default point (F) are all same with the method of Bharath and Shumway (2008). From this, the default distance DD is calculated. Then, all parameters are brought into equation (B9) to calculate the default distance. Finally, we can obtain firm's default probability through the standard cumulative normal distribution function in equation (B10).

Following by the definition of company KMV, the calculation of EDF_{KMV} as follow:

The probability of default for KMV is an evolution of Merton (1974), except that it is defined differently in terms of the distance to default.

$$DD_{KMW,i,t} = \frac{V - F}{V * \sigma_V} \quad (B11)$$

$$EDF_{KMW,i,t} = Normal(-DD_{KMW,i,t}) \quad (B12)$$

In the equation (B11), the definition of V , F and σ_V are same with them in the method of Merton (1994). Also, the calculation of EDF_{KMW} is also through the standard cumulative normal distribution function.

Appendix C

The Construction of Governance Index

Following the approach of Zhou *et al.* (2020), the principal component analysis (PCA) method is employed to capture the variability of the data and derive a comprehensive indicator of corporate governance. Table C1 show provide the detail definition of governance indicators Zhou *et al.* (2020). By transforming the seven key indicators, PCA provides a holistic perspective on the different dimensions of corporate governance while retaining the essential information embedded in the variables. In Panel A of Table C2, the results highlight the relative contributions of each variable to the overall Corporate Governance Index. Among the indicators, Management shareholding ratio, Board size, and Institutional shareholding emerge as the most significant contributors to the index. These variables play a crucial role in assessing the incentive mechanisms, monitoring capabilities of the board, and the balance of shareholding within the company.

In this study, the Kaiser-Meyer-Olkin (KMO) test and Bartlett test are conducted to assess the suitability and soundness of factor analysis. These tests are widely utilized in factor analysis to determine the appropriateness of applying this statistical technique to the data at hand. The KMO measure serves as an indicator of sampling adequacy for factor analysis. It ranges from 0 to 1, with values closer to 1 indicating a higher level of adequacy in the sample for conducting factor analysis. Generally, a KMO value greater than 0.6 is considered acceptable, indicating that the data are suitable for factor analysis. Conversely, a lower KMO value suggests that the data is not suitable for factor analysis, warranting consideration of alternative methods or improvements in data quality. In Panel B of Table C2, the KMO value is reported as 0.618, surpassing the threshold for acceptability. This signifies that the data in this study are deemed suitable for factor analysis based on the KMO measure. Consequently, factor analysis can be confidently employed to explore the underlying structure and relationships among the variables under investigation.

The Bartlett test is a common statistical tool used in factor analysis to assess the suitability of

the correlation matrix for factor analysis. It tests the null hypothesis that the correlation matrix is an identity matrix, implying perfect independence between variables. In the Bartlett's spherical test, the p-value associated with the test is used to determine the rejection or acceptance of the null hypothesis. A p-value below a predetermined level of significance, such as 0.05 or 0.01, suggests a higher degree of correlation among the observed variables, making them suitable for factor analysis. The Bartlett test results, as demonstrated in Panel C of Table C2 with a Chi-square value of 23418.841 and a p-value of 0. The statistically significant Chi-square value and extremely small p-value provide strong evidence against the null hypothesis and support the notion that there is a meaningful correlation among the variables, justifying the utilization of factor analysis to uncover latent factors.

Table C1: Definition of governance indicators Zhou *et al.* (2020).

$Gov\ Index_{i,t} = PCA \sum_{j=1}^7 Governance\ Indicators_j$	Definition
Management remuneration	Total annual executive remuneration
Management shareholding ratio	Total executive holdings / Total share capital
The independence of the board	Number of independent directors / Total number of directors
Board size	The number of board directors of a firm
Institutional shareholding	Total institutional holdings / Total share capital
Shareholding balance	Sum of the shareholdings of the second to fifth largest shareholders/controlling shareholder
Separation of Duties	If the CEO and the shareholder are the same person it equals 1, otherwise it equals 0

Table C2: Principal Component Analysis Results Based on Zhou *et al.*'s (2020) Method.

Panel A: Results of factor loadings	
Variable	Factor loadings
Management remuneration	0.2474
Management shareholding ratio	0.7233
The independence of the board	0.4465
Board size	-0.6263
Institutional shareholding	0.6059
Shareholding balance	0.3110
Separation of Duties	-0.5160
Panel B: Kaiser-Meyer-Olkin test of sampling Adequacy	
KMO	0.618
Panel C: Bartlett test of sphericity	
Chi-square	23418.841
Degrees of freedom	21
p-value	0.000

Regarding the governance index use in the robustness test, Zhou *et al.*, (2017) selected another eight corporate governance variables and used principal component analysis to construct a comprehensive evaluation index of corporate governance quality (Shown in Table C3). This alternative index captures various aspects of corporate governance, including the separation of the positions of chairman and general manager, the proportion of independent directors, the proportion of shares held by the top ten shareholders, the proportion of shares held by the top shareholder, the size of the board of directors and supervisory board, the sum of the remuneration of the top three executives and the shareholdings held by the management. Table C4 shows that this index has past the KMO test and the Bartlett test, this study then confirms the appropriateness of applying factor analysis to the dataset.

Table C3: Definition of governance indicators Zhou *et al.* (2017).

$Gov\ Index_{i,t} = PCA \sum_{j=1}^8 Governance\ Indicators_j$	Definition
Management remuneration	The sum of the remuneration of the top three executives
Management shareholding ratio	Total executive holdings / Total share capital
The independence of the board	Number of independent directors / Total number of directors
Board size	The number of board directors of a firm
Supervisory board size	The number of supervisors on the supervisory board
Top ten shareholdings	The top ten shareholder holdings / Total share capital
The proportion of shares held by the top shareholder	The top shareholder holdings / Total share capital
Separation of Duties	If the CEO and the shareholder are the same person it equals 1, otherwise it equals 0

Table C4: Principal Component Analysis Results Based on Zhou *et al.*'s (2017) Method.

Panel A: Results of factor loadings	
Variable	Factor loadings
Management remuneration	0.1343
Management shareholding ratio	0.6108
The independence of the board	0.5712
Board size	-0.7422
Supervisory board size	-0.6216
Top ten shareholdings	0.1198
The proportion of shares held by the top shareholder	-0.2064
Separation of Duties	-0.5138
Panel B: Kaiser-Meyer-Olkin test of sampling adequacy	
KMO	0.607
Panel C: Bartlett test of sphericity	
Chi-square	24237.400
Degrees of freedom	28
p-value	0.000

Appendix D

The Calculation of Stock Crash Risk

This study applies two measures to evaluate stock price crash risk in accordance with the previous literature (Chen *et al.*, 2001; Jin and Myers, 2006; Kim *et al.*, 2011a; b; Hutton *et al.*, 2009; Callen and Fang, 2015). The first is the negative coefficient of skewness of firm-specific weekly returns (NCSKEW). The second one is the down-to-up volatility of firm-specific weekly returns (DUVOL).

First, the market-adjusted return of stock i is calculated from model (D1) using weekly return data for stock i .

$$r_{i,t} = \alpha + \beta_{1,i}r_{m,t-2} + \beta_{2,i}r_{m,t-1} + \beta_{3,i}r_{m,t} + \beta_{4,i}r_{m,t+1} + \beta_{5,i}r_{m,t+2} + \varepsilon_{i,t} \quad (D1)$$

Where $r_{i,t}$ is the return of stock i at week t in each year and $r_{m,t}$ is the average return of all A-share stocks at week t weighted by market capitalisation outstanding. This paper adds the lagged and ahead terms of market returns to equation (D1) to adjust for the non-synchronous returns of stocks (Dimson, 1979).

$W_{i,t}$ is the market-adjusted return for stock i in week t , $\varepsilon_{i,t}$ is the regression residuals in model (D2).

$$W_{i,t} = \ln(1 + \varepsilon_{i,t}) \quad (D2)$$

The first measure of stock price crash risk used in this paper is the negative skewness of the market-adjusted weekly return of stock i (NCSKEW) and a greater *NCSKEW* number indicates that a stock is more prone to crashing. The indicator is calculated as follows.

$$NCSKEW_{i,t} = -\left[\frac{n(n-1)^{3/2} \sum W_{i,t}^3}{(n-1)(n-2)(\sum W_{i,t}^2)^{3/2}} \right]$$

(D3)

The second measure of crash risk used in this paper is the difference in volatility between the upward and downward phases of stock prices (DUVOL). First, stock returns are divided into two subsamples, up weeks, and down weeks, based on whether the market-adjusted weekly return ($W_{i,t}$) of stock i is greater or less than the mean of period, and then the standard deviation of stock returns is calculated for each of the two subsamples, and then $DUVOL_{i,t}$ is calculated using the following model. where n_u and n_d are the number of weeks of stock i , t , is greater (less) than the average annual return $W_{i,t}$. Similar to NCSKEW, a greater DUVOL value indicates that a stock is more prone to crashing.

$$DUVOL_{i,t} = \ln \left\{ \left[(n_u - 1) \sum_{\text{down}} W_{i,t}^2 \right] / \left[(n_d - 1) \sum_{\text{up}} W_{i,t}^2 \right] \right\} \quad (\text{D4})$$

Appendix E

The Construction of Corporate Strategy Index

According to the methodology of Bentley *et al.* (2013), each variable is measured every fiscal year using the rolling five-year average. Each variable is measured every fiscal year using the rolling five-year average. The dimensions are then divided into quintiles depending on two-digit industry code and year. The highest quintiles receive a score of 5, the second highest quintile a score of 4, and so on, while the lowest quintiles receive a score of 1. According to Miles *et al.* (1978), the high degree of mechanization is mainly focused on systematic and efficient technology. As a result, the capital intensity value is reversed, with observations in the lowest quintile receiving a score of 5. Therefore, the value for capital intensity, which is reverse scored so that observations in the lowest quintile are assigned a score of 5. The overall corporate strategy index is a summation of six dimensions for each company year, with the highest score of 30 (Prospector strategy) and the lowest score of 6 (Defender strategy). The definition of strategy-types: defenders (6–12); analyzers (13–23); prospectors (24–30).

Table E1: The Construction of Corporate Strategy Index

Corporate strategy index _{<i>i,t</i>} = $\sum_{j=1}^6 \text{Strategy dimension}_j$		
Dimension	Variable	Measurement
Company's proclivity towards seeking out new products.	Ratio of research and development expense to sales	Research and development expense to sales calculated using a rolling five-year average.
Company's capacity to efficiently create and deliver products and services.	Ratio of employees to sales	The number of employees to sales ratio calculated using a rolling prior five-year average.
Company's historical growth.	Change in total sales	Percentage change in total sales over a rolling five-year average in one year.
Company's focus on exploiting new market.	Ratio of selling, general and administrative to sales	Selling, general and administrative expenses to

Company's organizational stability.	Employee fluctuations	sales calculated using a rolling prior five-year average.
		Standard deviation of the total number of employees calculated using a rolling prior five-year period.
Company's commitment to technological efficiency.	Capital intensity	Net value of property, plant, and equipment (PPE) scaled by total assets calculated using a rolling prior five-year average.
